

SOCIAL SCIENCES

Constitution of the USSR
and the Socialist Way of Life

Systems Theory: Topical Aspects

The Historical Experience
of the Soviet Five-Year Plans

Sociolinguistics in Conditions
of the Scientific
and Technological Revolution

Relations with Nature Optimised

Imperialism
and the Liberated Countries

Scientific Knowledge
and Labour

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Philosophy
History
Economics
Politics
Sociology
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To the Reader

Both at meetings and in their letters to us our readers show a keen interest in the socialist way of life, to the problems of war and peace, and in how legal science has been further developed in the new Constitution of the USSR. We therefore open this issue with an article by Academician P. Fedoseyev, Chairman of the Editorial Council of our journal. He notes that it is in the socialist way of life, the affirmation of which is inseparable from the implementation of the propositions of the Constitution of the USSR in everyday life that the interconnection between the socio-economic and political achievements and the changes in everyday life and in the consciousness of people in the course of building the new society manifests itself most vividly. We also publish an abridged text of the speech made by P. Zhilin, Corresponding Member of the USSR Academy of Sciences, during a discussion of L. I. Brezhnev's books Little Land and Rebirth at the Division of History, USSR Academy of Sciences.

Systems Theory

V. Afanasyev, Corresponding Member of the USSR Academy of Sciences, describes various aspects of the systems approach to the phenomena and processes of social life. **V. Kuzmin** summarises his studies of the role and significance of the systems principle in works by Marx. **I. Blauberg** emphasises that the methodological foundations of the concept of wholeness should be studied in close connection with the elaboration of the systems approach. **N. Lapin** discusses interdisciplinary aspects of a specific group of large systems—global models. **V. Sadovsky** analyses the expediency of using system ideas for the further development and improvement of current concepts of the methodology of science.

Philosophy

B. and E. Yudins deal with the interaction and interconnection of science as a major productive force with various spheres of the life of society as a whole and of the individual. **F. Kuznetsov** notes that developed socialism has put in the forefront of the whole of social life the individual with his growing spiritual and moral requirements in the dialectics of his relations with society.

Economics

G. Sorokin analyses the experience of the Soviet five-year plans that have always been based on advanced economic theory and consistently enriched it. **Vi. Afanasyev** regards some Western views in the field of political economy as attempts to present the changes taking place in the productive forces under the impact of the STR as radical changes in the socio-economic essence of capitalism.

Contemporary History

E. Kovalev researches material showing the wide interest of various strata in China in the revolutionary events in Russia, particularly the response of the Chinese liberal press to the Great October Socialist Revolution.

Developing Countries

K. Brutents writes about the failure of imperialism's neocolonialist policy, impelling its architects to make changes in the strategy and tactics of this policy.

Linguistics

Yu. Desheriev stresses that the study of language in all its diverse manifestations in the conditions of current social development, the scientific and technological revolution and the progress of the natural sciences is a major task of sociolinguistics.

Interdisciplinary Research

Unemployment as one of the most burning problems affecting the economic, socio-political and spiritual aspects of life in the West is analysed in the article "Unemployment in the Capitalist World". Modern society's activity has reached such dimensions, notes **E. Fyodorov**, that it has become urgently necessary to protect nature in order to prevent irreversible and undesirable changes of the environment.

* * *

In the second half of 1978 our journal began to appear in two editions in Portuguese. In Portugal the edition is brought out by the "Avante!" Publishers (57, Av. Santos Dumont, Lisbon-1) and the second edition circulated in other countries is printed in Moscow and distributed by firms having business dealings with V/O "Mezhdunarodnaya Kniga".

Beginning with this issue, we are introducing some changes in the layout of our journal. Your comments and suggestions will be welcomed.

In our third issue for 1976 we carried a questionnaire. Many of the comments and suggestions received were taken into account. Since then our readership has greatly increased, new editions, in Portuguese and in Russian, have been put out and science has posed fresh problems.

In this connection and also to mark the forthcoming 10th anniversary of our publication, we intend to publish in the closing issue of this year a new questionnaire in the hope that our readers' replies to it will help the Editors to further improve the journal.

We wish our readers

A Happy and Peaceful New Year!

The Editors

Constitution of the USSR and the Socialist Way of Life

PYOTR FEDOSEYEV

The new Constitution of the USSR, which came into force on the 60th anniversary of the Soviet state, is justifiably called the Fundamental Law of developed socialist society at the present stage of the building of the communist system. It is, one may say, the political code of the builders of communism expressed in fundamental laws.

The nationwide discussion of the draft of the new Constitution and its adoption, combined with the celebration of the 60th anniversary of the Great October Socialist Revolution, still further accentuated the features of the life, thought, and behaviour of Soviet citizens characterising the socialist way of life that has taken shape in the USSR.

The Constitution of the USSR and Leonid Brezhnev's speeches contain a wide spectrum of fundamental propositions and ideological guidelines relating directly to the problems of the socialist way of life, make a large contribution to its theoretical study, and set Soviet social science new tasks.

As a range of forms of vital activity implicit in a definite society, class, or social group, a mode of satisfying the material and cultural requirements of individuals in a given socio-economic system, and the factor determining the character of association and value orientation of individuals, the way of life is formed not in accordance with the desire of people but on the basis of a concrete social system. It is natural, therefore, that the problem of the development and consolidation of the socialist way of life arose in its full stature with the building of developed socialist society.

Marx and Engels regarded the antagonistic contradiction between technological progress and social advancement achieved in bourgeois society at the expense of the privations and hardships of working people as one of the main features of that society's development. "In our days," Marx wrote in the mid-19th century, "everything seems pregnant with its contrary. Machinery, gifted with the wonderful power of shortening and fructifying human labour, we behold starving and overworking it. The new-fangled sources of wealth, by some strange weird spell, are turned into sources of want. The victories of art seem bought by the loss of character. At the same pace that mankind masters nature, man seems to become enslaved to other men or to his own infamy. Even the pure light of science seems unable to shine but on the dark background of ignorance. All our invention and progress seem to result in endowing material forces with intellectual life, and in stultifying human life into a material force."¹

Real socialism is the first society to transcend this conversion of the joint activities of people into an alien force dominating them. Socialist society refracts the key gains of social progress in the activities of each individual, in his way of life.

Elements of the socialist way of life have been developing and gaining strength ever since the victory of the socialist revolution. They took root in proportion to the break-up of the former socio-economic system, in the struggle against the traditions and way of life of bourgeois society, in the offensive against capitalist elements, their ideology, policy, and norms of behaviour.

As in the entire matter of society's revolutionary remoulding on the principles of socialism, the leading role in forming the socialist way of life was played by the working class. Its revolutionary and labour traditions, and its scientific, Marxist-Leninist ideology were the foundation for the formation of the socialist way of life, the education of the new man, and the assertion of communist morals.

The leading role played by the working class in socialist society is embodied by its vanguard, the Communist Party. Through the Party the working class exercises the determining influence on the development of the political consciousness and scientific world outlook of all working people. With the final establishment of socialism the new, socialist way of life becomes the main element of the vital activity of all social groups, of all nations and nationalities: its principles and norms increasingly permeate all aspects of the work and life of people.

The socialist way of life brings into prominence the relationship of socio-economic and political achievements with the uninterrupted beneficial changes in the life and thinking of people in the course of the building of the new society. The socialist way

of life is a way of life that fosters the education of the new man, that, to quote Lenin, gives him *allround development and an allround training*.

The two key conditions for the formation of the socialist way of life are: a) the creation of the socialist mode of production and the relevant socio-political system and, b) the education of the new man, a man with lofty communist ideals, an active builder of the new relations between people, of collectivist forms of association and norms of behaviour. These are closely interrelated processes. The maturing of the socialist way of life signifies, above all, the establishment of new forms of human relations in production, in public life, in the family, and in everyday life. The new relations mirror the new conditions of production and distribution of material goods, and the corresponding social links, which ultimately remould man himself, his views, and his aspirations.

This dual process develops all-sidedly at the stage of mature socialism, when, to quote the Constitution of the USSR, "socialism is developing on its own foundations, the creative forces of the new system and the advantages of the socialist way of life are becoming increasingly evident, and the working people are more and more widely enjoying the fruits of their great revolutionary advantages".

A way of life is a synthetic category, which from a certain angle embraces all forms of the vital activity of people. Since the establishment of socialism signifies a fundamental change in the economic, social, and political conditions of the life of all members of society, essential changes are undergone by the views, convictions, and aspirations of people and all the modes of their vital activity forming the way of life. That is why the socialist way of life differs radically from the way of life of bourgeois society. This was convincingly shown in the CC report to the 25th Congress of the CPSU: "The atmosphere of genuine collectivism and comradeship, cohesion and the friendship of all big and small nations in the country, which gain in strength from day to day, and the moral health which makes us strong and steadfast—these are the radiant facets of our way of life, these are the great gains of socialism that have become the very lifeblood of our reality."³

The socialist way of life embodies the citizen's new attitude to public affairs, to the common interests of the nation, to the destiny of the Motherland and of all mankind. The optimal combination of personal interests with the interests of society's development is achieved when social principles play the leading role. Active promotion of economic development, concern for the preservation and enlargement of public property, for the defence and blossoming of the socialist Motherland, for enhancing its moral and political prestige in the world, for consolidating world peace

and security, and many other public matters come within the range of the vital interests and realised duties of the citizens of socialist society. The maxim, pronounced by Marx, that personal freedom is possible only in a collective,⁴ is sinking ever firmer root in the minds of Soviet people. Concern of all for the welfare of each and concern of each for the welfare of all is the law of life in developed socialist society.

Through their awareness of civic duty people feel their link not only with the collective at their place of work but also with the entire people, and thereby display international solidarity. Friendship among nations spells out peace and cooperation between them. The international alliance of working people, the ideal of life without war, the ideal of unbreakable world peace, are a salient feature of the socialist world outlook and the socialist way of life.

In the Soviet Union internationalism is implemented in day-to-day life, in the life and creative labour of Soviet people. It is noteworthy that throughout the Soviet Union, in every republic, region, town, and village, at every factory, office, institute, and collective-farm people of different nationalities live and work in harmony and help each other to move to new achievements in the building of communism.

One of the basic civic duties recorded in the Soviet Constitution is formulated in Art. 64, which states: "It is the duty of every citizen of the USSR to respect the national dignity of other citizens, and to strengthen friendship of the nations and nationalities of the multinational Soviet state."

The socialist way of life is a way of life of the working person, of the maker of material and cultural values. The Constitution of the USSR defines the fundamental role of labour under socialism and shows the character of Soviet society as a society of working people. Art. 14 states: "The source of the growth of social wealth and of the well-being of the people, and of each individual, is the labour, free from exploitation, of Soviet people." This underscores the specific feature of socialism: it has emancipated and humanised labour, transcended its capitalist alienation, abolished private property in the means of production, put an end to exploitation of man by man, and created ever broader possibilities for the realisation of the strength and abilities of each person. Under socialism social production is itself steadily subordinated to the need for satisfying the growing requirements of all members of society as fully as possible. At its 25th Congress the CPSU adopted a programme for social development and raising the living standard. The central provision of this programme declares: "On the basis of economic growth and greater efficiency of social production, it is to be ensured that the people's growing material

and intellectual needs be met more fully, that the socialist way of life be consistently developed, and that Soviet society's social structure be further improved."⁵

Growing importance and tangible strength is today being acquired by Marx's proposition that the act of production is accompanied by a change not only of the objective conditions but also of the producers themselves, who shape new qualities in themselves, develop and remake themselves as a result of production, creating new forces and new notions, new modes of association, and new requirements.⁶ As Marx noted, under socialism material production sheds its poverty and antagonistic character, and the free development of the individual begins. The abolition of exploitation and the growth of labour productivity give working people more leisure time, thereby facilitating the scientific, artistic, in short, allround development of individuals.

Today hardly anybody will question the words: Man does not live by bread alone. Indeed, the vital activities of man do not boil down to obtaining the means of subsistence, to labour "determined by necessity and mundane considerations".⁷ Other factors underlying a way of life are the socio-political and intellectual activities of people.

The socialist way of life is characterised by a high level of intellectual activity on the part of society as a whole, of all social groups and of individuals. The distinction between manual and mental labour is increasingly erased; the intellectual element of the activities of people engaged mainly in manual labour is growing steadily. Labour is increasingly given a creative content in parallel with the allround rise of the intellectual level of the masses. The objective foundation of this tendency, which leads to radical changes in the way of life of many categories of working people, is mainly the organic combination of scientific and technological achievements with the advantages of the socialist system, which accelerates science's fusion with production.

As was noted by Leonid Brezhnev, a "production worker of a new type, harmoniously combining physical and mental work, is growing up in the conditions of developed socialism and under the influence of the scientific and technological revolution".⁸ It is not accidental that word combinations such as "worker-intellectual", "non-professional intellectual", and "worker-researcher" have appeared in sociological literature and belles lettres. With the help of these terms social thought feels for the changes that are taking place today in labour activities and which clear the ground for the fusion of mental and manual labour in the course of communist construction.

Active participation in socio-political activity is a hallmark of the socialist way of life. Its emergence is ensured by the very

essence of socialism, by the democracy implicit in it. The reason socialist democracy is seen as democracy of a higher type, as democracy not in words but in deed, is that it rests on the activity and political consciousness of the masses, on their unfailing and growing participation in all areas of life and state administration. The increasing public activity of the people is one of the socialist system's greatest achievements. The most vivid evidence of socialist democracy's creative potentiality is its main document, the Constitution of the USSR, product of collective wisdom, which absorbed the finest ideas and thought of the people when they discussed it. "We," Leonid Brezhnev noted addressing the Supreme Soviet of the USSR on October 4, 1977, "can say with confidence and pride that *it is the whole Soviet people who have in fact become the true creators of the Fundamental Law of their state.*"⁹

The Soviet Constitution enshrines the true democracy of developed socialist society, the political system that ensures the effective administration of all public affairs, the increasing participation of the people in the life of the state, and the combination of the real rights and freedoms of citizens with their duties and responsibility to society.

A remarkable feature of the new man and of the socialist way of life is their inexhaustible social optimism. This is due chiefly to the fact that the socialist social system was shaped and established by the most advanced, revolutionary class—the proletariat. Our way of life sprang from the most progressive social system, namely, the socialist system. Hence the optimistic world outlook of the builders of communism. Pessimism, the desperation, Lenin wrote, implicit in classes that perish,¹⁰ is alien to them. The revolutionary optimism of the working class was tempered in the struggle against capitalism, against the capitalist way of life. The unshakable belief of the working class that historical justice is on its side and that its cause is invincible is manifested with redoubled strength and asserted in socialist society.

Also an important characteristic of the world outlook of the new man and of his way of life is that there is no discrepancy between his convictions and deeds. A person's thoughts and feelings are manifested in his practical deeds, in his public activity. Under the socialist way of life, communist ideals are linked indivisibly with communist deeds in all fields of the vital activity of the citizen of the new society. This harmonious combination of ideological guidelines, the moral make-up and the activities of people is an essential element of the formation and development of the new man and his way of life. The close unity of the scientific, Marxist-Leninist world outlook, communist norms of morality, and the principles underlying the vital activity of people is clearly expressed in the moral code of the builders of

communism formulated in the Programme and Rules of the CPSU. The basic principles of the moral code determine the day-to-day moral requirements made of man in the building of communist society.

The development of socialism and the improvement of the socialist way of life is accompanied by the allround development of the individual, the coordination of all facets of the thinking, behaviour, and activity of people. However, it would be naive to expect that in reality this harmony is achieved automatically in the life of individuals, collectives, and society as a whole. Not only harmony, but also disharmony, certain contradictions and discrepancies appear in the thoughts, behaviour, and activity of people. In some cases labour activity is not reinforced by the appropriate high moral qualities. Often there is discrepancy between recognition of communist ideals and the actual behaviour of people. At the Special Seventh Session of the Supreme Soviet of the USSR, Leonid Brezhnev drew the attention of all state and public organisations to the need for "a stronger drive against parasitism, habitual breaches of labour discipline, drunkenness and other anti-social phenomena which cut across the very substance of our socialist way of life."¹¹

The dialectics of life are such that in a socialist society everything new and progressive is asserted in a persevering struggle against the old and outworn. Where a person is guided by proprietary ideology and violates the norms and principles of socialism his way of life cannot be regarded as socialist, although he lives in a socialist society. Survivals and the influence of the bourgeois way of life are not ousted automatically by the new society's growing forces. Exponents of the old norms and habits continue to influence the people around them. This underlies the contradiction between the colossal achievements of socialism and the backward elements that slow down society's development. Communist society cannot be built without surmounting these negative phenomena or, to quote Leonid Brezhnev, without abolishing these social sores.

The struggle against survivals of the past with the purpose of asserting the socialist way of life is unquestionably a struggle against the actual bearers of capitalism's birth-marks. However, this struggle also has a broader socio-cultural significance: the drive against survivals of the past is also a drive against the world outlook, morals, and foundations of the day-to-day life of their exponents, against the tenacious traditions of the bourgeois way of life that reign supreme in capitalist countries. The competition between socialism and capitalism does not boil down to technical and economic indicators; it also embraces social ideals and values, namely, the way of life.

An acute ideological struggle has been raging in recent years precisely in this area, in which the bourgeois ideologues and propaganda services seek to make good of the change of the alignment of forces on the international scene in favour of socialism and the fact that imperialism has lost the historical initiative. As in

former years, the keynote of bourgeois propaganda and of bourgeois notions of a way of life worthy of man is consumption with its ingenuous motto: "I buy (or have, or can buy and have) and therefore I live."

The fact that the consumer attitude to life in the bourgeois world outlook has a long tradition must be reckoned with. It was theoretically substantiated by the philosophy of utilitarianism, Social-Darwinism, pragmatism, and so on that express the ideology of philistinism, which preaches anti-intellectualism and narrow utilitarian precepts of "adaptation" for the sake of personal well-being and "survival". The many powerfully-backed schools and petty colleges of social thought in the West and the innumerable "lone wolves" of Western ideology unremittently laud and sanctify philistine virtues, anti-intellectualism, and individualism.

In its consumer interpretation, human life is reduced to the level of incomes and the quantity of material goods at the disposal of the individual, and also to longed-for and primitive "pleasures". Capitalism manipulates even human needs, skilfully cultivating base desires and attractions, tying man firmly to the chariot of its entertainment industry. Modern bourgeois sociology and literature often counterpose the senses and reason, which leads to the absolutisation and glorification of bestial instincts given the guise of emotional life. With this distorted frame of mind is linked the cult of brutality and violence. The consumer way of life stimulates the spread of alcoholism, drug addiction, sexual license, and crime.

The bourgeoisie fosters a consumer attitude in order to divert the people from political activity, suppress intellectual requirements, and stir up mercenary feeling. Bourgeois society is still able to expand material production and increase material consumption for part of the population, but it increasingly suppresses intellectual consumption and increasingly shows its hostility for reason, morals, and progressive culture.

The crisis of capitalist society and its system of values, the destructive effects of the uncontrolled expansion of capitalist industrial production to the environment and man himself, the poverty and degrading impact of the consumer "philosophy of life" and morals, which are increasingly discrediting themselves in the eyes of the mass of working and young people, have become so clear-cut that in recent years bourgeois ideologues have been frantically endeavouring to produce a more attractive replacement for the model of the bourgeois consumer way of life which has acquired a bad odour. The untenability of the widely advertised "consumer society" in fundamental questions of social and private life is partially acknowledged in the "quality of life" concepts that became fashionable in the 1970s.

The Social-Democratic leaders are particularly zealous in preaching reforms of the way of life, in demanding changes in the "system of values of Western society". But in the same breath they reject revolutionary reforms, suggesting the preservation of private property, capitalist enterprise, and the market mechanism of the economy. The ideas about the "humanisation" of society and a "new quality of life" are thus usually barren, for they provide a screen for ugly capitalist reality.

The present stage of the struggle between Marxism-Leninism and bourgeois ideology, is marked by the appearance in the West of concepts whose outward criticism of the anti-humane development of "industrial societies" conceals their attacks on real socialism, which serves as an example and beacon for the working people, for developing nations that have adopted the socialist orientation.

In addition, the old, tested weapon of bourgeois ideology and propaganda—individualism nourished by proprietary psychology and morals—is used against the socialist countries, against the socialist way of life. The society of proprietors, Lenin wrote, is "based on the principle: rob or be robbed... Naturally, people brought up in such a society assimilate with their mother's milk, one might say, the psychology, the habit, the concept which says: you are either a slave-owner, a petty employee, a petty official, or an intellectual—in short, a man who is concerned only with himself, and does not care a rap for anybody else."¹²

Capitalism gives every possible encouragement to individualistic feeling, which had been cultivated by the ruling exploiting class in pre-capitalist societies. It gives full rein to unbridled egoism and individualism. Bourgeois individualism is opposed to the individual, undermines the latter's sense of civic duty, cripples man himself, narrows his interests, and limits vital activity to isolated existence.

In bourgeois society the interests of individuals inevitably come into conflict on the soil of private ownership. Competition reinforces the psychology of individualism, disunites citizens, brings them into conflict with each other, and gives their way of life inner antagonisms. The bourgeoisie declares that to negate private property and the brutal competition founded on it means to negate individual freedom. However, today one sees clearly the justice of Marx's words that "free competition spells out freedom for capital and not for individuals".¹³

Proprietary feeling, which has been cultivated for centuries on end, makes itself felt also under socialism even after private property has been replaced by public property. Crimes such as embezzlement, bribery, profiteering, and larceny are the direct offshoots of proprietary traditions. The different manifestations of money-grubbing and hoarding obviously have the same source. This is largely the soil on which individualism flourishes; even in a socialist society there are individuals who attempt to set themselves above society and the collective. While granting broad rights and freedoms to the socialist individual, the socialist system rejects individualism, the claims of egoistic types to all sorts of unfounded privileges, to a special status.

Small wonder that, in commenting on the draft Constitution of the USSR, some bourgeois press organs savagely attacked the provisions on the rights, freedoms, and duties of Soviet citizens. "This," Leonid Brezhnev said on October 4, 1977, "has, of course, its own logic: indeed, it is precisely the idea of 'concern' for human rights that prominent leaders of the capitalist world have lately chosen as the main thrust of their ideological crusade against the socialist countries. The critics of the Soviet Constitution, however, have found themselves in an unenviable position. They cannot escape the fact that our draft Constitution defines the social, economic, and political rights and freedoms of citizens and the specific guarantees of these rights more widely, clearly, and fully than ever before anywhere else."¹⁴

Bourgeois critics of socialism allege that socialist society suppresses and restricts the individual. But by individual they mean individualism, the isolated existence and privileges of the bourgeois individual.

While rejecting individualism as a system of thinking and behaviour, socialism inspires and develops the high consciousness of the dignity of the free individual in a socialist society.

The formation of the socialist way of life on the basis of public property and collective labour by no means rules out the development of intellectual individuality, personal qualities, and needs. On the contrary, it fosters them. The creative initiative and

individuality of each person is displayed in society, in association with other people, in collective labour. Moreover, the formation of the new man presupposes his all-sided development as an independent individual. As was foreseen by Marx, it is precisely in a socialist society that man is able "to assert his true individuality", for each must be "given social scope for the vital manifestation of his being".¹⁵

Far from being erased, individuality, i.e., the manifestation of the personal qualities, interests, tastes, and creativity of the individual, is given increasing scope under socialism. It is characterised by a high level of intellectual maturity, which presupposes identity and the consciousness of civic duty. An inalienable feature of the man with a communist make-up is not hardened egoism but a striving to place his skills and talents in the service of others.

The problem of individuality and individualism has yet another aspect. Marx convincingly showed that capitalist rule means the "total abolition of any individual freedom and the total enslavement of individuality to social conditions that acquire the form of material forces and even super-powerful things".¹⁶ A paradoxical reality of modern bourgeois society, which proclaims false "equal opportunities" for all its competing members is such that while fostering the ideology of individualism it exercises a destructive influence on genuine individuality, steadfastly narrowing and restricting the sphere of its free manifestation. Lenin showed the illusory character of the individualistic slogans and vital recipes for the "small man" trying to "make his way in the world" under state-monopoly capitalism: "As a matter of fact, however, capitalism long ago replaced small, independent commodity production, under which competition could develop enterprise, energy and bold initiative to any considerable extent, by large- and very large-scale factory production... syndicates and other monopolies. Under such capitalism, competition means the incredible 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."¹⁷

The constant and unabated pressure of the mammoth production and bureaucratic machine of state-monopoly capitalism on man is supplemented with the deliberate fabrication and dissemination of so-called mass culture, which depersonalises both its creators and consumers, levels down and standardises the intellectual life of people. Naturally, this impoverishment and depersonalisation of human life is strongly opposed by the democratic movement and by exponents of advanced culture.

Against this background the "historical advantages of socialism as a mode of production and way of life, its genuine humane essence are thus more fully and dramatically revealed".¹⁸

The great founders of scientific communism saw in communist society "the only society in which the original and free development of individuals ceases to be a mere phrase",¹⁹ and on that basis levelled principled criticism at the concepts of egalitarian, "barrack" communism. The negative effects of the practical application of concepts such as these are seen distinctly in the

Maoist "model" of society, which flaunts the dignity of the individual and the principles of humanism. We emphatically reject all attempts to reverse the history of socialism, to divert it from the trunk road of communist construction, from the principle: "From each according to his abilities, to each according to his needs."

It must be noted that recently on the crest of the Western discussion of "limits to growth" some theorists attempted to revise fundamental Marxist-Leninist propositions on the character of the future communist society. Uncritically borrowing from the prophecies of the Club of Rome scholars, who forecast an early global catastrophe as a consequence of the destructive effects of the exponential growth of industrial production and population, the exhaustion of natural resources, the pollution of the environment, and so forth, these theorists suggest a radical revision of communist distribution according to needs and its replacement with the wretched "philosophy of asceticism" in the spirit of Maoist tightening of belts, levelling, ration card systems, and so on.²⁰

How poor is the imagination of the modern revisionists! Seventy years ago, in *Materialism and Empirio-Criticism* Lenin gave a proficient definition of this "method": "...one day à la Ostwald, the next day à la Mach",²¹ and so on *ad infinitum*. As for the new-fangled "philosophy of asceticism", its pseudo-Marxist proselytes should at least think over the fact that the architects of the modern version of that philosophy intended it chiefly for the peoples of developing countries and the working people in bourgeois countries, counting on surmounting at their expense the consequences of capitalism's anarchic development.

The communist ideal is not an ascetic way of life or the suppression of needs and personal interests but the allround development of the individual, and the harmonious fusion of social and personal interests, of material and moral incentives. In a talk with Clara Zetkin in 1920, Lenin said: "Communism must bring not asceticism but the joy of living and happiness."²²

Socialist emulation cannot be started without recognising and satisfying personal interests. Emulation is not competition in the pursuit of profit, but a creative contest in work. The individual proves himself by his creative work and the results of this work, and society judges him by these criteria. The optimal combination of personal interests with those of society is achieved in socialist emulation.

The socialist way of life differs in substance and basic features from the way of life of bourgeois society. It is established with the building of socialism, but does not at once become the way of life of all members of society, for survivals of capitalism and philistine views and prejudices continue to guide the day-to-day behaviour, deeds, and actions of individuals for a long time. Here the task is that in all forms of their vital activity the way of life of all members of socialist society should become socialist. To achieve this aim it is necessary to continue improving the objective conditions of life and promoting the political consciousness of the people. In turn, the establishment and improvement of the socialist way of life means to create the conditions for moulding the citizen of communist society and his communist way of life.

The main element here is the collective. The enhanced significance of work collectives is legislatively expressed in the Constitution of the USSR, which declares that they take part in discussing and resolving state and public affairs, questions of production and social development, and all matters relating to the life of industrial and all other enterprises. "Work collectives," Art. 8 states, "promote socialist emulation, the spread of progressive methods of work, and the strengthening of production discipline, educate their members in the spirit of communist morality and strive to enhance their political consciousness and raise their cultural level and skills and qualifications." The role of the work collective is thus not reduced to solely the sphere of production. In many ways it determines everyday life and leisure. One of its main functions is to foster cultural development. The work collective has thus become a school of social and moral training, a school giving citizens a sense of civic duty, exactingness to each other, mutual respect, and mutual assistance. In it is created a healthy atmosphere of public life, an atmosphere of quest, creativity, and a high sense of responsibility characteristic of developed socialism. The work collective has considerable possibilities and diverse means for preventing breaches of the law, for strengthening socialist law and order.

The primary Party, Komsomol, and trade-union organisations that mould the moral and political climate in the work collective play an extremely important part in consolidating the socialist way of life. The culture of association between individuals founded on respect and cooperation takes shape under their influence. They educate all members of the collective in the spirit of the finest examples, and foster in them a conscientious attitude to their duties.

In developed socialist society the way of life of workers, collective farmers, and intellectuals, of all nations and ethnic groups is steadily drawn together, in short, the socialist way of life comes forward as the way of life of the entire Soviet people, who are a new social and international entity.

The socialist way of life, which is common to all citizens, will be further improved through society's progress towards complete social homogeneity and unity of nations which will be achieved under communism. From the standpoint of the prospects for social development it may be said that the socialist way of life is a key factor of the establishment of communist civilisation.

The problem of asserting communist principles of life is essentially a problem of educating the rising generation in the spirit of Marxist-Leninist ideology and communist morals, collectivism, mutual assistance, industry, and public activity. The purpose of ideological-political work is to imbue young people

with a sense of socialist patriotism and internationalist solidarity, and make them immune to alien views and morals.

Soviet literature and art are doing much to show and establish new features of the way of life. Works of art help to assert an advanced system of cultural, moral, and aesthetic values that determine the main aspects of the socialist way of life.

Literature exercises a growing cognitive and educational influence as it acquires a more profound philosophical content and penetrates deeper into the fabric of life. The literature of socialist realism is enriched with theoretical thought that gives it a broad, philosophico-historical approach to present-day realities. This enables the writer to avoid superficialities, to move, as Lenin put it, from phenomena to substance and from less to more profound substance, from one form of links and relationships to a more sophisticated, more general form.

Needless to say, this does not signify a scholastic transposition of philosophical categories to the language of belles lettres. It means organically mastering the great cultural wealth and profound wisdom of Marxism-Leninism, its effective theoretico-cognitive principles, and the creative application of these principles to an artistic analysis and reproduction of real, vital processes. Philosophy, Marx said, is the intellectual quintessence of a definite epoch, the soul of that epoch's culture. This proposition is applicable, more than in any other case, to Marxist-Leninist philosophy, to the modern epoch and to socialist culture.

Through its understanding of the dialectics of the modern epoch, the literature of socialist realism mirrors in artistic form (both on the scale of world history and within the framework of each society) the great law of development—the law of the birth, growth, and triumph of the new, viable, and progressive, and the inevitable death of the obsolete, outworn, and reactionary. The guiding principle, expressing the Party spirit in creative art, is the truth of Marxist-Leninist dialectics that the old and fossilised does not depart from the stage of history by its own will, and that the new is asserted in society's life not automatically but by an unrelenting and at times bitter struggle against the forces, traditions, and customs of the dying world.

Exponents of Soviet culture give models of an ever more profound and all-sided portrayal of life, while their heroes embody the unbreakable bond with the destiny of the country, with the prospects for world peace and human progress, and increasingly feel their historical responsibility for the social and intellectual achievements scored by the Soviet people during the 60 years of their heroic history. The problem of the individual and society, which is the most complicated problem of history, is rationally resolved for the first time in the socialist way of life and finds its artistic reflection in the literature of socialist realism.

With the establishment of socialism in a number of countries, the socialist way of life has become an international phenomenon. Underscoring its historical advantages and broad dissemination, Leonid Brezhnev wrote: "The way of life engendered by socialism has become the property, not only of Soviet people but also of the people of the other countries of the socialist community. The socialist way of life, which is now a reality, is regarded by the peoples of the world as the ideal dreamed of by mankind's finest minds, and for which millions upon millions of working people had fought."²³ The socialist way of life does not remain immutable. It develops and is enriched by new features in the thinking and behaviour of people, by their mutual relations, by new cultural values, and by new achievements of the social system.

The orientations for asserting the socialist way of life spring from the Marxist-Leninist conceptions of that way of life and the conditions determining it.

Since a way of life is directly dependent on the development level of the productive forces and the character of the relations of production, the main orientation for asserting and improving it, in this case, the socialist way of life, is linked with the further development of socialist production. This is the pivot for the settlement of all other problems.

In charting its impressive plans for socialist economic development and organising the people for the fulfilment of these plans, the CPSU proceeds from the premise that the material foundation of Soviet society will ensure the improvement of the conditions determining the development of the way of life. It has been estimated that in the period between 1976 and 1990 the Soviet Union's material and financial resources will be twice as great as in the preceding 15 years. This is an extremely important circumstance because the strengthening of socialism's material, technical, and financial resources creates the conditions for carrying out the entire range of measures aimed at asserting and promoting the socialist way of life, at the relevant restructuring of the leading forms of vital activity—from work to family, everyday life, and leisure.

When we single out the main orientation for the assertion and improvement of the socialist way of life we must see the accompanying importance of ideological and educational work. New, better conditions of work and life do not fall from the sky. They are created, altered, and remoulded by the people, through their efforts in production. In showing the prospects for improving the material conditions of social existence and, on their basis, improving the socialist way of life, Soviet scholars underscore the truth that the rise of the living standard and the multiplication of all the blessings of life depend on the people themselves, on their work in production, and their socio-political activity. Socialism's basic principle, "From each according to his abilities, to each according to his work", determines not only the form and measure of the distribution of goods as is frequently believed. Actually, this is mainly the principle underlying the organisation of production and society's life, and expresses the requirement that each person should work to the best of his ability for the welfare of society and receive from society in accordance with the results of his work. In the Soviet Union, people are given growing actual possibilities for applying their creative strength for the all-sided development of the individual.

Work is the principal element of the education of the new man and the formation of his way of life. In this area, too, the 25th

Congress of the CPSU set a number of important practical tasks, whose implementation leads to the improvement of the socio-economic and production conditions of work and to a modification of its character. Life itself demands that a set of problems connected with the improvement of the material and moral incentives and of the efficiency of each worker should be resolved without delay. Other similarly important tasks include, notably, the attainment of a higher rate of comprehensive mechanisation and automation of production processes in all fields of the national economy, particularly the mechanisation of ancillary work. Labour is increasingly acquiring a creative character and becoming more attractive. In the context of improving the way of life, the attainment of this objective will signify an advance towards turning work into a prime necessity of life.

Family and everyday life holds a major place in the way of life of people. Increasing importance is acquired by the services industry, on whose quality the day-to-day mood of people depends to a considerable extent. In recent years there has been a substantial expansion of housing and communal services construction. But the services industry has not yet reached an adequate level of development and unhealthy phenomena are still to be observed in it: bribery, embezzlement, and so forth. Backwardness and malpractices in this sphere naturally evoke disappointment and irritation. Constant concern for improving everyday services is unquestionably an indispensable condition for consolidating the socialist way of life. One of the tasks in organisational and educational work is not only to speedily carry out the plans for the development of the services industry but also to reinforce the healthy social norms of mutual relations in it. Here the accent must be on quality and efficiency, and on a respectful attitude to consumers. The introduction and implementation of social development plans at factories, collective farms, and offices would contribute to improving the socialist way of life and strengthening relations of cooperation and mutual assistance.

The establishment of the socialist way of life is inseparable from the day-to-day observance of the provisions of the Constitution of the USSR. The further development of the socialist foundations of our way of life requires the broad propagation and consistent observance of the socialist socio-political norms, moral principles, and value orientations, which ennoble all forms of the vital activity and behaviour of people.

At the joint anniversary sitting of the Central Committee of the CPSU, the Supreme Soviet of the USSR, and the Supreme Soviet of the RSFSR on November 2, 1977, Leonid Brezhnev said: "Never before have we had such favourable opportunities for carrying out the tasks for which, in the final count, the revolution

was accomplished—for raising the well-being of the masses, extending socialist democracy, and furthering the harmonious development of the individual."²¹

The socialist way of life develops on the material and socio-political foundation of mature socialism, in the course of the fulfilment of the epochal tasks set by the Communist Party. It provides the criterion of Soviet society's advance towards communism and of the norms of behaviour of each citizen. This way of life embodies the vast intellectual and moral potential of communism accumulated by Soviet society during the past sixty years of the new era ushered in by the Great October Revolution. The establishment of the socialist way of life clears the way to the mode of life that will take shape during the transition to communism.

NOTES

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- ² V. I. Lenin, *Collected Works*, Moscow, Vol. 31, p. 50.
- ³ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy. 25th Congress of the CPSU*, Moscow, 1976, p. 101.
- ⁴ K. Marx and F. Engels, *Works*, Vol. 3, p. 75 (in Russian).
- ⁵ *Guidelines for the Development of the National Economy of the USSR for 1976-1980*, Moscow, 1976, p. 79.
- ⁶ K. Marx and F. Engels, *Works*, Vol. 46, Part I, pp. 483-484 (in Russian).
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- ⁸ L. I. Brezhnev, "A Historic Stage on the Road to Communism," *World Marxist Review*, No. 12, December 1977, p. 5.
- ⁹ L. I. Brezhnev, *On the Constitution of the USSR*, Moscow, 1978, p. 33 (in Russian).
- ¹⁰ V. I. Lenin, *Collected Works*, Vol. 16, p. 332.
- ¹¹ *Fundamental Law of the Socialist State of the Whole People*, Moscow, 1978, pp. 44-45.
- ¹² V. I. Lenin, *Collected Works*, Vol. 31, pp. 293-294.
- ¹³ K. Marx and F. Engels, *Works*, Vol. 46, Part II, p. 154 (in Russian).
- ¹⁴ *Fundamental Law of the Socialist State of the Whole People*, p. 48.
- ¹⁵ K. Marx and F. Engels, *Collected Works*, Moscow, 1975, Vol. 4, p. 131.
- ¹⁶ K. Marx and F. Engels, *Works*, Vol. 46, Part II, p. 156 (in Russian).
- ¹⁷ V. I. Lenin, *Collected Works*, Vol. 26, p. 404.
- ¹⁸ L. I. Brezhnev, "A Historic Stage on the Road to Communism," *World Marxist Review*, No. 12, 1977, p. 4.
- ¹⁹ K. Marx and F. Engels, *The German Ideology*, Moscow, 1968, p. 495.
- ²⁰ W. Harich, *Kommunismus ohne Wachstum?*, Hamburg, 1975.
- ²¹ V. I. Lenin, *Collected Works*, Vol. 14, p. 343.
- ²² Clara Zetkin, *Erinnerungen an Lenin*, Berlin, 1957, p. 74.
- ²³ *Pravda*, May 19, 1977.
- ²⁴ L. I. Brezhnev, *The Great October Revolution and Mankind's Progress*, Moscow, 1977, p. 10.

Heroic Pages of History

PAVEL ZHILIN

The appearance of L. I. Brezhnev's books *Little Land* and *Rebirth* is a momentous event in political as well as scientific life. Both books right away acquired enormous social significance in our country and also abroad. This is not surprising for they tell of heroic pages in the history of the Soviet state, of the Communist Party and of the Soviet people.

Although chronologically, *Little Land* and *Rebirth* are separated by the dividing line between the war and peace time, they are, in effect, closely connected with each other, are united by one central theme, that of the feat of arms of the Soviet people in the Great Patriotic War (1941-1945) and their labour exploits in the rehabilitation of the war-devastated national economy.

If we consider the main content of the two books what should be noted above all is the many-sided picture they give of Soviet people's devotion to their socialist system, their adherence to communist ideals and their heroism which in that grim and turbulent period assumed a massive character. The fact that these books are published in Washington and in Bonn, in Ankara and in London, in Helsinki and in Lisbon is evidence of the enormous interest shown abroad in the Soviet Union and in the personality of the General Secretary of the CC CPSU, Chairman of the Presidium of the USSR Supreme Soviet—outstanding political figure and statesman of the Land of Soviets.

Little Land deals with one of the most difficult periods in the armed struggle in the south of the country. It reveals with historical fidelity the incredible difficulties of that period, the military art of the Soviet soldier. Precisely in this lies the immense value of the book as a true chronicle of the war.

Leonid Brezhnev enjoyed the warm regard and confidence of the soldiers bearing side by side with them all the hardships of the war. His warm personality, sincerity and ready sympathy in large measure explained the immense prestige of the Eighteenth Army's political department of which he was the chief.

The path covered by this army, more than five thousand kilometres, was one of hard-fought battles. But the main content of the book is devoted to events that took place on Little Land and near Novorossiisk in the winter, spring, summer and autumn of 1943. Here, on a narrow strip of the coast, running six kilometres in length and four and a half kilometres in depth, and crisscrossed with trenches and communication passages, a crucial strategic issue was being decided in the course of more than two hundred days of heavy fighting: if the men of the Eighteenth Army succeeded in holding this important beach-head then the capture of Novorossiisk, the key position to the Taman Peninsula, would be ensured; if the enemy succeeded in taking possession of Little Land then the struggle would assume a protracted, exhausting character. In this desperate struggle the Soviet troops stood their ground and defeated the enemy.

The value of *Little Land* for studying the history of the Great Patriotic War lies in its concrete character. It enriches the reader with new factual material and corrects some views that have become antiquated.

Both books consider and come to grips with important fundamental issues. Of the questions connected with the history of the Great Patriotic War three should be noted.

The first. On the assessment of the prewar situation.

It is well known what efforts were made by the CPSU and the Government on the eve of the Second World War to block the way to fascist aggression. But when it became clear that the Western Powers had no intention of establishing an anti-Hitler coalition and that they were pursuing a policy of instigating Hitler to start a war against the USSR, the Soviet Government was compelled to conclude a non-aggression pact with Germany and thus stave off the outbreak of war and secure the time needed to strengthen the country's defence potential. This act of the Soviet Union is portrayed and assessed in the West in different ways and frequently in a distorted manner.

The Soviet people too were troubled by this question. This is how Leonid Brezhnev replied to the question asked at a conference of lecturers in 1940:

"Comrade Brezhnev, we have to explain the non-aggression pact: that it is in earnest and anyone who distrusts it is engaging in provocative talk. But people don't seem to have much faith in it. So what are we to do? Should we explain or shouldn't we?"

"It was a rather awkward moment; four hundred people were sitting in the hall awaiting my reply and there just wasn't time to ponder the matter.

"Yes, we must explain it,' I said. 'And we'll go on explaining, comrades, until fascist Germany is razed to the ground!'"¹

Brezhnev's reply reflected the essence of the policy and strategy of our Party, which took account of the real aim of the aggressive plans of the Hitler fascists.

The second question: on building up the country's defence potential in the conditions of expanding fascist aggression.

Some historians and for that matter some authors of memoirs as well sometimes claimed that the Soviet Union did not prepare thoroughly for a military confrontation with fascism. Leonid Brezhnev who at the time was secretary of the Dniepropetrovsk Regional Party Committee responsible for the defence industry incisively refutes such an erroneous assertion. He writes:

"I had to attend to quite a few important and urgent matters connected with organising and coordinating a powerful defence complex such as the south of the Ukraine was at that time and, in particular, the area along the Dnieper.

"Plants producing purely peace-time goods were switching over to war production; our metallurgists were learning to make special grades of steel; I had to keep in touch with several ministries, to fly to Moscow and to travel endlessly all over the region. There were no such things as days off."²

We know from documents published and from memoirs that much was done in the country to prepare it to repulse the aggressor. That is why it was able in the end, despite temporary reverses, to tilt the balance in our favour.

The third question: on the popular character of the Great Patriotic War. Leonid Brezhnev considers the armed struggle not separately but in the indissoluble unity of the front and the rear, as a war of the whole people in which each made his contribution to the victory over the enemy. This is an important methodological question. The front as the main and decisive sphere of military action was linked by a thousand threads with the rear and was provided with everything needed to wage a successful armed struggle and to achieve Victory.

Leonid Brezhnev shows the character of war in modern times when a whole country is under stress and strain, when all man-power and material resources are drawn upon. In the book *Rebirth* its author cites figures of the terrible destruction wrought by the war in Zaporozhye and the Dnieper area. As is generally known, the Soviet Union was deprived of a third of its national wealth during the war years. The major military monopolies of the USA meanwhile grew incredibly rich. In this connection, Leonid Brezhnev, speaking of the

postwar competition between the two systems, applies a comparative method of research. He writes: "Comparisons are inevitable: the amount of steel, oil, electricity, grain and cotton each side has produced. We make such calculations, and so do our ideological opponents. Forced to acknowledge that in many areas the Soviet Union has caught up with the United States, for instance, and left the latter far behind in a number of major economic indicators, they, our ideological opponents, place emphasis on those economic indicators in which the biggest capitalist state has not yet yielded its superiority.

"In this, they try hard to pass over in silence and conceal from their public the historical conditions of the two sides. Yet, in this competition, which they call 'honest', one side, protected by the ocean from foreign invasion, batted on war, while the other, subjected to constant provocations, had to carry the heavy burden of wars and devastation and, in many fields, was forced to start practically from scratch."³

These and other fundamental conclusions drawn by Leonid Brezhnev are a valuable contribution to the study of the history of the Great Patriotic War and furnish a scientific methodological basis for its further research.

The books *Little Land* and *Rebirth* are not only the recollections and reflections of an active participant in the war and postwar rehabilitation of the national economy. They are historical works in which their author, basing himself on solid factual material, has drawn broad theoretical and philosophical conclusions that are of tremendous interest for contemporaneity.

Little Land and *Rebirth* enable the reader to see, through the specific, what was characteristic of the whole country. They are written in a straightforward, clear style easily understood by a wide readership.

Little Land contains not only valuable military experience relating to the defence of the socialist state, but also the Communist Party's organising experience in mobilising the country's forces and means for its defence in armed struggle.

Here I would like to note that much is being done, through the efforts of Soviet historians and with active participation of military leaders, to generalise the rich experience of the war years. The Institute of Military History, for instance, prepared and published in a comparatively short period (12 years) 140 scientific works in 5,800,000 copies.

Work is being completed on a 12-volume *History of the Second World War. 1939-1945* (nine volumes have already appeared). Its authors include prominent scholars and leading military figures. The edition is being brought out by a Central Editorial Commission,

headed by the Minister of Defence of the USSR, Marshal of the Soviet Union, D. Ustinov.

Also a one-volume *History of the Second World War* is being prepared by historians of the socialist countries, to be published in many European languages.

All this is necessary both in the interests of scientific progress and so that there will never again be a new war deploying mass-destruction weapons.

The extremely great importance of Leonid Brezhnev's books lies in the fact that they draw the attention of the broadest masses to the need to study and draw on historical experience in present-day conditions, mobilise them to fight for peace, for political as well as military detente, and against the intensification of the arms race and the threat of a new war. Some people in the West consider the last war now a thing of the distant past and consequently there is no need to return to its history. To this Leonid Brezhnev replies: "We remind of the lessons of the war today not because we seek retribution for the past but because we are taking care of the future."⁴ "We are calling for Europe's bloody past to be overcome, not in order to forget it, but so that it may never be repeated."⁵

That is why the reader finds Leonid Brezhnev's words in the closing part of his book *Little Land* so moving: "If I were asked today what is the main conclusion I drew from the war which I went through from beginning to end, I would say: There must be no more war. Never again must there be any war."⁶

NOTES

¹ L. I. Brezhnev, *Little Land*, Moscow, 1978. pp. 14-15.

² Ibidem.

³ L. I. Brezhnev, *Rebirth*, Moscow, 1978, pp. 58-59.

⁴ L. I. Brezhnev, *Following Lenin's Course. Speeches and Articles*, Vol. 2, Moscow, 1970, p. 10 (in Russian).

⁵ L. I. Brezhnev, *Our Course: Peace and Socialism*, Moscow, 1974, p. 15.

⁶ L. I. Brezhnev, *Little Land*, p. 15.

Systems Theory: Topical Aspects

Systems Approach in Social Cognition

VICTOR AFANASYEV

Perhaps no terms in modern science in general and in sociology in particular are spread more widely than the terms "system", "structure", "systems method", etc. In the West, one can hear and see more and more frequently that the systems approach represents a new methodology, a new world outlook, which is, supposedly, the only one that corresponds to the spirit of our time, the requirements of modern science and technology. As early as 1950, a book was published in Vienna, *The Wholeness in Philosophy and Science*, where it is stated unequivocally that the principle of systems property, of wholeness represents a special philosophy, the methodological basis of science, that it is that "magical key which can open the door to the whole totality of the riches of reality".¹

In recent years such views have become especially widespread. "Structuralism", "functionalism" and other trends in modern Western philosophy and sociology that are often founded on various idealistic, anti-dialectical speculations on "systems method", "systems approach" are being intensively developed and propagandised. As a matter of fact, these speculations represent different versions of peculiar "systems" positivism, the rejection of solving purely philosophical problems, substitution of special approaches in their place, attaching general methodological significance to certain interdisciplinary principles, above all those of mathematics and logic that are not significant in the general philosophical, world-outlook sense. Similar trends are typical also for the interpretations of systems approach in the West. As a rule, they are characterised by a clear class orientation: to substantiate

the stability, "homeostatic" nature or, to put it more simply, the eternity and unshakability of the capitalist social system, to find the ways and means of overcoming or at least alleviating the deep contradictions that are inherent in it.

Under these conditions it is necessary to lay special emphasis on the fact that the general methodological foundations of the systems approach are in no way the priority of the representatives of the modern trends in systems analysis, to say nothing of the idealistic positivist interpreters of these trends. The philosophical substantiation of the systems approach was given a century ago by Marx, and not only the substantiation, but the most brilliant application to the analysis of capitalist production. Such an approach is one of the important methodological requirements of Marxist-Leninist dialectics, one of the forms of concretisation of the dialectical-materialist theory of universal connection and universal motion, the development of material reality and the forms of its reflection in the human mind. It is only on this basis that one can correctly comprehend the existing diversity of specialised scientific applications of systems analysis.

* * *

Usually the term "system" denotes a complex of components interacting in one or another way. For example, according to one of the founders of the modern "general system theory" L. von Bertalanffy, "a 'system' can be defined as a complex of elements standing in interaction".² It seems to us, however, that this definition is much too broad since it includes various conglomerates, mixtures, the properties of which can be reduced to the simple sum of the properties of their components, although there is no absolute boundary between systems and disordered formations (that are frequently called conglomerates, summative systems), i.e., in the process of evolution of reality disordered formations turn into systems and vice versa. In the strict sense of the word, a system is a wholeness characterised formation that possesses new qualitative characteristics which are not present in the components forming it.

The clue to such understanding of system was given by K. Marx and F. Engels. In his description, for instance, of cooperation as a system, a totality of interacting producers, Marx noted that "... the sum total of the mechanical forces exerted by isolated workmen differs from the social force that is developed when many hands take part simultaneously in one and the same undivided operation..."³ In a cooperation (a *system*) a new productive force, which is massive in essence, is created; the social

contact itself, the interaction between workers "begets in most industries an emulation and a stimulation of the animal spirits that heighten the efficiency of each individual workman".⁴

On the basis of the above, a system should be defined as a set of objects, the interaction between which causes the appearance of *new, integrative qualities that are not typical of individual components that form the system*. The relation between these components is so close and essential that the variation of one of them causes the variation of others, and frequently of the system as a whole. It is the presence of so intense interaction, *organic* connection between components that is responsible for the fact that in its interaction with the medium a system always appears as something single, possessing a qualitative definiteness. A system represents such a formation in which the internal connections between its components are domineering with respect to both the internal motion of these components and the external actions on them.

A system actively acts on its components, transforms them according to its own nature. As a result, the initial components undergo substantial changes, i.e., they lose certain properties which they had before their entering the system, and acquire new properties. When a system is formed, new components that were absent previously are often formed.

The above statements concerning systems, systems property, become expressed most vividly and, if one may say so, most completely in systems which constitute an object of social knowledge.

The Marxist dialectico-materialist view on society and the Marxist sociology of necessity express the systems approach to its study. Society, social systems are not a mechanical conglomerate, not an arbitrarily created formation but an objectively existing totality of closely interconnected social phenomena. Marx and Engels frequently stressed the need to investigate the connections and interactions between social phenomena as they exist in reality. The task of the researcher is not arbitrarily to construct one or another systems unity out of elements of thought and to impose it on society but to find the systems property in society itself and correctly reflect it in thinking.

Marx spoke many times against the method of combining concepts irrespective of the objective reality, of a certain socio-economic system. He aptly described this idealistically speculative method by the well-known dictum from Goethe's *Faust*:

"With words a dispute can be won,
With words a system can be spun".⁵

Lenin also called for the study of society as a social organism, a wholeness-characterised "system of production relations, as a definite social formation."⁶

The systems approach to society was expressed in Marx's and Engels' teaching on social and economic formation as a most general, universal form of social wholeness, systems property, the basic form of the existence of social matter. It is a totality of closely interconnected social (economic, socio-political, spiritual, family-domestic) phenomena based on a historically definite mode of production of material wealth. A socio-economic formation is a dynamic, developing system, with the sources of its evolution being inherent in it, and not brought into it from without.

Having created their teaching on socio-economic formation as a system, which discloses the close unity and interconnection of various social phenomena, Marx and Engels disproved the idealistic and metaphysical views of pre-Marxian sociologists on society, and demonstrated that there is no society in general but there is a concrete-historical society, "...a society at a definite stage of historical development, a society with a peculiar distinctive character".⁷

The concept of socio-economic formation made it possible to comprehend the complex flow of historical phenomena, to single out the most essential, the most general, the most recurrent in them, in other words, to discover the regularities of social development. The result of this is that the history of society appears not as a chaotic heap of phenomena but as a regular natural-historical process of one formation (system) being replaced by another.

* * *

The systems approach conditioned by the requirements of Marxist dialectics is, in turn, also characterised by *systems property*, since it has several aspects, the unity and mutual connection of which gives a profound and allround idea of it. Let us consider the main aspects of the systems approach in succession.

The internal properties of a system are characterised by systems-component, systems-structural, systems-functional and systems-integrative aspects.

A. *The Systems-Component Aspect.* Any system possesses a certain set of components. The systems-component aspect of the systems approach is the search for an answer to the question: *of what, of which components the whole is formed?* It is an analysis of the substance of the system. From the philosophical point of view the system components are those structural units the interaction of which causes the qualitative specifics inherent in the system.

In social systems we find components of a material, procedural, spiritual and human nature.

Things as components of a social system are bodies, objects drawn into the orbit of public life. These are mainly objects of the so-called second nature: instruments and means of labour, and means of consumption created by man out of things of nature on the basis of applying the laws of its development, and used by him in the process of his production, socio-political and spiritual activity.

Things as social phenomena cannot be understood in themselves, outside human activity. They are products of concrete labour, use-values, and as such are natural in origin. At the same time, things perform a certain social function as they are the means of satisfying one's needs. It is only in connection with men's activity, satisfying their needs that they become components of the social system, while preserving their natural qualities, amount and measure. In this case there is a unity of the natural and the social in a thing, the natural manifesting itself in the material the thing is made of, while the social—in the fact that it is drawn into social relations, satisfying some or other needs of men. A thing serves the social system by its natural quality which is, however, insufficient for it to be useful to men, to the social system. It is important that things be produced in the necessary amounts and proportions and possess the quality corresponding to requirements of the system. The natural material here is removed, as it were, is covered with social significance, with the value of the thing.

Depending on the nature of the social system, the main material substance, the means of production, while being the property of one or another class or a group of classes, perform an important social function: serves as the basis of social relations, determines the place of one or another class in the social organisation of labour, as well as the forms of its obtaining the means of subsistence. Under socialism, things are predominantly objects of social (state or collective) property, which engender the relations of friendship and mutual assistance between people who are free from exploitation, the socialist principle of distribution. Under capitalism, they are objects of private capitalist property, which serve as the basis of the relations of domination and subordination, the unjust distribution of the means of subsistence.⁸

It should be noted that man also possesses material natural properties. Man, however, is a part, a component of the social whole not by virtue of his biological nature but as a social being.⁹

The second group of components of the social system consists of *economic, socio-political, spiritual-practical processes, in particular, those of education, training, etc.* Each of the social processes is of necessity connected with the activity of men, social groups, classes. All social processes are in the end manifested through men,

although they are performed according to objective laws.

The third group of components is of a *spiritual nature*. These are social ideas which exist not by themselves but again in men, in their minds. Behind ideas are always certain interests, men's needs; they correspond to the requirements of the social system (society, class, etc.) to which these men belong. Socialist ideas, for instance, express the scientifically realised interests of the revolutionary working class, reflect the being of the people of the socialist society, their interests and goals. Their content and social functions qualitatively differ from the content and social functions of bourgeois and petty-bourgeois ideas.

Man as a social being always appears as the main component of any social system. Man is the last, in a sense, the final elementary vehicle of the social systems quality. At the same time, being a component of any social system, an embodiment of its essence, man is only a part of the social system. He is not a kind of absolute social atom, eternal and indivisible. Only when included in a definite social system, man acquires his social essence. In a social system of any complexity, of any level of organisation man is the principal component, always a socially organised and conscious being setting himself definite aims and striving to attain them.

It should be pointed out that it is by no means always possible in a society to draw a boundary between the material, procedural, spiritual and human components, since any component of a social system always appears as a relation too. However, in order to cognise and control society as a system and also any subsystem within its framework, it is important to disclose their *composition, the set of their components*, to elucidate their substantial nature, since all the other characteristics of the system in large measure depend on its composition.

B. The Systems-Structural Aspect. Of immense importance for determining the qualitative specificity, characteristic features and properties of a system is its *structure*, the internal form of the system, which represents a *way of interconnection and interaction between the components that form it*.

The concept of a system's structure is very close to the concept of form but is not identical to it. It covers only one aspect of the concept of form: the internal organisation of content. As is known, in addition to this aspect, form is also a manifestation, an expression of content (exchange value as a form of manifestation of value), and a characteristic of the external appearance of an object (external form), and so on.

The specificity of structure depends above all *on the nature of the components of a system*. At the same time, since it follows from the nature of parts, structure plays an important role in the system: it connects the components, transforms them, imparting to them

certain unity, wholeness and causing the appearance of new qualities not inherent in any of them. Of especially great importance for preserving a system is *the relative independence, stability of structure*. Structure does not immediately, directly and automatically follows the change in a system's components but remains constant within certain limits, thus preserving the system as a whole. A system would have ceased to exist as a given concrete whole without stable connections and interaction between its components. As the most stable characteristic of a system, structure resists, as it were, constant changes in its components, keeps these changes within the limits of a certain quality. The presence of structure is a condition for accumulating quantitative changes within a system, which are a *sine qua non* of its subsequent development and transformation.

As far as society is concerned, structure appears as *the internal organisation of society or its individual elements*. The structure of society is a totality of social relations. Structure is inherent in society as a whole and in any concrete subsystem within its framework. Every concrete social system within the framework of a "global" whole, society has its own specific structure, organisation which is a concretisation of a more general structure—the structure prevailing in society.

The structure of any social system is determined by *relations between men, production relations above all*. People act in the various spheres of public life (economic, socio-political, spiritual, family-domestic). Hence specific structures for the concrete spheres of an integral society: economic structure, socio-political structure, the structure of spiritual life, the structure of everyday and family life. Each of them possesses specific features of its own, which bear the stamp of the qualitative nature of society and are determined above all by the forms of property prevalent in it. The most general feature of the structure of socialist society consists in the relations of friendship and mutual assistance of free labourers.

The structure of a social system appears not only as relations between people. Relations between the various spheres of public life—the economic and the socio-political, the economic and the spiritual spheres, relations between other social spheres—all are elements of structure.

When we say that the structure of a social system is multiform and manifests itself in various connections and relations, we must always bear in mind that, no matter what components are connected in a social whole and in what form the structure appears, it is in the end of necessity manifested in the activity of people. Any structure, any relation in society is made up of people's activity. Of course, these relations are not always realised, comprehended by people but people are always behind them. It was not accidental that Lenin wrote: "The materialist sociologist, taking the definite social

relations of people as the object of his inquiry, by that very fact also studies the real *individuals* from whose actions these relations are formed." ¹⁰ Man as a social being is always behind the structure of a society.

C. The Systems-Functional Aspect. Every social system is active, which is manifested in the *functions of the system*. The functions of a system are, in turn, an integrated result of the functioning of its components.

There is a functional dependence between the individual components of a given system, between the components and the system as a whole, between the system as a whole and another, broader system a component of which it itself is. What is more, some components function simultaneously, side by side with each other, while others function in succession, one after another. To put it differently, the functions of components are coordinated in space and time.

With respect to the system, the functions of components are of a *purposeful nature*, otherwise a component falls out of the system, becomes a foreign body for it. It is important to stress that the functions are "tied" to the components and are performed within the framework of the structure, internal organisation inherent in the system. Therefore, changes in the nature of the components, in the character of their interaction (i.e., in the structure) of necessity cause corresponding changes in the functions of both the components themselves and the system as a whole.

One should distinguish between coordination and subordination of functions. *Coordination* of the functions of a system's components takes place *horizontally*. For instance, the members of individual working groups, of the teams in a shop, of the shops in a factory coordinate their activity. *Subordination* of functions proceeds *vertically*, with the functions of some components being subordinated to those of others and the functions of all components without exception being subordinated to those of the system as a whole.

Subordination of functions points, first, to the special, *specific* place and the unequal importance of each of the components in performing the functions of a system; second, to the fact that every given system, while integrating the functions of its components, itself performs a certain functional role in another, broader and more complex system of which it is a component.

Marx considered, for example, the labour process from the point of view of the functional subordination of the components of an integral system. The components of labour are: labour itself as labour power expenditure, the object of labour, i.e., the object towards which human labour is directed, and the instruments of labour, the implements through which man acts upon the object of labour. The most important elements in the labour process are the

instruments of labour, their functions; it is on them that the functional specifics of all the other elements, and moreover, the economic epoch as a whole depend. According to Marx, "it is not the articles made, but how they are made, and by what instruments, that enables us to distinguish different economic epochs. Instruments of labour not only supply a standard of the degree of development to which human labour has attained, but they are also indicators of the social conditions under which that labour is carried on." ¹¹

A change in instruments of labour leads to a change in labour itself, in the labour functions of people, requiring certain qualification and skills from them. In view of the fact that with the development of implements of labour, the worker passes over to machines an ever greater part of his functions connected with the processing of the object of labour, his functions depend on the nature of the implements, on which of his functions and to what extent can be "taken over" by the machine. A change in implements of labour is accompanied by a change in the object of labour, since with the improvement of implements an ever wider range of more and more diversified articles, and in every article an ever greater variety of its aspects become objects of processing.

Marxist dialectics does not absolutise functional relations; it sees *causal relations* behind them. Meanwhile, functional connections are not always causal. The main point in the study of systems is the elucidation of their social determinacy, causal conditionality. A thorough analysis of functional connections with a view to finding cause-and-effect relations between them is an indispensable requirement of Marx's systems approach to social phenomena.

Each of the social systems has a complex nexus, an interlacing of causal relations and interactions. Some components of such systems are directly connected with the system through a causal relation, they are more or less immediately "responsible" for some or other characteristics of the system. Others are "responsible" for the properties of the system in an indirect, mediated fashion, and still others may in general have the character of a side effect. Nevertheless, the functions of all components, all parts of the system, the whole are coordinated with it. In Lenin's words, "the part must conform to the whole, and not vice versa". ¹²

It follows from the foregoing that social systems represent a queer tangle of functional and causal relations. In this connection the task of sociology is not to limit itself to an analysis of the structure or functions of a system but to use scientific methods to disentangle the most complex mass of causal relations and patterns of functioning and development of a system, which is inherent in every social system.

D. The Systems-Integrative Aspect. One of the fundamental aspects of the systems approach is the question of *systems factors*, of those

mechanisms that guarantee the preservation of the qualitative specificity of systems, their functioning and development.

The material unity of the world, the dialectical principles of interconnection and motion which are inherent in reality but which are modified in the various spheres of reality and in each concrete type of system acquire their peculiar, specific form, constitute the most general, universal foundation of systems quality.

Social systems belong to the class of *self-controlled* systems, i.e., systems with their own mechanisms and factors of control. It is the latter that ensure the integrity of a system, its functioning, improvement and development.

Control is the indispensable, inherent property of society at every stage of its development. This property is of a *universal character* and follows from the systems nature of society, from the social, collective labour of people, from the need to communicate in the process of labour and life, to exchange products of their material and intellectual work.

Labour was, is and will always be social in nature. From the very beginning of their existence people had to work together, to unite into groups, in order to resist more successfully the powerful forces of nature. But unification in labour is inconceivable without organisation, order and division of labour, determination of man's place in the collective and of his functions. Division of labour, establishment of certain proportions between the various spheres of public life, between branches of production, and material and intellectual activity are necessary in every society, although under different historical conditions they assume a different character. "All combined labour on a large scale," wrote Marx, "requires, more or less, a directing authority, in order to secure the harmonious working of the individual activities, and to perform the general functions that have their origin in the action of the combined organism, as distinguished from the action of its separate organs."¹³

Control is exercised not only over production but over the social life of people as well. It is well known that man is a social phenomenon. He always belongs to a definite social system (formation, class, social group) which makes definite requirements of him, places his affairs and actions within certain (ethical, and in a class society also legal and other) norms, which correspond to the nature of society and the economic and other social relations prevalent in it. The spiritual life of people is likewise inconceivable outside the influence of various socio-economic, political and cultural-ideological factors.

As the society was established, two types, two mechanisms of controlling action on the social system, spontaneous and conscious one, took shape and are in operation to this day. In the case of the *spontaneous* mechanism, the ordering, controlling action on the

system represents the averaged result of collision, intertwining and intercrossing of various, often contradictory forces, of a great number of casual individual acts. This action makes its way as a general tendency in a mass of chance events; it is automatic in nature and requires no interference on the part of people. An example of this is the market, the main regulator of the capitalist economy. Along with spontaneous, non-programmed factors, operative in society at any stage of its development are *conscious* factors of control connected with the goal-oriented activity of people. Here one witnesses the gradual formation of specific social institutes, *subjects of control*, in other words, the systems of agencies and organisations consciously acting on the system with a view to achieving definite results.

Being an indispensable property of any society, conscious control, i.e., ensuring of order by people themselves, regulation of production, and of public life as a whole, is an important manifestation of man's activity, a necessary form of strengthening one or another society, its preservation and improvement. According to Marx, "such regulation and order are themselves indispensable elements of any mode of production, if it is to assume social stability and independence from mere chance and arbitrariness".¹⁴

One can see that the purpose of conscious control is to resist spontaneous, automatic factors of control. The point in question is relative independence, since society cannot attain absolute freedom from the controlling force of chance, regardless of its stage of development.

It is important to note that the degree of independence of any concrete society from the spontaneous effect of chance, the force and the efficiency of its resistance to spontaneous factors are not the same. They depend on the maturity of a society, on the regularities and trends inherent in it, on the extent to which these regularities and trends create conditions for human activity, permit the interference of man and social institutions in social processes.

Thus, the conscious control of society assumes a *concretely-historical character*. The boundaries of control, its content, goals and principles depend on the essence of society, on the economic relations prevalent in it, on the nature of the socio-political system. Conscious control in a class society assumes a *class, political character*. It is exercised to satisfy the interests of an economically ruling class. In accordance with its interests, the ruling class (or a group of classes) creates a system of social institutions, agencies and organisations called upon to influence society.

In the process of social progress, the conscious factors of control have undergone profound changes: from control by means of empirical traditions and customs in the primitive society that were obtained from direct experience and passed over from generation to

generation, to the scientific comprehension of social processes and conscious control over them on a scientific basis under socialism.

Along with the aspects of the systems approach that are related to the disclosure of the internal structure of systems, an important role in systems studies belongs to the so-called external-systems aspects which we are going to discuss.

* * *

Every social system exists not by itself, not in isolation, but in a certain relationship with other social and natural systems. These formations that are external with respect to a given system and are connected with it through a network of communications constitute its environment.

The objects forming the environment of a social system are not of equal importance for its functioning. The environmental conditions without which a given system cannot function and develop are *indispensable*. The conditions which do not exercise an essential influence on the system and act on it in a random way are *attendant*.

The question of the boundaries between a system and its environment is not so simple as it may appear at first sight, for by no means all social systems have clearly defined spatial and temporal boundaries. The relation between a system and its environment is sometimes so close that questions arise naturally: does one or another phenomenon belong to a given system or to its environment; if this phenomenon acts on the system, if the latter cannot exist without this phenomenon, should it be classified as a part of the system? On the other hand, if a phenomenon constitutes part of the system which is not sufficiently organic, should it be "taken out" of the system and classified as a part of the environment? What is the criterion which makes it possible to distinguish between a system and its environment?

It seems to us that this criterion consists in participation or non-participation of one or another phenomenon in the creation of systems properties, in the nature and the degree of this participation. Only those objects, phenomena, processes belong to a system which *participate directly in the creation of the system's properties*. It is their interaction that produces the system with its qualitative characteristics. And those objects which, while being external to the system, participate in the formation of its integrative properties not directly but in a mediated way, through individual components of the system or the system as a whole, belong to the environment.

The environment of a social system is quite diversified. It is, first of all, the *natural environment*, those natural and climatic conditions under which one or another social system functions. A system is in *material-energetic interaction* with its natural environment, deriving from it the materials and energy for the organisation of material

production, and on this basis social and spiritual life. Within the framework of society, the environment of any system consists also of *other social systems* with which it *interacts economically, socially and at spiritual-informational level*. The composition, the structure and the functions of a set of systems with which a given concrete system interacts depends on the nature of the given system and on the functions the latter performs in society.

The higher the organisation of a system the greater its sensitivity to its environment, on the one hand, and the more active its influence on the environment, on the other. Interacting with its environment, an inanimate, inorganic system is destroyed, absorbed by the environment. A living organism adapts itself to its environment. Man and a social system not only preserve their integrity in conditions of the changing environment, but *change their natural environment*, transform it according to their interests and needs.

The environment is an important factor of differentiation and integration of social systems. A system derives material from the environment to replenish and renew its components, to improve its structure. Integrating the elements of the environment, a system transforms them according to its own nature. The environment, while exerting a continuing perturbing influence on the system, forces it to restructure itself, to neutralise or to assimilate this influence.

Insofar as the environment has an important role to play in the functioning and the development of a social system, one has to take into account, in cognition and in practice, the dependence of the system's properties both on the internal factors (composition, structure and functions of the system) and on the processes that occur in its environment. The environment constitutes the indispensable background against which and with the mediated participation of which the functioning of the system takes place.

At the same time, the significance of the environment should not be absolutised. Absolutisation of the environment is the source and the feature of various equilibrium theories in social knowledge. The specificity of a social system, its essence are determined above all by the inner nature of its components, the character of their internal interaction. In the absence of this, the system would never have been what it is. The external actions are always refracted by the internal properties of the system, by the internal contradictions inherent in it.

* * *

Lenin wrote that "dialectical logic requires that an object should be taken in development, in change, in 'self-movement'." ¹⁵ This requirement also applies in full measure to the study of social systems.

Systems nature, the ability to form systems of interconnected components is one of the fundamental universal properties of social matter. Each of the social systems, whether it is a definite society, state, class, party, a work collective, etc., has its own history, its beginning and end, experiences the process of origination and establishment, development and flourishing. Society as a whole, a concrete-historical society and the subsystems forming it function and develop in time.

For the scientific cognition of any social system it is necessary to know how a given system appeared, what major stages it passed through in its development, what it is now and what its historical prospects are.

New social systems form in different ways. One socio-economic formation replaces another as a result of a social revolution. Radical qualitative changes take place in various subsystems within the limits of a formation. Within framework of the state, new administrative units are created, new cities, townships and settlements built, businesses opened, new work collectives set up, etc.

No new social system starts from scratch. Any such system takes material for its formation from the preceding systems or from the systems existing nearby. A new system emerges on the basis of the old one not at once, not in a ready-made shape but first in the form of definite prerequisites which frequently represent separate components of these other systems. Thus, there is historical continuity in the emergence and development of social systems.

The emergence of a new social system on the basis of those preceding it was convincingly demonstrated by Marx by analysing the arising of the economic system of capitalism in the depths of feudalism as a certain unity of the minimum of necessary components. At the beginning it was the capitalist manufacture followed by large-scale machine production, with commodity circulation and the turning of manpower into a commodity inherent in it. The bourgeois revolution resulted in the capitalist system replacing feudalism. Gradually but inexorably it subordinated and transformed, according to its inner essence, all economic forms overtaken by it; interest and commercial profit, rent, money, etc. In addition, it created components of its own, for instance, labour-power as a commodity. Rent, interest, commercial profit, etc., became components of the capitalist economic system only when they were drawn into the general flow of the production and accumulation of surplus value.

Motion, development is also inherent in a social system already established: its functions develop and become richer; there is a constant change in the system's components and their interconnections and in the interaction of the system as a whole and of its individual components with the environment; some components

transform, others appear. In some cases new components emerge by way of development and transformation of the old ones, in other cases they arise by way of segmentation of one or several existing components, in still other cases the system assimilates, absorbs something external that has not belonged to it earlier and transforms it into its own component, and so on.

Internal connections and external interactions inherent in a system undergo complex changes in the process of development. New connections appear, the existing ones differentiate; one connection transforms another or assimilates it; the existing components or relations regroup and undergo restructure, etc.

The components of a social system, the elements of its structure are not equivalent not only as regards their place and role in the functioning of the system but also as concerns the prospects and possibilities of its improvement and development. Some components lose their place and significance in the system; others do not go beyond the basic quality of the system and have no future; still others have great prospects of development, are carriers of a new, more perfect system, and serve as the prerequisite, the embryo of this system. Therefore, in the study of a social system it would be unwise to limit oneself to the consideration of the system's characteristics from the point of view of what they are at present. It is also necessary to disclose the dynamics of the system, to understand it from the point of view of the prospects of its development, to find among the whole variety of its components what is progressive and more perfect and viable, and what is constantly growing and developing.

Thus, a social system represents quite a complicated picture; according to Lenin, a social system always contains remnants of the past, the main elements of the present and the germs of the future.¹⁶ These germs, embryos of the future come in conflict with the main elements of the present, and the resolving of this contradiction gives birth to the new, the progressive.

* * *

We have described the aspects of the systems approach to the phenomena and processes of public life. It is only in their unity and interaction that these aspects turn the systems approach into a powerful instrument of cognising and transforming society.

It stands to reason that one of the aspects or a combination thereof can be (and are) used in the study and practical transformation of social systems. However, the allround significance and, hence, the efficient practical management of a system can only be ensured by the combined application of the aspects of the systems approach.

The systems approach to cognition and control is especially important in developed socialist society which is capable of solving the most complex comprehensive problems requiring close coordination and interaction of the various spheres, aspects, branches of the economy and public life. As was noted by L. I. Brezhnev at the 24th Congress of CPSU, "the comprehensive approach to planning and the adoption of major national-economic decisions acquire ever greater importance. The very nature of the tasks before us is such that their fulfilment, as a rule, calls for concerted efforts by many branches and economic areas, and includes implementation of a whole system of diverse measures."¹⁷

The systems approach, comprehended from the point of view of Marxist dialectics, is a powerful instrument of cognising and transforming society along progressive, socialist and communist lines.

NOTES

- ¹ *Die Ganzheit in Philosophie und Wissenschaft*, Vienna, 1950, p. 32.
- ² L. von Bertalanffy, *Problems of Life*, New York, 1960, p. 148.
- ³ K. Marx, *Capital*, Moscow, 1969, Vol. 1, p. 308.
- ⁴ *Ibid.*, p. 309.
- ⁵ *Goethe's Faust*, New York, 1961, p. 203.
- ⁶ V. I. Lenin, *Collected Works*, Moscow, Vol. 1, p. 189.
- ⁷ K. Marx and F. Engels, *Selected Works* in three volumes, Vol. 1, Moscow, 1969, p. 160.
- ⁸ For the dual nature of the quality of things belonging to the "second" nature, see V. P. Kuzmin, *The Category of Measure in Marxist Dialectics*, Moscow, 1966, pp. 131-166 (in Russian).
- ⁹ K. Marx and F. Engels, *Works*, Vol. 12, p. 710 (in Russian).
- ¹⁰ V. I. Lenin, *Collected Works*, Vol. 1, p. 406.
- ¹¹ K. Marx, *Capital*, Vol. 1, pp. 175-176.
- ¹² V. I. Lenin, *Collected Works*, Vol. 12, p. 486.
- ¹³ K. Marx, *Capital*, Vol. 1, p. 313.
- ¹⁴ *Ibid.*, Vol. 3, p. 793.
- ¹⁵ V. I. Lenin, *Collected Works*, Vol. 32, p. 94.
- ¹⁶ *Ibid.*, Vol. 1, pp. 166-167.
- ¹⁷ *24th Congress of the CPSU. Documents*, Moscow, 1971, p. 81.

Systems Foundations and Structures in Marx's Methodology

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A study of the role and significance of the systems principle in Marx's theory and methodology has prompted the following general conclusions:

1. The assertion of the materialistic understanding of history (Marx, Engels) in the 19th century and the discovery of the laws of the evolution of living nature (Darwin) was at the same time a discovery of the species-generic or the macrosystems regularities of objective reality. These theories contained such basic parameters of systems knowledge as the distinguishing between the forms of individual and "species" being, of individual and "species" development. This led to the modification of the scientific picture of reality and the scale of conceptions of the world; science began to discriminate clearly between systems, subject and elementary objects, this making for a broader and more detailed understanding of reality. Figuratively speaking, it appeared now before man not as a "world of objects" but as a "world of systems", and besides, of developing ones. All this was of great philosophical significance, became an important component of the dialectico-materialistic picture of the world.

2. Comparative analysis of the understanding of the forms and stages of theoretical cognition by Marx and Hegel demonstrates convincingly the advantages of materialistic epistemology, makes it possible to formulate an idea of the meaningful difference between the subject, systems and metasystems knowledge. By taking into account the specificity of various forms of theoretical cognition and by singling out systems knowledge as one of its

concrete forms oriented towards the study of certain features of reality, one can determine the place of systems knowledge among other forms, and its continuity with respect to the previous forms of the substantive knowledge. It makes it possible to eliminate mysticism of the idealistic conceptions of the "higher substances", and to avoid a broad interpretation of the systems approach's role and place in the arsenal of scientific methods.

3. Marx discovered and proved, concretely and scientifically, the existence of a special class of qualitative certainties, the systems qualities. The philosophical and methodological analysis of Marx's theory of value, money, the dual nature of labour, the moral wear and tear of technology, and commodity fetishism makes it possible to identify the conception (which actually forms its basis) of "aggregate systems properties" describing the integral properties of things and phenomena in the framework of a definite socio-economic formation. In exactly the same way the philosophical and methodological analysis by Marx of the specificity of capitalist property, forms of commodity production, population laws, etc., enables one to identify the peculiar systems properties which disclose the "formational" (feudal, capitalist, and so on) qualitative nature of phenomena, their social and economic systems type. It is difficult to reveal the real nature of complex social phenomena, the laws of their determination and subordination, to avoid an oversimplified approach to their study, mechanism and reductionism, without a clear methodological understanding of this discovery by Marx.

4. Identification of the methodology of studying society as a system, used in *Capital*, makes it possible to better understand Marx's socio-historical theory itself, enriches the arsenal of methodological means used in the social sciences, and provides an opportunity for introducing into broad scientific circulation such techniques and methods of research which were not realised clearly before. All this enables one to comprehend more correctly and precisely the history and qualitative changes of society, the dialectics of the productive forces, the interaction and subordination of various systems criteria in the management of society, etc. The specific character of the systems study of social phenomena and processes is revealed in the fact that the regularities of society as an integral organism, as a system, and also the systems functions, foundations and structures, the intrasystem interactions and the system-forming factors became the focus of such study, became its logical centre.

5. Marx was the first to formulate the scientific conceptions of the systems nature of social phenomena, and to elaborate concretely and scientifically the systems principle. The materialistic understanding of history, the theory of socio-economic

formations, of the basis and the superstructure, of value, and of the dual nature of labour contained in a commodity—these are only some of the most striking manifestations of Marx's successful application of the systems method. The systems principle appears on the whole as one of the facets of the dialectico-materialistic outlook, of the Marxist-Leninist theory and methodology.¹

In order to further disclose the content of these conclusions, I shall attempt in the present paper to analyse still another important aspect of Marx's conceptions of systems nature, namely, the question of systems foundations and structures of the social "organism". The study of systems foundations considered from the general methodological point of view is closely related to the problem of systems qualities and develops it further.² At present, however, another aspect of this problem is considered, in the sense that the central place belongs to the identification of methodological principles that ensure the construction of multi-quality, multi-system, multi-level theoretical conceptions concerning the complex objects of reality.

The complexity of objects studied by modern science appears now as the focal point of the methodological issues that arise in it. In scientific cognition the last hundred years (from the middle of the 19th century to the present time) were a revolutionary epoch. Science, passing from the study of individual objects to that of their sets, complexes and systems, to a more extensive analysis of the processes of development and functioning, of internal and external interactions, discovered a new world of complexity: the universal dialectics and the universal connection between phenomena, the special regularities of the macro- and micro-systems, and real continuums of interacting factors, the specific forms of causality, qualities, foundations, regularities, etc.

The epoch-making achievements of 19th-20th century science made it possible to present the world surrounding us as a multi-system one. It has this property both as far as its structure and its genetic history are concerned. Moreover, its individual parts, spheres, and components are multi-system. As a result it seems as if any phenomenon of this world is a *polynomial* of various real systems and it behaves in each of them in accordance with the laws of the given system. One of the important methodological means of beginning a scientific study in such a cognitive situation is the analysis of the foundations of an object and, in particular, of the *multiplicity of foundations*.

The Ladder of Systems Foundations. When one identifies the specificity of concrete phenomena, it is necessary to consider the objects under study not as a whole but as a combination of some "layers", levels, spheres. In most cases such identification is based on the principle of identification of the specific way of material

existence or the higher form of motion that is typical of the object under study. Although this approach is sufficiently broad to include both the "nature" of phenomena and their *differentia specifica*, it does not cover all the foundations of an object, the whole depth of the actual phenomena. Under such conditions cognition has to abstract itself from certain foundations. Of course, such an abstraction is not only possible but frequently even necessary. It constitutes the specificity of mono-system analysis and essentially represents a definite epistemological method based on the assumption that the lower foundations appear as some "invariable condition".

In reality, however, each phenomenon not only belongs to a certain step of the evolution ladder (in the sense of the historical origin of one phenomenon from the other), but has a whole set of foundations in which no layer can exist without the preceding one, constituting its foundation. The result of this are the "pyramids" of foundations the height of which depends on the position the phenomenon occupies on the evolution ladder.

The largest scale division of objective reality into spheres, or "natures", represents the first such pyramid or ladder of foundations. In this division the cosmogonic objects (the Universe, galaxies, the Solar System) are the first general foundation that determines all the others. The planet Earth and its physical and chemical state provides the second foundation; although many essential parameters of it depend on the activity of the Sun, it possesses at the same time a basis of its own which is conditioned by the planet's mass, its "age", the atmospheric temperature and pressure conditions, the geological structure, etc. At a certain stage of the Earth's history inorganic nature gives rise to life, to the biosphere, which forms the third foundation for all living organisms existing on our planet. On the basis of the first three foundations social life that has its own laws and foundations appears and constitutes the fourth foundation which covers the whole world of man and exerts a certain reverse influence on the organic and inorganic nature of the Earth.

Being materialists, we take into account the fact that there are lower (from the material-structural point of view) and preceding (from the historico-genetic point of view) foundations for every real phenomenon: social, biological, physical and chemical. Usually, however, we abstract ourselves from these foundations, take them for a "constant condition", in particular, also because their temporal variations are simply incommensurable in scale with the system which is higher on the evolution ladder. There is a difference of several orders of magnitude between the temporal scales of the existence and development of the cosmogonic processes and those of inorganic living nature and society. Of

course, the most rapid development is typical of the youngest and the most complex system—society.

If one takes this circumstance into account, it is important to remember when dealing with ideological issues that this "constancy" of the lower foundations which is theoretically permissible is relative. Thus, for instance, our Sun, according to the conclusions of modern science, will become extinct in 12 billion years' time, and its energy activity will decrease much earlier. What changes will this produce in all systems and will man have in this connection to open up other planets? One can imagine also some other large-scale systems variations (in principle unlikely but not excluded) under which the development of life and social progress will be limited from the side of the "lower" foundations.

The existence of the "foundation ladder" means that real macrosystems dovetail with each other, so to speak: the system with a lower level of organisation represents the starting point, the prerequisite and the foundation of that with a higher level which, in its turn, appears as a foundation of a still higher one, etc. They are not simply arranged in a series and independent of each other but are interconnected and subordinated, exert a certain influence on each other. It is quite obvious that one cannot regard this influence only as "upward" or "downward". There are different types of relations between the foundations of different orders, in particular, relations of dependence and interdependence, coordination and subordination. In this sense Hegel was right when he said in his *Naturphilosophie* "...one stage represents power over another, and this is reciprocal..."³

An understanding of the multi-systems and multi-layer property of foundations is very important when analysing concrete phenomena considered within a certain single sphere. The modern level of development of such natural sciences as geology, biology, paleontology graphically demonstrates this. The major methodological role, however, is played by the phenomenon of the "foundation ladder" in the analysis of the most complex phenomena, i.e., in the study of the processes of social reality. This can be easily understood, since in this case the qualitative definiteness of phenomena itself turns out to be "dual one": natural-social; the high level of integration of these phenomena engenders one more type of the "two-dimensionality" of their existence, that of the object-systems. Besides, the social phenomena are characterised, along with this so-called "vertical" multi-layer, multi-level and multi-systems properties, by an enormous internal diversity of qualities that acquires "horizontal" multi-layer features. Such are, for instance, the class, political, national, cultural, professional, sex, age and other qualities of people which do not permit to be arranged as a linear regular vertical

"foundation ladder". The general foundations of this multi-layer qualities of social man are rooted *outside of him*, in the corresponding systems (subsystems) of society.

During the last decade the historico-genetic aspect of the problem of foundations has been especially intensively developed. It was greatly influenced by the successes of a whole number of the natural sciences, as well as by the realisation of their deep interconnection in the construction of a unified picture of the world. The Marxist conception of the history of society, however, which delineated clearly the historical stages of the development of humanity, differing in their basis foundation, in the mode of production, made the most significant contribution to the formulation of the problem of foundations as a general scientific methodological problem. Owing to Marx's theory, the history of society appeared as an ascending flight of stairs, a ladder of foundations replacing each other, and it appears as such not only purely chronologically but in reality, in the systems way. Lenin expressed this essence of Marx's socio-historical conception in the following words: "According to Marx's theory, each such system of production relations is a specific *social organism* whose inception, functioning and transition to a higher form, conversion into another social organism are governed by specific laws."⁴ (Italics mine—V.K.) After the publication of Marx's *Capital* it became clear that the history of humanity as a whole, as well as its different parts and stages: the history of social production, technology, science, culture, religion, etc., cannot be understood without understanding the general motive forces of the natural and historical process and the laws of socio-economic formations.

In the course of the investigation of the multiple nature of foundations certain contradictions surfaced between the trend towards differentiation of the sciences, leading to the affirmation of the *monosystems* analysis as the main method of cognition of the concrete sciences, and the needs of the synthesis of modern scientific knowledge that requires a broader, deeper and more complex study of reality and, accordingly, the development of the *polysystems* analysis. The monosystems conceptions were the main methodological platform for disclosing the macro- and micro-regularities of the individual spheres of reality in science of the second half of the 19th and the first half of the 20th century. At present active processes are under way of correcting and supplementing monosystems knowledge with knowledge from the contiguous sciences, developing interdisciplinary knowledge, the ever deeper penetration into the mechanism of the effect of non-specific foundations on the phenomena under study. Scientific knowledge evolves on the whole in the direction of polysystems knowledge. This process should result in bringing out

the complex polysystems regularities of the world (physical and chemical, biophysical, geopolitical, psychophysiological, social and economic, social and cultural, social and psychological, etc.).

The above considerations regarding the multisystems nature and the multiplicity of the foundations of the phenomena and processes under way in the world will serve us as a starting point for considering more concrete problems of social development which are difficult to understand without an understanding of the multiplicity and mutual replacement of foundations.

The System with an Expanding Foundation and Replaceable Structures

Human society represents systems with a progressively developing (expanding) foundation and replaceable structures. These characteristics constitute the specific features of the development of social systems, and both of them are based on a fundamentally new property, the ability of human society to purposefully *accumulate* advantages of its species. Marx saw in this one of the basic differences between the evolution of nature and the history of society. In his words, "animals are unable to combine the different attributes of their species, and are unable to contribute anything to the *common* advantage and comfort of the species. It is otherwise with *men*, amongst whom the most dissimilar talents and forms of activity are of use to one another, *because* they can bring their *different* products together into a common stock."⁵

The *accumulation* of human knowledge of the world, the accumulation of production experience and the experience of social life, cultural achievements, material values, in short, the accumulation of any long-term material and spiritual wealth—herein lies the main secret of the progress of human civilisation. And in the same way as it is impossible to understand and imagine the progress of everything living without heredity, without the biological mechanism of accumulation of the elements of progress, so it is impossible to understand the progress of human history without the social method of accumulating the achievements of civilisation.

We are justified in saying that labour and consciousness, conscious activity made man what he is.⁶ At the same time Marx constantly emphasised that labour, consciousness and language are the *collective* labour, the *collective* knowledge, the *means of communication* between people. It is precisely this collective character of life, labour, production, knowledge and consciousness, language and human thinking that is the *superbiological* foundation of the human being, a property which does not follow directly from biological needs.

The animal, of course, also "cognises" the world, the higher

animal is also characterised by elementary "thinking", it also "produces" and acts; all this, however, does not go beyond the boundaries of the biological way of life and adaptation to the environment.⁷ The animal perceives its environment through a biological "prism" which provides it not so much with knowledge of the world by itself as with knowledge of various factors, harmful and useful, dangerous and safe, necessary and indifferent for life.⁸

A qualitative change of cognition occurs in society. From a limited form of adaptation to the environment and its specifically biological perception cognition turns into a powerful means of the study of objects and phenomena of the objective world by themselves, mastering them in practical activity. These changes are based on the radical changes of the mode of existence and activity (the transition to active, social forms of life) and on the enormous expansion of the means of cognition through the second signal system—language and human thinking. The great Russian physiologist I. Pavlov, noting the role of the appearance and development of the second signal system in man, said this constitutes the human proper "addition" and "increase" of the social with respect to the biological.⁹ Naturally the problem cannot be reduced to this on the broader plane: the object of human cognition becomes universal and the latter, overcoming the narrow character of "biological knowledge", acquires also special features which make it social knowledge proper. Social knowledge, as also "biological knowledge", is centred around the problems of life, the latter appearing now not in its biological hypostasis but in all its social wealth and diversity.

It is not only in the sphere of consciousness, however, that the human "addition" emerges; it is rooted in the radical change in the basis of progress. This is quite obvious even in a most general comparison of biological and social evolution, especially a comparative analysis of the nature of human and animal activity. An essential element of the qualitative evolution of human society is the fact, which constitutes the basic difference between social and biological evolution, that the mode of human activity is defined as *active* and purposeful, as the *mastering* of the natural and social conditions of man's existence. By contrast with this, the life of the animal is always only adaptation to the given conditions of existence and the consumption of the already available products of nature.

The shaping of superbiological production, cognition, thinking, the means of social communication and the acquirement of human universality by them are based on their overcoming their direct subordination to biological needs. Our ancestors realised the advantages and the necessity of hunting *together*, of defending

themselves *together*, of building dwellings and sites *together*, etc., long ago, in the distant epoch of the prehistory of society, when they struggled for survival. Gradually this led them to a certain division of "labour", to work turning into *work for the community* (and not just for oneself and one's young). Already this step opens up the way to overcoming the direct subordination of behaviour to biological needs. It is from such labour or work for the community that purposeful *labour* and *social production* gradually grow, becoming the starting point of human civilisation. They contained from the very beginning the new basis and new principles of progress—the domination of "man over the forces of nature... as well as over the forces of his own nature..."¹⁰

When distinguishing between biological progress and social progress, one should take into account still another circumstance, namely, that the animal, figuratively speaking, carries its "species" and "genus" within itself, while the generic substance of man is *outside him*, is in society. Accordingly, a certain "generic", superindividual mechanism of the accumulation of labour, knowledge and culture achievements, a mechanism which is already independent of the life and death of individuals and is transferred to the next generations as the property of the "genus", of the whole of civilisation, is created by this accumulation. In the final analysis, the difference between human history and biological history, its intricacy, its "social organisms" replacing each other, its gradually expanding foundation and basis of progress—all this depends on the accumulation of the productive forces of social man, on man mastering the forces of nature, his own nature and social conditions of its existence, on the accumulation of wealth in the broad sense of the word.

It is on this basis of the social accumulation of social wealth which is embodied, first of all, by the development of the *productive forces* that the formation of the "social organisms" replacing each other (socio-economic formations) occurs. Let us now consider the phenomena of "replaceable structures" and the "expanding foundation" on the example of the Marxist theory of the factors of development of the social productive forces.

Replaceable Structures in the Historical Development of Social Productive Forces

Two major trends in Marx's analysis of the historical progress of the social productive forces can be identified on the basis of a study of Marx's views on these problems. One of them discloses their general systems socio-economic (formational, as it were) history, the other—the history of individual factors of development of the productive forces and their dominant structures. The first of these trends is well known and has been thoroughly

analysed in Marxist literature. The other trend of research which is connected with the disclosure of the endogenous history of the development of the productive forces was not expounded by Marx systematically and exists only in the form of individual fragments and statements. We shall make an attempt to give a brief analysis of Marx's views on this question in this section of the paper.

In his *Capital* and in the preparatory notes Marx frequently spoke of the necessity to study social production by itself, "in its one-sided aspect", on the basis of an analysis of the development of the productive forces. He wrote: "Darwin has interested us in the history of Nature's Technology, i.e., in the formation of the organs of plants and animals, which organs serve as instruments of production for sustaining life. Does not the history of the productive organs of man, of organs that are the material basis of all social organisation, deserve equal attention?"¹¹ Marx also says that "it is not the articles made but how they are made, and by what instruments, that enables us to distinguish different economic epochs". He emphasises that "in a wider sense we may include among the instruments of labour... all such objects as are necessary for carrying on the labour-process."¹²

According to Marx's theory, there are several fundamental factors underlying the development of any production: *labour, the means of production, knowledge* (science and experience). In addition to this, production is influenced to a very considerable extent, although not so directly, by *natural and social conditions*. The concrete historical combination of all these conditions and factors determine the inner structure of the productive forces at all stages of the development of social production. During different historical periods now one, now another, fundamental condition appears, in Marx's words, as the dominant factor in production. To put it differently, the significance of this factor in a given concrete historical period of the development of social production is predominant. The dynamics of the correlation of factors and conditions in its concrete modifications leads to assertion of definite *dominant structures* of the development of the productive forces, and production itself, considered from this point of view, emerges at various stages now as mainly "natural", now as determined by "living labour", now as machine, industrial, embodying the domination of "materialised labour", etc.

In the initial period of the formation of human society, preponderant was its dependence on natural conditions. During many thousands of years primitive man used mainly the gifts of nature. The procuring of ready natural products and the fashioning of the simplest instruments of labour and weapons constitutes the basic form of production of that period.

As cattle-breeding and agriculture developed and turned into

the main basis of social production and the satisfaction of needs, humanity entered a new phase of its production history when *living labour* in its purely human sense became dominant. The change which is recorded here is connected with the rising level of development of the productive forces, with the fact that purposeful, systematic labour becomes the *universal form* and basis of social production ensuring the transition from an appropriating economy to a producing economy. In this process the animal forms of the satisfaction of needs are replaced by the social forms.

Labour's natural unity and close association with its universal natural prerequisites will be preserved still for many, many more centuries: the land will be the great natural basis, the laboratory, the arsenal which provides man with both the raw materials, and the means of labour and also his dwelling, while production itself will be natural, conditioned mainly by nature itself. This will be the natural basis for the entire economic and production activity of people. The historical prerequisites, the forms of property and the levels of development of the productive forces will change, the land, however, will still remain the basis of social production, the means of its cultivation and the processing of its products will be the main instruments of labour, and direct, living labour will be the most important productive force and the dominant factor of production. This stage of the development of the productive forces—the domination of living labour—covers nearly the whole written history of humanity: the primitive communal system, slavery and feudalism. It is only in bourgeois society that the replacement of the "leading" factor (condition) takes place.

Which then of the "eternal" factors of social production at this historical stage becomes its next "dominant" condition, the new general principle that determines its structure? According to Marx, in production based on machines, the appropriation of living labour by means of materialised labour "is the nature of *production* itself, of its material motion".¹³ (Italics mine—V.K.) Developed capitalist production, machine, mass production based on collective labour and large-scale private property leads to *materialised labour* (the accumulated labour and accumulated wealth concentrated in the *means of mass production*) becoming the dominant condition of the process of production. "Materialised labour itself," wrote Marx, "appears directly in the system of machines not only as a product or as a product applied as a means of labour but as the productive force itself."¹⁴

Under the conditions of capitalist society this dominant role of the means of production over living labour is sharply intensified by the economic domination of capital, the opposition between labour and capital. In this case the "accumulation of the universal productive forces of the social brain",¹⁵ concentrated in a system

of machines, appears already not so much by itself as in the form of the usurpation of the social forces, as the antagonist of direct labour, as a force alien to it.

Under the conditions of socialism this opposition between living and materialised labour changes considerably in a cardinal aspect: as far as its socio-economic aspect is concerned, the contradiction between living and materialised labour is eliminated as the antagonistic opposition of the interests of labour and capital. When social property and the socialist system are dominant, the accumulated social wealth is no longer a force which is alien to labour and opposed to it, on the contrary, it becomes a means furthering the development of the working masses' vitality and of the progress of the social productive forces. In their *Manifesto of the Communist Party* Marx and Engels wrote: "In bourgeois society, living labour is but a means to increase accumulated labour. In Communist society, accumulated labour is but a means to widen, to enrich, to promote the existence of the labourer."¹⁶

At the same time, under the conditions of any socio-economic system the purely material aspect of the matter remains in principle the same, provided the general level of industrial and economic development has not changed. In developed industrial production living labour is "subordinate" to materialised labour in the process of production, to that concentration of social knowledge, experience and skills which is realised in modern technology and appears as a *system of machines*. The transformation of social labour, of fixed capital, of the system of machines into the dominant condition of social production that emerges historically, primarily as the manifestation of the economic domination of capital over labour, subsequently manifests itself from another, from the universal aspect as the supremacy of the concentrated forces of labour and knowledge in the production wealth of society and at the same time as the prerequisite of the domination of the new integrative forces of social production.

Therefore, capital, as it comes into being, finds production in such a form when living labour covers the whole process of production as the dominant element.¹⁷ In this process the instruments of labour act directly as the means of labour that mediate the activity of man oriented towards the object. The worker transforms them into the organs of his body, into the continuation of himself. He animates the process of production by his skill and his own activity. These means of labour and conditions of production are not adequate to capital, however, since they represent the means of labour and the social relations of the pre-capitalist mode of production. On the basis of enlarged production and the unification of labour capital develops more

and more new conditions of production and the means of labour that are adequate to it and which form a special mode of its existence: fixed capital, industrial capital.

A radical change takes place in the production basis which presupposes "a complete revolution in the development of material production".¹⁸ First, the age-old unity of man, the producer with the natural conditions is destroyed. For the first time, social production based on a universal social division of labour and covering all spheres of social life, emerges. Second, natural economy as the dominant form of social production is replaced by industrial production which becomes the main, leading and universal form of social production. Third, such a major basis of social production in pre-capitalist formations as agriculture and property in land becomes a much too narrow prerequisite of its further development. As Marx puts it, "the natural ground slips away from under every sphere of economic activity and the conditions of its production are transferred into a universal connection which is outside this sphere.... All-embracing exchange, the world market, and therefore also the totality of activities, social communication, needs, etc., which constitute exchange become the universal basis of all spheres of production."¹⁹

This capitalist "transformation of all products and activities into exchange values implies the breaking down of both stable (historical) relations of personal dependence in the sphere of production and the allround dependence of the producers on each other. There is a dependence between the production of each individual person and the production of all others; in exactly the same way the transformation of his product into vital means for himself became dependent on the consumption of all others."²⁰

In all socio-economic formations that are based on the exploitation and suppression of the working masses, the minority which constitutes its ruling, privileged part, plays this role because it owns the basic means of social production. It is absolutely clear that whoever owns the means of production appropriates also a considerable part of its results. In particular, the basic condition of social production and the main form of private capitalist property are the industrial means of production which are transformed by the development of the productive forces itself from small instruments of labour (which are the property of the producer) into large, specialised machines with power installations, and into systems of machines, plants, factories, etc.

A number of other important phenomena also appear in the mode of production in connection with this radical change. A new (with respect to the degree of its development) form of

accumulation, productive accumulation, emerges. A new quality of the socialisation of labour takes shape, the degree of its specialisation, cooperation and integration increases considerably, the force used in production becomes the mass force for the most part. New relations between the workers and the owners of the conditions and means of production are formed, hired labour (free from property) becomes the universal type of labour. A new relationship in the production of the means of consumption and the means of production arises, the relative proportion of the latter increases considerably. The nature of the output of social production changes: from production based on natural production, using, as Marx said, the "natural machine"²¹ and producing chiefly natural products it turns into production that produces mainly artificial products. As a result of these changes in the mode of production living, direct labour ceases to be the dominant unified element in production²² and materialised labour becomes the dominant element.

Capital tries to preserve this state (advantageous for it) when it appropriates all the forces of labour, science and the accumulated social wealth, i.e., all the forces of the social system. However, it is beyond its power. This state is historically transient, and it is destroyed by that very progress of the productive forces which is stimulated by capitalist production. Marx saw in this the immanent contradiction of capital, the contradiction between the bourgeois form of domination over production and the progress of the productive forces of society.

Thus, it was obvious to Marx already in the fifties of the last century that direct "isolated labour as such is in general no longer productive", that under new historical conditions it becomes productive "only within the limits of the joint labour of many", that "production was turning from a simple process of labour into a scientific process which subordinates the forces of labour and makes them serve human needs..."²³ Marx showed that the production of surplus value, which is the absolute law of the bourgeois mode of production, is most adequately tied to direct (living) labour and its quantity, for the source of surplus value is living labour, unpaid living labour.

At the same time, the development of capitalist production leads inevitably to the increase of fixed capital and the decrease of the portion of living labour, to the domination of materialised labour, to the application of science in production, etc. All this, Marx said, makes living labour "a secondary factor with respect to universal scientific labour".²⁴

As a result, we arrive at the conclusion that the productive forces called into being by capitalist production require for their broad and complete development a different socio-economic basis,

that they correspond to a different social system. At the same time the bourgeois system reveals not only *economic limitations* and contradictions in its development but also its *discrepancy with the historical progress* of the development of the productive forces as regards their social and humanistic aspects.²⁵

The nature of the change itself, of the rejection of one factor "dominating over production" by another, deserves attention. As is evident from all studies of Marx, such rejection means only that the *efficiency* of social production at a given stage of the development of the productive forces is determined *mainly* by the dominant factor, for this is the general structure of the whole system of social production. This marks, however, only the structure of the forces acting in production and the role of the leading factor. This by no means minimises the independent significance of *all* "eternal factors" of social production (natural conditions, living labour, the means of production, knowledge, i.e., science and experience, social conditions) for its functioning. Moreover, there is an absolute growth of their role in connection with the continuous and allround historical development of material and intellectual production. And the change of factors itself occurs according to the laws of dialectical negation, i.e., removal and preservation at the same time.

Let us return to the analysis of the conditions and structures dominant in production that replace each other. The state described above characterises the situation that existed during the epoch of Marx and Engels. More than a hundred years have elapsed since that time, and today mankind has entered a new phase of development of social production, a phase marked by the greatest scientific and technological revolution in history, a revolution in the development of the social productive forces and combining within itself the revolutionary changes in science, technology and production. Even more significant is the fact that the present scientific and technological revolution is unfolding against the background of the radical social restructuring of the world.

We are living at the beginning of this period, that is in that transitional epoch, when labour, materialised in fixed capital, in the means of mass production, still remains the predominant condition of social production. But it is obvious today already that Marx's predictions are coming true: *science* is becoming the basis of the most revolutionary changes in social production. We may assume that it will not be long now when science will de facto become the dominant or, at the minimum, one of the dominant prerequisites and conditions of social production. Of course, the role played by science in social production is somewhat different from that of living labour and the means of production. The latter

represent the direct factors of material production, whereas science is its ideal component. Science's influence on social production can even be decisive (in the sense of acting as stimulators of the progress of social production), but it still remains mediated.

When science is not sufficiently developed, when scientific discoveries are rare and production is still at a low level and unable to master many scientific achievements, it naturally cannot become the main accelerator of the technological progress of production and its social standard. In the competition of producers it was the side or the association which possessed large capital and could develop larger and more specialised production that won. Such was the case during the last century, and in many respects still is in modern capitalism.

At present, however, certain new feature is appearing that speaks of the new role of science in social production and in social life in general.

Modern science with its industrial organisation is able to solve quickly the most complex problems of the qualitative transformation of production. It is becoming possible to obtain more rapidly fundamentally new *types* of such machines, devices, substances, technologies, etc., which are capable of producing "revolutions" in various spheres of production and thus leave competitors far behind. Ever more frequently the greatest efficiency of social labour and the highest profitability of production are a consequence not of the usual factors of economy but of scientific solutions that are fundamentally new.

The basic conditions of social economy themselves (the average level of socially necessary labour expended and the average level of production technology) are at present greatly dependent on the effectiveness of scientific knowledge. Thus, science becomes something higher, more meaningful than other conditions. To put it differently, it is already not simply "technological armament" but the scientific basis of technological progress which is, at the present level of development of the productive forces, the main factor and the actual stimulator of the progress of social production. In this way, through a series of mediations, science becomes a systems factor which dominates over production.

The specificity of the modern stage of development of the productive forces consists, apparently, in that science acts as not the only dominant factor over production but in association with the factors of "materialised labour" and "social conditions".

In accordance with the new needs and new possibilities of social production science is developing rapidly, and today there are already millions of people in the world who are engaged in

professional scientific activity. The effectiveness of the application of science in production as a whole no longer requires proof. The scientific and design preparation of industrial production has turned into an independent production sphere, the scale and the value of which frequently exceeds the dimensions of the corresponding material production. Research and development firms and associations, and institutes that serve individual branches and disciplines, the whole system of academic, educational and applied scientific organisations now cover not only material production but practically all spheres of social life. Thus science is moving towards its apogee, to a state which Marx defined as the "dominant factor that covers the whole of social production".

Today science indeed acts as the most revolutionary element of the development of the productive forces, but alongside it the "natural gift of social labour", the maximal realisation of which determines, to a great extent, the advantages of the socialist economy, remains the most important factor of social economics.

Thus, we have traced the way in which these "eternal" factors and conditions of social production—natural conditions, living labour, materialised labour accumulated in the means of production and, finally, science—developed one after another and under certain historical conditions became the leading factors, the "predominant" ones over production. The most interesting methodological aspect is that every ascent of one or another factor to its apogee and its subsequent "submergence into the foundation" leads to the *expansion* and *enrichment* of the general foundation itself. While the "eternal" factors remain eternal, the history of their "flowering" and replacement discloses an important chapter on the structure and general laws of the social systems, gives us a graphic example of "replaceable structures". At the same time, this analysis undoubtedly leads to the conclusion that society exists in a certain sense not only as a given historical reality but as a general historical reality that summarises and combines within itself all the real achievements of historical development. The stage of development reached by a society (the socio-economic formation) is at the same time the carrier of certain accumulated qualities and properties of civilisation as a whole.

In order to obtain a complete general picture, it is necessary now to consider how the *social factor* (social conditions) which is also one of the "eternal", constant conditions of the functioning and progress of social production achieves its highest development and at a certain historical stage becomes the dominant condition of the ascending movement of the productive forces.

In all historical epochs people represent the main productive force. Only the socialist, communist society, however, which uses

all the achievements of labour and knowledge for the benefit of man, his allround development, and which formulates as its major goal the development of human forces.²⁶ realises the emancipation of labour, removes its fundamental social contradiction, transforms labour from an arduous duty and the source of the means of existence into creative work, into a means of the highest self-expression of the individual. It is in that way that the socialist, communist system becomes the dominant systems condition of the progress of the productive forces. For this reason under the conditions of communism both trends of development of the productive forces—the “socio-economic” as well as the technological one—converge and complement each other. Lenin's formulation of this principle says that only socialism will make it possible to spread science widely and to really subordinate social production and distribution to the socialist scientific principles that make all the achievements of economy, science and culture serve the interests of the working people. He emphasised that “in the understanding of this truth lies the whole complexity and the whole strength of Marxism”.²⁷

Socialism and communism create more adequate conditions for the development of the new features of social production and thereby turn them into their systems advantages. In the same way as the forces of labour become the forces of capital under the conditions of capitalist production, so, on the contrary, under the conditions of socialism, all the forces of social development become the forces of socialism, the forces that serve the new social system of socialism. It is only natural that only under socialism and communism does the role of the social factor, of social conditions reach its apogee, since for this system and type of society the planned solution of actual, radical social problems becomes possible and feasible, becomes the main goal. It goes without saying that in no preceding epoch of human history, under no other social systems was this possible.

We have considered only the most general aspects of this important and interesting problem, emphasising, first of all, its systems content. There is no doubt that a more detailed and comprehensive interpretation of Marx's views on the history of the productive forces, a more profound contemporary analysis of these questions will make it possible to enrich substantially our conceptions of the contemporary scientific and technological revolution, to determine more precisely the relationship between social and scientific and technological progress, to disclose more thoroughly the natural historical necessity of the progress of the productive forces giving rise to communism.

At the same time, our analysis has also a broader methodological significance. A study of the socio-economic formations that

replace each other or, in the more narrow sense, of dominant structures replacing each other in the development of the productive forces clearly brings out a very peculiar phenomenon which we have denoted as the factor of “variable structures”. Such phenomena constitute an exception in inorganic and even in organic nature. And in society they form one of the most typical features of the dialectics of social development. It should be stressed that it is the systems principle that helps identify certain characteristic features of such phenomena. It is the fact that every real social system rests on its specific initial basis (type of production) or the leading factor (the dominant condition) of development which determines the place and the relative role of all other phenomena and relations of the system, modifies them from the point of view of the general systems whole. To put it differently, every historically concrete social structure reflects the dominant relations of the given system, the general nature and determination of the processes occurring in it. At the same time it is transient and the action of the forces of historical progress can transform it into a new integral wholeness in the framework of which its “general” systems quality becomes firmly established. Herein lies the essence of the phenomenon of variable structures: society develops qualitatively, changing its internal structure.

Secondly, the systems principle enables the researcher to reveal the fact that social development is governed also by the laws of the expansion and accumulation of the foundations of human civilisation. Therefore, a socio-historical analysis which records the social structures replacing each other is intended to note not only the historical necessity of the replacement of the lower developed stages of the socio-economic organs by higher ones but their continuity as well, in accordance with which each stage of the development of society makes a certain contribution to the development of the productive forces, the socio-historical experience of humanity, the evolution of culture and scientific knowledge.

Thus, in accentuating these aspects of the dialectics of social development, the systems principle thereby helps the researcher to disclose their regular and typical character, and in the final analysis, to achieve an integral combination of the so-called “statics” and “dynamics”, of structural analysis and the concrete historical approach, to recreate more vividly and accurately the pattern of the phenomena and processes under study in all the wealth of their manifestations and theoretical descriptions.

NOTES

¹ V. P. Kuzmin, *The Systems Principle in Marx's Theory and Methodology*, Moscow, 1976 (in Russian).

- ² Ibid., pp. 67-114.
³ G.W.F. Hegel, *Sämtliche Werke*, Part 9, Stuttgart, 1929, p. 69.
⁴ V.I. Lenin, *Collected Works*, Moscow, Vol. 1, p. 410.
⁵ K. Marx and F. Engels, *Collected Works*, Vol. 3 Moscow, 1975, p. 320.
⁶ K. Marx and F. Engels, *Selected Works* in three volumes, Moscow, 1970, Vol. 3, p. 365.
⁷ K. Marx and F. Engels, *Collected Works*, Vol. 3, p. 276.
⁸ P. K. Anokhin, "The Forestalling Reflection of Reality", *Voprosy filosofii*, No. 7, 1962.
⁹ I. P. Pavlov, *Collected Works*, Vol. 3, Moscow-Leningrad, 1949, P. 568 (in Russian).
¹⁰ K. Marx and F. Engels, *Works*, Vol. 47, Part I, p. 476 (in Russian).
¹¹ K. Marx, *Capital*, Moscow, 1971, Vol. 3, p. 352.
¹² Ibid., pp. 175, 176.
¹³ K. Marx and F. Engels, *Works*, Vol. 46, Part II, p. 204.
¹⁴ Ibid., p. 205.
¹⁵ Ibidem.
¹⁶ K. Marx and F. Engels, *Selected Works* in three volumes, Moscow, 1969, Vol. 1, p. 21.
¹⁷ K. Marx and F. Engels, *Works*, Vol. 46, Part II, p. 204.
¹⁸ Ibid., Vol. 46, Part I, p. 228.
¹⁹ Ibid., Vol. 46, Part II, p. 19.
²⁰ Ibid., Vol. 46, Part I, p. 99.
²¹ Ibid., Vol. 46, Part II, p. 85.
²² Ibid., p. 204.
²³ Ibid., p. 208.
²⁴ Ibidem.
²⁵ Ibid., Vol. 47, p. 186.
²⁶ K. Marx, *Capital*, Vol. 3, p. 820.
²⁷ V.I. Lenin, *Collected Works*, Vol. 27, p. 411.

System and Wholeness Concepts

IGOR BLAUBERG

In systems research the concept of the whole, wholeness plays an important role. All authors (at least, the great majority of them) base their studies on the fact that a system represents an integral set of elements. At the same time, there is a century-old history of the philosophical categories of part and whole, in the course of which their content, as well as their methodological significance for the development of scientific knowledge, has been transformed substantially. It seems to us that methodological difficulties in cognising and constructing complex integral objects, which were experienced in the second half of the 20th century by concrete scientific and technological knowledge, in large measure necessitated the systems approach.

Considered as philosophical categories, the part and the whole express the relation between a set of objects and a connection which unifies these objects and is responsible for the appearance of the new (integrative) properties and regularities which are not present in isolated objects. The type of connection between parts determines also the type of the whole formed.

The categories of part and whole characterise also the general motion of knowledge; the latter usually begins from the undivided concept of whole, to be followed later by the analysis, decomposition of the whole into parts, and is concluded by the reproduction of the object in thinking in the form of a concrete whole. As is well known, Marx formulated these laws of cognition of integral objects in his *Economic Manuscripts of 1857-1858*. In this connection, the nature of the interpretation of part and whole categories, as well as the problem of wholeness derived from them,

determine to a considerable extent the general strategy of scientific cognition, the method of solving fundamental scientific problems.

We are here facing the necessity to distinguish between two meanings of the concept of wholeness, the broad and the narrow. The concept of wholeness in the narrow sense is associated with cognition of some or other real objects characterised by complex organisation (this meaning is attached, for instance, to the problem of wholeness in biology, psychology, etc.) and with general specific features of such objects. The wholeness in the broad sense correlates not with one concrete object or another as such but with a style of thinking that is typical of a given epoch; therefore, the interpretation of this concept is related to a certain type of philosophical and general scientific reflection and creates a certain general background against which the motion of philosophical and scientific knowledge displays itself.

In view of the fundamental significance of the problem of wholeness for the theory and practice of modern systems studies, a question naturally arises about the comparison of the concepts of wholeness and systems property (the whole and the system). Whoever has come across the use of these notions in scientific literature, has not failed to notice that their contents are extremely close to each other, and there is a deep internal relationship between them as well. But what is the degree of this relationship: are they synonyms or are they connected through a different relation? To put it differently, what is the meaning of the use of these two concepts in scientific knowledge?

There is no convincing (or at least sufficiently detailed) answer to this question in modern literature devoted to the analysis of the philosophical aspects of the problem of wholeness.¹ The appearance of publications which it seemed to be unable to evade this question (we have in mind literature wholly or in part devoted to the definition of the system concept), as well as the development of other purely systems studies, has not done much to clarify the relation between the systems property and wholeness.

In a number of publications by V. Sadovsky, the typological analysis of diversified meanings of the system concept was conducted on the basis of approximately forty definitions of this concept that became most widely spread in monographs and papers on systems research. Basing ourselves mostly on his results, let us consider the forms the relation between concepts constituting the subject-matter of the present paper appears in systems literature.

In ascertaining the fundamental diversity of reasons for which the properties of a system are ascribed to some or other objects, Sadovsky emphasises the extreme complexity of the problem of

determining the lower boundary of the systems property; at present there are no criteria for making the upper boundary of the systems nature more precise either; crossing this boundary means entering the field of various kinds of systems, rather than systems in general. Hence the problem of constructing a certain hierarchy of system properties, the lower members of which apparently being regarded as non-systems, and the higher ones, possibly, covering certain types of systems; on the whole, however, this hierarchy, would specify the properties of a system as such.²

Following this path, the author identified a number of informal features (considering their "systems" nature beyond doubt) and divided them into three groups denoted by A, B and C. Group A was meant to include features which characterise the internal structure of a system: set, element, relation, property, connection, interaction, subsystem, organisation, structure, etc. Group B contained features that characterise the specific systems properties: isolation, interaction, integration, differentiation, centralisation, decentralisation, wholeness, stability, feedback, equilibrium, control, and so on. Group C included features that pertained to the system behaviour: environment, the state of a system, activity, wholeness, functioning, variation, homeostasis, purposefulness, etc.

Let us note that in this series of systems features the feature of wholeness appears both in group B and in group C. Thus, it is considered not only as the essential systems property but also as a characteristic of system behaviour. And as far as group A is concerned, one can easily see that all or at least most of the features relating to it serve to describe system as a definite whole.

On the basis of considering the definitions of the system concept, Sadovsky arrives at the conclusion that they can also be divided into three different groups. The group whose volume is the most substantial and which is most interesting from the methodological point of view includes definitions of system through such concepts as "elements", "relations", "connections", "whole", "wholeness", although the terms that fix these concepts in one or another definition are extremely heterogeneous. The author infers from this that the definition of a system through elements, connections, relations and wholeness forms the base structure of the definition of this concept, which describes at least quite a large class of systems, if not any system formations.

As for the two other groups, one of them covers the definitions that give concrete expression to the base one through the introduction of additional attributes and thus specify certain classes of systems (cybernetic, biological). The author considers the second group which includes definitions of a system as a certain

class of mathematical models as a mathematical expression of the base definition (if the objects are described that satisfy this definition), and, on the other hand, as a construction of a broader class of mathematical models, in terms of which one can trace the gradual transition from the non-system to the system object of study.³

The relation between wholeness and systems nature analysed here forms a more generalised criterion of the classification of the above definitions of the system concept. In accordance with this criterion, the set of such definitions is divided into two groups, one of which includes wholeness as the essential feature of every system and the other contains no such feature. The first group gives full coverage to definitions with the base structure (in terms of Sadosky's classification) as well as their additional concretisation, and also some definitions formulated in terms of mathematical models, namely, those of them which serve to describe objects with wholeness properties.

In the definitions of the second group, the system concept is interpreted, as a rule, from the set-theory point of view: the system is regarded as a set of elements with relations defined on this set. A "classical" example is the frequently quoted definition of A. Hall and R. Fagen: "A system is a set of objects together with relationships between the objects and between their attributes." Although it is exactly the assumption that the system has the properties, functions or goals that are different from the properties, functions or goals of its components⁴, which the authors base their argument on, one can easily see that this assumption is not explicitly fixed in their definition.

However, as has been demonstrated in a number of articles by Soviet scientists, the interpretation of the system concept in terms of the set theory⁵ is not adequate to the tasks of describing specific systems formations and should be regarded only as auxiliary analytical means of their analysis. Yu. Shreider, for instance, stresses the following fundamental difference between the set and the system; when a set is formed, the basic components are the elements certain combinations of which form one or another set; for a system, the feature of wholeness, i.e., the fact that it constitutes a certain whole composed of interacting (connected) parts, is primary. For a system the elements are not specified beforehand; they are constructed (or selected) during the system's segmentation, with each system permitting various forms of its segmentation. Although each segmentation is a set, the system itself is not a set; it can merely be regarded as a set.⁶

If, on the other hand, the primary attribute of a system is wholeness, which cannot be described in terms of relations either, since the logical characteristics of binary relations (or those

reducible to binary) do not allow one in principle to express the properties of integral organisation (a special analysis of this question can be found in A. Angyal's paper "Logic of Systems")⁷.

Thus, the second group of system definitions does not define this concept and can be ignored in what follows. A consequence of this is that any definition of system which can be regarded as equivalent to its object includes the feature of wholeness as the most essential and decisive attribute of any system.

Although, when compared to the concept of wholeness, the system concept appears to be much more detailed and separated into elements, being surrounded by a dense network of related concepts, the feature of wholeness is usually accepted in the definition and description of a system as intuitively obvious and is not subjected to further explication. In most cases, the wholeness of a system is specified through indication of the mutual connection between elements; in his concept of "the general system theory", L. von Bertalanffy, for instance, for whom the study of the system was equivalent to that of wholeness, characterised wholeness as a property in the presence of which the variation of any element affects all other elements and leads to the variation of the whole system, and conversely, the variation of any element depends on all other elements of the system.⁸ By no means underestimating the importance of taking into account the mutual connection and interaction of parts during characterisation of the whole, we would like still to emphasise that the main element of this characterisation is the property of integrativity, i.e., the appearance, as a result of interaction between parts, of new qualities and properties at the level of the whole, these new qualities and properties not being inherent in the individual parts or their sum.

It is exactly the integrativity of the whole, and not the interconnection between parts in itself that gives a clue to the explanation of the fundamental role of the wholeness concept in scientific knowledge. Without the fixation of this aspect of the question, our position would hardly be different from, let us say, that of the 18th-century French materialists for whom the principle of interaction between parts of a whole was indisputable.

It would also be important to note that in systems research literature the relation between the concept of system and that of the whole is not, as a rule, made more precise either, because of which these concepts turn out to be interchangeable within quite broad limits. If one compares the interpretation of the concept of the whole in publications on the wholeness problem to that of the system concept in systems literature, one can see that both concepts are in principle characterised by the same attributes. The whole, as well as the system, consists of parts (elements); the stable,

invariant connections between parts form the structure of the whole; the whole, like the system, possesses the properties of organisation and orderliness. The whole is hierarchically organised *ex definitione*: what is a part in some respect is a whole in another; therefore, every whole is a part of another whole, and any part is, in its turn, a whole. In the analysis of the whole, as in the study of systems, the insufficiency of purely analytical segmentation of an object is revealed, the necessity of the use of synthetic research procedures comes to light, and so on, and so forth. From the similarity of these basic specific features of the system and the whole the similarity of other, less essential, peculiarities results, so that this enumeration could be easily continued.

The following conclusions can be made by us:

1. The great majority of authors in systems literature problems do not distinguish between wholeness and systems nature (between the whole and the system). And when in the definitions of the system concept the attribute of wholeness is absent both in its explicit and implicit form, such definitions are not definitions of system proper.

2. Some authors of publications on the problem of wholeness believe that the concepts of the whole and system are essentially identical. And those authors who distinguish between these concepts refer to one or another definition of system (usually to that of Bertalanffy: the system represents "a complex of elements standing in interaction") to confirm their point of view. The references to a certain system definition which is universally recognised in scientific literature are not convincing, however, since the large-scale development of systems studies has recently been accompanied by the appearance of such a diversity of those definitions, both informal and formal (discussed above), that an attempt to identify certain general contents in them would require a considerable classification effort.

Thus, it seems to us that, coming back to the question of the "degree of kinship" between the concepts of wholeness and systems nature, which was formulated at the beginning of the present paper, we should answer it in the following way: yes, these concepts express the same content and are essentially synonyms. Therefore, on the basis of purely stylistic considerations, they can easily be substituted for each other in the corresponding texts, or the dying off of one of them in special scientific literature (most probably, it would be the concept of whole as less "modern") is just a question of time.

This answer, however, is not satisfactory.

As it seems to us, an important role in the development of science belongs to a principle which goes back to Ockham and amounts to a statement: it is useless to apply a great effort to do

something which can be achieved with a lesser one. For all their deep kinship, the concepts of whole and system having century-old history and continuously reproduced in the evolution of modern scientific knowledge cannot help possessing substantial differences. In order to identify the specificity of each of them, however, we must leave the narrow circle of definitions and competing interpretations of these concepts and consider them in a broader context, namely, in the context of those functions they perform in modern science.

Thus, we should now answer the second half of the question formulated in the beginning of the paper: what is the meaning of the functioning of these two concepts in scientific knowledge? This is exactly what we are going to do now, being aware that this attempt, since it is the first of its kind, may turn out to be unsuccessful; at any rate, we hope that it would be helpful for the further discussion of this issue.

We shall begin with difficulties which are encountered by anyone who strives to record the wholeness criteria (and, accordingly, those of systems nature) from the point of view of purely ontological approach to various objects of reality. Such recording implies the possibility of formulating a certain (sufficiently complete) list of features that are typical of all integral objects, and only of them. In other words, a certain class of objects should be singled out at the empirical level, which possesses the above features of wholeness and differs fundamentally from another class of (non-integral) objects, which does not possess such features.

Above we tried to demonstrate how difficult it is to outline an empirical boundary that separates the integral formations from non-integral ones. Now we would like to add that, as it seems to us, the problems that emerge in this case are associated not with how apt is the definition of the whole in some or other publications but with the fact that the meaning of the wholeness concept can never be reduced to the function of generalisation with respect to the level of scientific knowledge achieved at each moment of time.

One should not underestimate the significance of such generalising role of the wholeness concept, which is specifically expressed in definitions that describe the general properties of integral formations. More precisely, each of such definitions records the general element which has been singled out in various objects appearing as wholes at each stage of scientific development. One must clearly realise, however, what cognitive procedures such definitions are based upon and what exactly functions they can actually perform in cognition.

When definitions of wholeness are constructed, the way

"upwards", associated with the initial recording of the features corresponding to the lower type of wholeness, followed by the subsequent addition to this set of features that characterise wholeness formations of higher types, is certainly inappropriate. For such an approach, the resulting set of features depends essentially on the type of wholeness chosen as the initial one, but it is exactly this question that cannot be solved at the empirical level: the answer to it is related to the presence of a certain theoretical conception of wholeness, i.e., it implies that the definition of wholeness exists already in knowledge.

The way "downwards", i.e., the attempt to extrapolate the properties of highly organised type of wholeness so that they would include all other types of integral objects, is as unproductive as the first one. First, in this case the same problem of defining the "lower boundary" of wholeness arises. Second, the conceptions of wholeness corresponding to the higher level of organisation, developed by science, cannot be regarded as a certain cliché which would determine the understanding of other types and levels of wholeness. There are specific properties, inherent in each of these levels, and their understanding implies the development of special concepts of wholeness of a given type and level.

It may seem at first that the ontological status of the system concept is somewhat different from that of the concept of wholeness, since its connection with its empirical "assessors" is less rigid. Indeed, in systems literature the interpretation of the system as an arbitrary set of objects with relations (connections) specified on it is sufficiently widespread. By way of example, we can cite the system definition suggested by L. Blumenfeld at a discussion meeting on systems approach in biology (1968): "The concept 'system' denotes a set of real or imaginary elements chosen in any way from the rest of the world. This set represents a system if 1) the connections between these elements are specified; 2) each element is considered indivisible inside the system; 3) the system interacts as a whole with the external world; 4) the set will be regarded as a single system if a one-to-one correspondence can be established between its elements at different moments of time; this statement applies to the case of evolution in time."⁹

As a matter of fact, however, if one has in mind real systems research and not a certain logical mental play, this arbitrariness of system specification is only apparent. In literature one can frequently come across W. Ashby's statement about the possibility of imagining a system with the following three variables: the ambient temperature in a given room, the air humidity and the dollar rate of exchange in Singapore.¹⁰ Incidentally, he himself admitted that such choice of variables is irrational, with which one can hardly disagree. In the above

definition of the system concept, as well as in a number of its other definitions, the importance of the epistemological position in the study of a complex object is emphasised correctly. For all that, however, it is quite obvious that this operation of specifying the connection between elements appears in reality as secondary, derivative with respect to the segmentation of a given complex object that forms a certain wholeness (or is regarded as a whole). It is exactly this segmentation which can be performed on different grounds that provides the possibility to identify some or other elements of the system under study.

It would be appropriate to repeat here once again that systems study, unlike the analytical approach, implies the motion not from the parts to the whole but from the whole to the parts. This statement has to be recalled more than once and, in particular, it was mentioned above, in a section where Shreider's point of view on the inadequacy of the set-theory language for the description of systems formations was presented. As it seems to us, his reasoning is an apt concretisation of a statement concerning the primacy of the integral approach with respect to the elementarist one (based on elements, parts) and the possibility of diversified segmentations of an integral object, which occurs persistently in systems literature. In this connection we would like to say that Sadovsky's classification of the components of the system concept definitions that are most widespread in literature¹¹ seems to be made somewhat more precise. Among these components Sadovsky singles out the characteristic of the initial formations (A_1)—elements, parts, etc., and the characteristic of combination of such formations (A_2)—complex, set, and so on. It is not necessary, from the point of view of systems research methodological principles, to give special proof to the fact that it is exactly A_2 , i.e., the whole, and not the elements, which should be the primary item in the above enumeration.

In this case, therefore, one discovers once more that the content of the system concept is inseparably connected with that of the concept of wholeness; for this reason it is as difficult to "tie" it as it is to "tie" the latter to a strictly definite class of the objects of reality in order to characterise it exhaustively on the basis of features of exactly that class of objects. In view of such conclusion, it is natural to try to apply another method to establish relation between these two concepts: to compare them methodologically, having in mind their meaning, place and functions in scientific knowledge.

The methodological functions of the concept of wholeness were identified and described by B. Yudin in our joint publication.¹² In the above publications, along with the generalising definitions of the wholeness concept, other kinds of definitions were consi-

dered which, instead of recording the level of knowledge achieved (this is a function of generalising definitions), appear as guidelines that denote the direction for further development of scientific thinking. The specific feature of such definitions is that they describe not integral objects themselves but those cognitive situations that arise in the study of these objects. For scientific knowledge the given function of the wholeness concept is one of the most meaningful: it is as if the concept here turns out to be the reference point, the origin of the coordinates system for the explanation of a certain sphere of reality.

Even if at the beginning of a scientific study the concept of the analysed object's wholeness appears at the intuitive level, it creates the basis for the ordering of the conceptual apparatus employed and for the systematisation of the available knowledge concerning a given object (for details, see our book, just mentioned, pp. 19-36).

What is then the emergence of this function of the wholeness concept in scientific knowledge associated with?

In order to answer this question, we shall need the method of distinguishing between two meanings of the concept of wholeness, introduced in the beginning of the paper. In this case we have in mind wholeness in the broad sense of the word, as associated not with concrete objects of complex organisation but with a style of thinking characteristic of a certain epoch (culture). Now, when the above is taken into account, it becomes clear that this categorial formation possesses a rather complex structure. Without attempting to give its detailed description, which is difficult as yet, we still can single out two layers in it and attach to them the condition names "actual" and "potential".

The first layer consists of the concepts of wholeness, existing in philosophical and scientific knowledge at any given moment of time and considered in their general form (the relation between the whole and the parts, the place of these categories among others, the interpretation of the system of concepts associated with wholeness, the notions concerning the methods of cognition of the whole, etc.). It is exactly at the level of this layer that the generalising definitions of the wholeness concept are located, although not completely, since they are related, on the other hand, also to the interpretation of wholeness in the narrow sense of the word.

The second layer constitutes that what is lacking in the concepts of wholeness that have been in existence; what is being found out about wholeness in the course of the subsequent development of science; those relations that exist in reality but have not as yet been discovered by scientific knowledge (although it is of importance for us that these are not the specific features of

individual objects as such but the specific features of the cognition of wholeness in general which are concrete in application to individual objects).

It is quite obvious that this second, "potential" layer can be explained most completely in a historical scientific study, when evolution from one stage to another in cognition of a certain integral object is traced and the differences between each subsequent stage and the previous one are recorded. It would be wrong to assume, however, that this layer manifests itself only retrospectively. It is, as it were, invisible though tangible; it is revealed in actual knowledge, but as a sketch, a hint, a fragment, and not as a whole. It is very easy to understand the origin of these fragments or hints: the whole, which is as yet unknown to us, cannot help being in some way revealed in parts that we have already known, the unknown structural level cannot help being somehow discovered at the levels already known, etc.

Let us venture an assumption that it is exactly the presence of this "invisible" layer which constitutes the source of intuition, creative thinking, etc.

In this connection we would like to recall an analogy from a different sphere. The well-known Soviet writer K. Paustovsky, reflecting in his *Golden Rose* upon the role of details in a work of literature and the principles of their selection by the artist, wrote: "The detail is most closely related to that phenomenon which we call intuition.

"I conceive intuition as an ability to reproduce the picture of the whole from an individual detail, from a certain single property.

"Intuition helps historical writers reconstruct not only the true picture of life of the past epochs, but their very spirit, the very state of the people, their mentality which was, of course, somewhat different as compared to ours...

"And for the reader a good detail produces an intuitive and correct conception of the whole: either of a person and his (her) state or of an event or, finally, of an epoch."¹³

One can say with certainty that there are a lot of facts known to science that represent fragments of a whole which is as yet vague and which will be discovered later in intuitive inspiration. Perhaps it is exactly the knowledge of how to approach such facts (and they most frequently "fall out" from the group of the generally recognised conceptions and the system of thought) as a manifestation of precisely some unknown level or an unknown whole that represents one of the distinctions between creative and noncreative thinking.

Thus, the introduction of a distinction between two meanings of the wholeness concept demonstrates that heuristic significance

in scientific knowledge is attached above all to the concept of wholeness in the broad sense of the word, with its "potential" layer. It is exactly this concept that forms the guideline of scientific knowledge, promoting the explanation of new facts or phenomena from the point of view of a broader whole. And the concept of wholeness in the narrow sense of the word (associated, as we have already said, with cognition of objects with complex organisation) is directed mainly towards the recording of the fact that a given concrete object of scientific cognition is integral, and therefore, the application of purely reductionist methods of study to it in the final count turns out to be ineffective.

Now we are in a position to make the relation between concepts "whole" and "wholeness" more precise. The "whole" is the result of applying "wholeness" as a notion that performs methodological functions to a certain concrete object, which is regarded from this moment onward as a whole if it satisfies the criteria adopted by us. It is hardly necessary in the present context to justify in detail the fact that such procedure is by no means a formal statement of a generally known fact but is associated in most cases with the fundamental restructuring of the existing concepts of the object under study; it would be sufficient to recall, for instance, the substantial shifts in linguistics produced by the notion of language being an integral formation or the changes produced in biology by the similar concept of biogenocenosis (ecosystem).

Thus, the concept of wholeness in the narrow sense of the word generally coincides with that of the whole. "Wholeness" proper, however, coincides with the concept of wholeness in the broad sense of the word. It is exactly with this meaning that these concepts will be used in our further discussion.

What leaps to the eye is that the concept of wholeness in our interpretation cannot in principle be described in formal language, since it records not so much and not only actual knowledge as the incompleteness of this knowledge. "The original cognitive situation on the basis of which an integral object is studied is defined by the presence of a certain amount of knowledge concerning it. The available knowledge, however, turns out to be insufficient for reflecting the regularities inherent in a given whole, i.e., for constructing its scientific explanation. This gap between what has been already cognised and what has as yet not been cognised is recorded exactly by the conception of wholeness of the object under study. It is important to note that the above gap in knowledge is relative: the non-cognised, as well as the cognised, is in a sense given to us. To put it briefly, we know what exactly we do not know. Such definiteness of what has not been cognised leads to the study of an integral object appearing as a regular,

ordered process with its internal logic."¹⁴ And what has not been known as yet, cannot be formalised. Thus, the call for the explication of the wholeness concept which is encountered frequently in systems literature may be referred, in reality, only to the whole or, more precisely, to the ways of its expression in knowledge. It is exactly the system concept, as well as the whole set of conceptual means associated with it, which play the role of an explicate of this concept (whole). Therefore, the concept of system is indeed inseparably connected with that of the whole.

Thus, when we speak of the relation between the concepts "whole" and "system", we, as a matter of fact, admit of a certain simplification. Actually, the point is that a certain integral object and its properties are described by means of a developed set of concepts, the central and organising place among which belongs to the concept of system. Complete and accurate description of an integral object through systems conceptual means presupposes that the given object has already been singled out in knowledge as a certain integral formation, and that the researcher is faced with the task of explicating the connections and the properties of this object and, as far as possible, of expressing them in the corresponding formal-mathematical concepts and operation procedures. To put it differently, the system concept includes those aspects of the study of an object with a complex organisation which have already been "worked out" in the process of using the concept of wholeness and permit of formalisation. The meaning of this is that the methodological role in systems research belongs not to the concept of system but to that of wholeness. And systems studies themselves appear in this case as an important "proving ground" on which the methodological-heuristic function of the wholeness concept is "tested".

From this it clearly follows that the ever wider use of the system concept in modern scientific knowledge by no means implies the rejection of the concept of wholeness, since it is exactly the latter which specifies that methodological context of scientific knowledge in which systems studies evolve. At the same time, the concept of wholeness does not permit of explication; therefore, in order to characterise it, one has to use such nebular expressions as "the style of thinking", "the background of scientific knowledge", "the type of reflection", etc. We try to describe the concepts of whole, wholeness, system and their interrelations more specifically.

The whole (*das Ganze, le tout*) represents a concrete object with integrative ("emergent") properties. From the epistemological point of view integrativity appears as the resultant of the generalising function of the concept of wholeness, associated with the cognised features of objects with a complex organisation.

The wholeness (*die Ganzheit, l'intégrité*) represents concepts of the

completeness of the coverage of phenomena, and at the same time of the essence of integration, the processes of formation of the new, structural levels, hierarchical organisation of processes and phenomena, etc., which exist at every given instant in philosophical and scientific knowledge. This is a background against which the cognition of integral objects, the guideline of cognitive activity develops. The concept of wholeness performs this function because it has a peculiar two-layer structure that includes not only the actual but the potential knowledge as well.

Hence it is clear how the "whole" relates to the "wholeness". The whole is a concrete object (a class of objects) in which through the application of the corresponding research procedures discovered the presence of integrative properties. Thus, the concept of the whole is formulated as the result of applying the concept of wholeness and is associated with the realisation of cognitive activity rather than being the primordial characteristic of the object by itself. Therefore, the development in any science of adequate concepts of the object under study as a whole represents such an important stage in its evolution.

The system is a concept which serves to represent in knowledge an integral object by means of specific principles, certain conceptual and formal means; this representation as a rule, is performed with a definite practical objective (for instance, in connection with control problems). One has to bear in mind that the representation of an integral object (a whole) as a system is not the only possible form of its reflection in knowledge, since there may be, let us say, its structural, functional, structural-functional, elementwise and other representations. The possible appearance in them of different, more efficient methods of the description of the whole, which would replace the systems approach in the same way as it has replaced others, should not be excluded.

Finally, let us consider briefly the concept "systems nature". If the concept of system makes the concept of the whole much more concrete and precise, the "systems nature" concept, it seems to us, practically adds nothing new in comparison with the concept of wholeness used in its complete sense which we strived to explain in this paper. It merely denotes being related to a system and is not subject to further segmentations.

What is the relation between the system and wholeness concepts? As follows from the above, the system concept always describes the whole and is inseparably connected with it (thereby, it is connected also with the concept of wholeness). Wholeness, on the other hand, is not exhausted by systems description due to the impossibility of formalising this concept.

In the real process of scientific cognition, the concepts of the whole, wholeness, system form a certain hierarchy including, in addition to the above notions, also a number of others related to

them, rather than occupy adjacent places. This integral hierarchically organised conceptual system represents a subsystem of scientific knowledge as a whole, considered from a definite angle from the point of view of the integration or synthesis of knowledge. The concept of wholeness appears here as the integral description of synthetic tendencies of scientific knowledge.

It is exactly with respect to such a system of concepts that the place and the significance of each individual concept (the whole, system, structure, organisation, etc.), and their hierarchical subordination, are determined in it. Obviously, these concepts are not synonyms, each of them expressing quite definite content. At the same time, it is also impossible to draw the line of absolute distinction between them from the point of view of their content and meaning because of their close interrelation in the system.

To sum up, one can draw a conclusion that the study of the methodological aspects of the problem of wholeness and the development of systems approach can only be realised under present conditions in their inseparable connection with each other.

NOTES

- ¹ For an analysis of literature on the problem of wholeness in the light of the above relation between concepts, see our paper "Wholeness and Systems Nature", *Systems Research Yearbook 1974*, Moscow, 1977, pp. 6-15 (in Russian).
- ² For a detailed treatment of this topic, see V.N.Sadovsky, "Some Fundamental Problems of Constructing the General Systems Theory" *Systems Research Yearbook 1971*, Moscow, 1972, pp. 47-48 (in Russian).
- ³ Ibid., pp. 51-53.
- ⁴ A.D.Hall and R.E.Fagen, "Definition of System", *General Systems*, Vol. 1, 1956, p. 18.
- ⁵ E.R.Rannap, "Systems Analysis of Invention Description", *Scientific and Technical Information*, Series 2, 1971, No. 6; Yu.A.Shreider. "On the Definition of System", *Scientific and Technical Information*, Series 2, 1971, No. 7; V.N.Sadovsky, "General Systems Theory as a Metatheory", *Voprosy filosofii*, 1972, No. 4.
- ⁶ Yu.A.Shreider, "On the Definition of System...", p. 5.
- ⁷ A. Angyal, "Logic of Systems", *Systems Thinking*, New York, 1970.
- ⁸ L. von Bertalanffy, "An Outline of General System Theory", *The British Journal for the Philosophy of Science*, 1960, Vol. 1, No. 2.
- ⁹ *Systems Research Yearbook 1970*, Moscow, 1970, p. 37 (in Russian).
- ¹⁰ *Studies in General Systems Theory* (a collection of translated papers), Moscow, 1969, p. 129.
- ¹¹ V.N.Sadovsky, "Some Fundamental Problems of Constructing General Systems Theory", *Systems Research Yearbook 1971*, Moscow, 1972, pp. 51-52 (in Russian).
- ¹² B.G.Yudin, "The Concept of Wholeness in the Structure of Scientific Knowledge", *Voprosy filosofii*, 1970, No. 12; I.V.Blauberger, B.G.Yudin, *The Concept of Wholeness and Its Role in Scientific Knowledge*, Moscow, 1972 (in Russian).
- ¹³ K.G.Paustovsky, "The Golden Rose", *Collected Works*, Vol. 2, Moscow, 1958, pp. 614-615 (in Russian).
- ¹⁴ I.V.Blauberger and B.G.Yudin, op. cit., pp. 21-22.

Social Indicators in Global Models

NIKOLAI LAPIN

A specific class of large systems, the systems that model global development, or global models, emerged in the 1970s and is being further intensively elaborated. Their formulation meets the needs of present world development.

As was noted at the 25th Congress of the CPSU, "global problems such as primary materials and energy, the eradication of the most dangerous and widespread diseases, environmental protection, space exploration and utilisation of the resources of the World Ocean are already sufficiently important and urgent. In the future they will exercise an increasingly perceptible influence on the life of each nation. The Soviet Union, like other socialist countries, cannot hold aloof from the solution of these problems which affect the interests of all mankind."¹

All this makes essential a comprehensive analysis of global developmental trends. Such an analysis is a complex task of an interdisciplinary nature and is possible only on the basis of applying various methods, both formal and informal, that are integrated within the framework of the systems approach. It is precisely the global models that make it possible to investigate various versions of the evolution of the global system and its subsystems, to evaluate the long-term consequences of probable controlling actions and thus to serve as an instrument in the solution of these problems.

In various countries, some ten large projects have been realised over a short period, under the auspices of international and national organisations. Those projects are devoted to investigating global problems and in most cases employ methods of mathematical modelling.² As one can see even from the names of these

projects (see Table 1) specialised models are also being developed alongside universal global ones; some of them are devoted to a general problem fraught with the danger of a crisis for the whole of mankind (e.g., the problem of food), others deal with a complex of global problems in the context of the development of individual regions or countries. On the basis of these studies practical recommendations are made to governments and international organisations.

All this is indicative of the intensive expansion and diversification of projects in the field of global modelling, and therefore, of the need to analyse a broad range of methodological problems that arise as systems modelling global development are constructed. The development of a scientific approach to the application of social indicators in global models is one such problem.

In considering it, the first question that arises is that of the *criteria of indicator selection*. In our view when the global models are being formulated, three types of criteria should be distinguished: general theoretical, concrete scientific and applied.

Table 1
GLOBAL DEVELOPMENTAL PROJECTS

Project Leaders	Project Names	Country	Year of Completion
Forrester J. W.	"World-2", or "World Dynamics"	USA	1971
Meadows D. H. <i>et al.</i>	"World-3", or "The Limits to Growth"	USA	1972
Mesarović M., Pestel E.	"Mankind at the Turning Point", or "Strategy of Survival: Organic Growth"	USA, FRG	1974
Herrera A. O. <i>et al.</i>	"Latin American World Model", or "Bariloche Model"	Argentina	1974
Kaya Y. <i>et al.</i>	"Global Constraints and New Vision for Development", and "Japan in the Changing World"	Japan	1974
Linnemann H. <i>et al.</i>	"Population Doubling and Food Supply"	Holland	1975
Tinbergen J. <i>et al.</i>	"Reshaping the International Order"	Holland	1976
Roberts P.	"Systems Analysis Research Unit Model (SARUM)"	Great Britain	1976
Leontieff W. <i>et al.</i>	"The Future of the World Economy"	USA	1976

When defining general theoretical criteria, it is necessary to take into account that the object of global modelling is specific, it is mankind and its environment. The informal aspect of this object is studied by general theoretical disciplines—philosophy and sociology, while its formal aspect, i.e., the aspect of mathematical modelling, is represented by general theoretical disciplines that consist of various branches of modern mathematics. It should be emphasised that a formal theory cannot specify informal criteria, including those for the selection of the parameters, it only provides an instrument for formalisation of these parameters and their interconnections. Therefore, the determination of the general theoretical criteria for the selection of parameters in the formulation of a global model would mean adopting the already existing socio-philosophical concept or the development of a new one within the framework of which the model will be constructed and the selection of the basic parameters, especially the social and cultural ones included in the given model, will be realised.

This means the emergence of a largely new situation for the specialists in the field of mathematical modelling. Until recently they did not deal with such complex objects. When modelling the natural, technical and organisational systems, they selected their parameters according to the criteria of the corresponding concrete scientific disciplines, while general theoretical problems were for them mainly the problems of mathematics itself, namely, the problems of the identification of interconnections between these parameters with one or another mathematical apparatus (already available or being specially developed). Only comparatively recently the models of the new class of objects which is qualitatively more complex and is associated with the evolution of the national economy began to be formulated, with due account of a number of social parameters that are studied by sociology. Now, when constructing global systems, these specialists have to even more fully take into consideration the fact that in the solution of such problems mathematics ceases to be the only general theoretical discipline; moreover, since it is a formal theory, it has to surrender priority to other, informal general theoretical disciplines—to philosophy and sociology.

This new situation has still not been fully grasped. One observes a certain inertia of thinking among many mathematicians who, when tackling such a new class of problems as global modelling, assume, as before, that the criteria for parameter selection for the model are only concrete scientific and applied ones.

Consider the types of criteria that were chosen by the authors of the best known global models. The first such models,

“World-2” by J. Forrester (1971) and “World-3” by D. Meadows (1972), can hardly be identified with one or another socio-philosophical concept. The authors of these models, bypassing this kind of general theoretical premises, subordinate the parameter selection directly to concrete scientific and applied criteria.

The main purpose of these models was to determine how great was the probability of a serious crisis in mankind's interaction with its natural environment. In other words, does this crisis pose a threat to the physical existence of the planet's population? When this problem was formulated, no analysis of its socio-philosophical premises and alternatives was made. For this reason, it was mainly the physical parameters that were selected by the authors of the first models. Such parameters can be measured easily, and their magnitudes are fixed in most cases, i.e., to put it differently, these parameters are most convenient for modelling. As a result of this, the above models include a great number of parameters (in the model “World-3” this number is about 500), that describe the state of the natural environment, material production and population, while the social and cultural parameters proper are represented extremely poorly.

These models interpret the global nature of posing the problem as mankind being non-differentiated with respect to any of the parameters: the “world as a whole” is considered, without distinguishing the social classes and strata, countries and regions. Only the average characteristics of production and consumption are taken into account. Income, services and food are computed “per capita”, an average member of mankind. Differentiation is introduced only for demographic parameters (birth-and death-rates), and it is also of a demographic nature, according to age groups. Therefore, all these parameters have been “purified” to remove their specifically social content.

It is noteworthy, however, that the authors of the above models, even with such an approach, had nevertheless to employ certain cultural parameters, for instance, *education*, *health care*. True, these parameters have been introduced in their “physicalist” function: as factors that affect the birth-rate (education) or the death-rate (health care). But in this case too there is convincing evidence of the fact that no matter what approach is adopted, even a purely “physicalist” one, global models cannot be constructed without socio-cultural parameters. Thus, in the first global models the parameters were selected not on the basis of general theoretical (socio-philosophical) criteria but on that of concrete scientific and applied ones. The general theoretical meaning of the problem consequently was reduced to identification of the actual connections between the parameters, on the one hand, and a definite mathematical theory, on the other, making it possible to

formalise these connections; as is generally known, the methodology of systems dynamics that had been formulated earlier by Forrester for other problems and which proved to be a convenient apparatus for the construction of the global model was applied and developed in these models.

The results of the models "World-2" and "World-3" are widely known; above all see the book by D. Meadows *et al.*³ They can be summed up as follows: if the present tendencies continue, the gross output, the size of the population and environmental pollution increase, while the unrenewable resources of the planet decrease as an exponential function, then already in the 21st century a general crisis is inevitable which will result in a catastrophic decrease of the gross output and population size. This crisis can be prevented if the world immediately adopts the strategy of "global equilibrium" which provides for artificial stabilisation by 1990 of industrial capital and the population size (the birth-rate should become equal to the death-rate). The authors have not suggested any concrete ways of achieving these goals.

M. Mesarović and E. Pestel criticised these models as mechanical, unmanageable and over-aggregated; they formulated in their project the task of constructing a "cybernetic" model of the world.⁴ Their criticism was justified, although it was within the context of the mathematical control theory. To counterbalance the systems dynamics methodology, the theory of multilevel systems, developed by Mesarović in application to the problems of modelling and control of the organisation systems, was advanced.⁵

This theory generalised and shaped a number of essential elements of the structure and functioning of the organisation systems, which enabled Mesarović to use this kind of general theoretical prerequisites as a basis to formulate several new (in comparison with the work of Forrester and Meadows) ideas concerning the construction of the global model. These ideas can be reduced to three points:

1. A model should include no less than three levels: a) the causal level which describes the objective, production-technological and ecological-geographical processes; b) the organisational level which describes the collective actions of persons who decide on the change of the objective processes; c) the value-normative level which describes the formation of the social values and the goals of decision-making organisations and persons.

2. A model should be manageable, i.e., to operate in a dialogue regime between the experts who make decisions with respect to one or another strategy and the computer.

3. A model should describe the world not merely as a uniform whole but as a system of interconnected regions.

Accordingly, a number of new social and cultural parameters are introduced into the model: *regions* as the sub-systems of the global system, singled out, true, mainly according to economic-geographical criteria, but with due account of some social and cultural characteristics (10 regions); *social norms* and *values* the goals of organisations; the *subject of management*, i.e., the person who makes decisions in accordance with his (her) values, norms, goals.

In the opinion of Soviet specialists, Mesarović and Pestel's report to the Club of Rome as well as other materials presented by them contain rather a programme for the construction of the global model and individual fragments dealing with the solution of special problems than a finished model as yet.⁶ The subject of management is offered several alternative scenarios; it remains unclear, however, how he (she) chooses those managerial strategies which he (she) would like to check, and whether it would be possible for him (her) to find the most rational solution by sorting out several such actions that have been chosen arbitrarily.

Nevertheless, the new approach that has been realised on the basis of the theory of multilevel systems and has required the introduction of new social and cultural parameters in the global model allowed Mesarović and Pestel to obtain new results with respect to the nature of the trends in mankind's development. As was shown by computations, the world is facing the threat not of a global catastrophe in the 21st century but of a series of crises which move from region to region; the first of these crises will take place already at the end of the 1970s (hunger, followed by mass infant mortality in Southeast Asia).

Mesarović and Pestel made use of these results to advance the strategy of "organic growth" (to counterbalance the strategy of "global equilibrium"). It suggests the differentiation of the trends and rate of world development with respect to various regions: during each period in some regions one should observe an increase or a decrease of the growth rates of some parameters, in other regions—of other parameters.

Thus, there is an essential difference between the Mesarović-Pestel results, on the one hand, and those of Forrester-Meadows, on the other. This difference, however, is associated with the different approaches within the framework of the formal (mathematical) and not the informal (socio-philosophical) general theoretical description of the object. We have noted above that it is difficult to identify the Forrester-Meadows approach with any definite socio-philosophical concept. The same holds true of the Mesarović-Pestel method. It by no means follows from this, however, that these approaches are free from any of the influences of current socio-philosophical concepts.

First, the authors of both of the above approaches orient themselves on fixing values and interconnections of parameters which reveal certain profound essential characteristics of the object, without however making a general theoretical analysis of these characteristics themselves. Here the effect of positivist philosophical views is evident.

Second, the set of parameters that are obtained from the concrete sciences, especially economic ones, makes it possible to trace the effect of bourgeois socio-economic concepts. The tabulated functions of capital investment distributions, which are used in the above models, reflect the mechanisms only of the capitalist methods of production, first of all, the mechanisms of the maximisation of surplus value with all their prerequisites and consequences (private property in the means of production, exploitation of wage labour, etc.); all these mechanisms, however, are tacitly interpreted as "universal" and are extrapolated over the whole 21st century.

Third, the authors' attitude to the possibilities of controlling the global system shows the effect of current bourgeois socio-political concepts. The influence of different conceptions is apparent in different models. For the models of Forrester-Meadows fatal-pessimistic features are typical. On the other hand, the Mesarović-Pestel models reveal the effect of scientific-technocratic concepts.

Thus, as far as the above models are concerned, the general thesis that scientific studies in any field, and especially in the modelling of global systems, cannot be free from the influence of some or other philosophical and socio-political views, is reaffirmed. This can be seen especially clearly from still another global model, the so-called Latin American Bariloche model that was developed at the same time as the Mesarović-Pestel model.

This model which has been formulated under the supervision of Prof. A. Herrera differs in many respects from the above models. Deep contradictions are typical of it. On the one hand, the authors consciously attach priority not to the formal-mathematical, but to the informal, socio-philosophical description of the object: such notions as "needs" and "capabilities", "freedom" and "equality", "management" and "self-management" are introduced.⁷ On the other hand, most of these notions are not operationalised and are not used in the construction of the mathematical model proper.

The informal theses themselves are also contradictory. On the one hand, capitalism is rejected, and the socialist principles of public property in the means of production, centralised planning are proclaimed. On the other hand, the authors do not accept real socialism, while the proclaimed socialist principles are

described by the authors themselves as a kind of "social utopia".

This contradictoriness is vividly expressed in the division of the world into four regions, one of which are the developed countries (not divided into capitalist and socialist), and the three other regions—the developing countries grouped on the geographical basis. This is where the root of the contradictions is disclosed: primary importance is attached not to the difference between capitalism and real socialism but to the division of the world into "rich" and "poor" regions and countries. The main models of interaction between the regions were constructed according to this division, i.e., with or without economic aid to the "poor" regions from the "rich" ones. The practical conclusion that follows from the model experiments is that aid to the "poor" regions from the "rich" countries should amount up to two per cent of the annual end product of the latter.

For all the erroneousess of dividing the world into "rich" and "poor" regions and the profound contradictoriness of the Bariloche model, it represents a certain step forward in the development of social indicators used for the construction of the global model. First, the requirement is consciously formulated to be guided by some socio-philosophical concept in the selection of these indicators; true, this requirement, is declared rather than realised. Second, certain new indicators are made operational and introduced into the mathematical model.

The most important of them are "*satisfactory conditions of life*". By this is meant certain levels of nutrition and housing, medical care and education. There is a fundamental difference between this parameter and biological "survival"; the former cannot be reduced to the extreme "to live or not to live" but includes the normative formulation of the question about a certain minimum of living conditions that satisfy the main needs of the human being. It seems to us, though, that the definition "satisfactory conditions of life" would be incomplete if it did not include the guarantee of labour the content of which corresponds to the worker's qualification; accordingly, certain conditions of labour should be taken into account and the principle of payment according to work done should be guaranteed.

Another essential parameter to which special attention is paid in this model is *urbanisation*. It includes the operational characteristics of the living conditions of the urban and rural population, the migration processes from the village to the city and some other aspects.

Without formulating the task of tracing the application of social indicators in all the available global models, we might note still another aspect which is beginning to emerge in certain models under development and is of fundamental importance. In the

specialised "Model of International Relations in Agriculture" (project "MOIRA" which is being elaborated by a group of Dutch specialists under H. Linnemann), along with a clear distinction between the capitalist countries and the mechanisms of the functioning of their economy, the parameter "*socio-economic group*" is introduced for the first time in global modelling. What is meant is the existence of socio-professional groups in a society (country) with different levels of income.⁸ Thus, for instance, for the capitalist society six such groups have been identified differing from each other considerably in the level of income and consumption.

Of course, the level of income is by no means the only indicator of social groups and should be supplemented by other indicators (the absence or the presence of production means, their nature, size, etc.). In this case, if the parameter "social group" is introduced into the model, it would be possible to obtain a concrete picture of the socio-economic processes and their real trends, rather than a result averaged globally or according to large regions.

Let us summarise what has been said and draw conclusions with respect to certain unsolved problems in the field of the application of social indicators in global modelling.

1. All the existing global models use some or other social indicators. There is a trend towards expansion of their number. The most important indicators used are: the socio-economic region, the social group, urbanisation, satisfactory conditions of life, social values and norms, the subject of management.

2. The extreme incompleteness of the indicators used is striking if one approaches it from the socio-philosophical, i.e., from the informal general theoretical point of view; this shortcoming becomes all the more important if one takes into account the fact that only some of the indicators enumerated above are applied in each individual model.

3. The reason for this is that many specialists who participate in the construction of global models have by no means realised the necessity of being guided by a certain socio-philosophical concept that specifies the general theoretical criteria for the selection of social indicators. On the other hand, this apparently shows also the weakness of the Western socio-philosophical concepts themselves, which are not sufficiently lucid and substantiated for solving the problems of mathematical modelling.

4. The task is to formulate an integral system of the main social indicators for global modelling, which would meet the requirements of necessity and sufficiency. In our view this system may be regarded as satisfactory if it meets the following requirements:

a) the parameters included in it should be theoretically substantiated from positions of an integral socio-philosophical concept and at the same time be operationalisable and quantifiable (directly or indirectly);

b) as far as the composition of parameters is concerned, it should be relatively universal and at the same time sufficiently flexible, so that it would be possible to modify it for specific problems that are solved in the construction of a global model;

c) being relatively independent, it should be at the same time connected with other subsystems of model indicators (economic, ecological, and so on), in other words, should represent a subsystem of a broader, integral system of parameters of the global model.

5. In our view it is the Marxist philosophy and sociology that are that general theoretical concept from which position one can solve successfully the problem formulated above. Dialectical materialism represents an integral scientific ideology which synthesises the scientific achievements in nature, technology, society and thought.⁹ The sociology of Marxism contains a system of concepts that express the laws of social progress, the structure and dynamics of various types of societies. It is oriented towards a purposeful, practical restructuring of the world and utilises modern methods of management, including the methods of systems analysis and mathematical modelling.¹⁰ In sociological research methods of operationalisation and quantification of many general concepts have been developed, and a substantial amount of primary information has been obtained.

It does not mean, however, that there is already an available system of social indicators that correspond to the special tasks of global modelling. In order to construct such a system, both a more precise solution of certain traditional problems and of a number of new ones which appear in connection with the new tasks, are required. Let us describe a few of such problems.

a) First of all, the necessity to operationalise, for the purposes of global modelling, the concept "social indicator" once again gives rise to the old problem: what is "social". This problem is widely debated in the USSR and other countries.

In the West, one observes the emergence of the so-called "social indicators movement". Its adherents stress the inadequacy of the GNP concept that was prevalent up until recently, for an integral characteristic of the state of society as a whole and the conditions of life of its members, and advance a new concept: the "quality of life".¹¹ According to some authors, the group of social indicators includes most of the basic parameters of the life of society: population, environment, technology, etc.,¹² according to

others, the social parameters constitute a more narrow circle that includes labour, the social community, the family, and so on.¹³

It follows from the analysis that there are three basic meanings of the notion "social": the first meaning is associated with the specificity of human society as distinct from nature as a whole and from the animal kingdom especially; it points to the historic character of social phenomena and processes, to their being conditioned by the internal laws of the society itself; the second meaning is related to the identification of the concrete internal structure and dynamics of society, of the historically changing forms of the joint vital activity of people; the third—to a description of the conditions and content of the development of the individual, of the personality. Thus, the nature of the first meaning is general, while that of the second and the third are more special. In the construction of the global model each of them performs its own methodological functions.

One of the urgent problems the solution of which would promote the operationalisation of the concept "social indicator", essential for the compilation of the list of indicators for global modelling is the specification of the main meanings of the concept "social".

b) The second group of problems is composed of the compilation of the list of social indicators and the determination of their internal structure.

First of all, it is necessary to formulate the foundations for the classification of these indicators. The problem lies in there being a large number of such foundations, which it would be desirable to reduce to a certain minimum.

From the most general view, there are theoretical and empirical foundations of classification. The theoretical foundations, in their turn, can be divided into formal and informal.

As far as their informal aspect is concerned, there is a whole set of foundations of classification. Distinguishing between parameters according to their role in the functioning of the social system, that is, the identification of the determining and the determined parameters if there is a feedback from the second group to the first, is fundamental.

Also essential are the structural approaches: distinguishing between the horizontal levels of the system (from the global to the individual one) as well as between its vertical spheres (production, services, etc., including management). The historical approach calls for identifying the types and states of the social systems replacing each other and, accordingly, the indicators of the past, present and future. Distinguishing between the objective and subjective indicators (i.e., between the actual situation and the way

it is perceived subjectively) is also important. There is a close relationship between all these and other informal approaches: they interweave with one another.

In addition to this, the formal (mathematical) theory specifies a number of foundations for classification. This is distinguishing between indicators according to the possibility of their quantification, aggregation-desaggregation, etc.

Finally, indicators can be classified also according to certain empirical foundations: the availability of information sources, of the methods of obtaining it, etc.

The theoretical (both formal and informal) and the empirical foundations of the indicator classification are interconnected (first of all, because they have to be realised within the framework of a single model). To avoid the model being excessively complex and non-realizable the number of these foundations have to be reduced to the necessary and sufficient minimum. The greatest difficulty is the problem of minimisation of the informal foundations.

Different approaches to the solution of this problem are possible. Some specialists propose the ideal "pyramid of indices": its apex is composed of such values as abundance, health, equality; the middle level—of intermediate abstractions (for instance, "abundance" is differentiated to include the production of various commodities, services, etc.); the foundation of the pyramid contains a broad list of specific indicators that can be related to the above intermediate abstractions.¹⁴ Other specialists, noting that the "pyramid" is unrealistic, construct the "cube of indices" according to three foundations: 1) the objective and the subjective indices; 2) the aggregated and global quantities, dispersion quantities, covariational quantities; 3) the actually existing and potentially applicable indices.¹⁵ There is no convincing solution as yet, however, of this problem on the whole, and especially in application to the tasks of global modelling.

c) The third group of problems which we shall only mention here is the selection of the basic (from a great number of possible) mutual relations of the social indicators with other indicators of the global model: the economic, ecological, etc., in accordance with the requirements of the integrity of the model.

6. The construction of a system of social indicators poses also a number of problems for the purely mathematical theory of modelling and control. For instance, is the identification of the global system as a whole and especially its social subsystem as a multilevel hierarchical system sufficiently correct? According to Mesarović, one of the indispensable characteristics of the hierarchical system is the priority of actions or the right of interference of the upper level subsystems into the activity of the lower level

subsystems.¹⁶ But what should be interpreted as such an upper level with respect to the global system?

Another problem is the identification of the mathematical apparatus which is suitable for describing the historical variability of the object and of the mechanisms of its functioning. There are also other problems.¹⁷

In conclusion we would like to stress the fact that the above and other formal and informal problems can be solved only through the joint efforts of philosophers, sociologists, historians, economists, mathematicians and specialists in the field of the modelling of large systems.

NOTES

- ¹ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy. 25th Congress of the CPSU*, Moscow, 1976, p. 98.
- ² For more details, see V. A. Gelovani, A. A. Piontkovsky, V. V. Yurchenko, "Modelling of Global Systems", *Survey of the Committee on the Systems Analysis, Presidium of the USSR Academy of Sciences*, No. 5, 1975; V. Zagladin, I. Frolov, "The Global Problems of Our Times", *Social Sciences*, No. 4, 1977.
- ³ D. H. Meadows et al., *The Limits to Growth*, New York, 1972.
- ⁴ M. Mesarović, E. Pestel, *Mankind at the Turning Point. The Second Report to the Club of Rome*, 1974.
- ⁵ M. Mesarović, D. Macko, J. Takahara, *Theory of Hierarchical, Multilevel Systems*, New York, 1970.
- ⁶ V. A. Gelovani, A. A. Piontkovsky, V. V. Yurchenko, op. cit.
- ⁷ M. Kaplan, "Towards an Alternative World Model; The Socio-Political Dimensions", *Report in the Proceedings of the Seminar on the Latin American World Model of IIASA*, Laxenburg, Austria, 1974.
- ⁸ H. Linnemann et al., *MOIRA: A Model of International Relations in Agriculture. Paper for the Third IIASA Symposium on Global Modelling (Food and Agriculture)*, Laxenburg, 1975.
- ⁹ P. N. Fedoseyev, *Communism and Philosophy*, Moscow, 1971 (in Russian).
- ¹⁰ A. Campbell, P. Converse, *The Human Meaning of Social Change*, New York, 1972.
- ¹¹ S. Encel et al., *The Art of Anticipation. Values and Methods in Forecastings*, London, 1975.
- ¹² *Social Intelligence for America's Future*, ed. by B. Gross, Boston, 1969; *Social Trends*, ed. by M. Nissel, London, 1970.
- ¹³ A. Campbell, P. Converse, op. cit.
- ¹⁴ B. Gross, *The State of the Nation*, London, 1966.
- ¹⁵ See S. Encel et al., op. cit.
- ¹⁶ M. Mesarović, D. Macko, J. Takahara, op. cit.
- ¹⁷ For more details, see N. I. Lapin, V. A. Gelovani, "Methodological Problems of Global Modelling", *Cooperation of the Sciences in the Solution of Economic Problems*, Moscow-Obninsk, 1976 (in Russian).

The Methodology of Science and Systems Approach

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The development of systems methods for the analysis of scientific knowledge has of late begun to acquire increasing importance among the various trends of evolution of the science methodology. In content, this set of problems is closely associated with the studies in the general systems theory, the systems approach, etc., and can be regarded as a special branch of these studies.

It is well known that scientific knowledge has been interpreted, since the time of antiquity, as a certain wholeness, a set of interconnected specific elements. Until recently, however, this interpretation has remained intuitive and exercised no important influence on the way in which the structure, the functioning mechanisms and the development of knowledge are revealed. Even in the field which is most developed in this respect, the methodology of deductive sciences that employs the concepts "a formal system", "an axiomatic system", "a constructive system" and so on, the term "system" is used rather with a special, particular meaning (as a fixation of a certain set of symbols, formulas, statements, etc., which are organised according to the adopted rules), instead of a generalised meaning established in the general systems theory and the systems approach (at the best, it is possible to say about the logic and methodology of deductive sciences that they are concerned with only one type of the systems nature of knowledge).

Therefore, in the analysis of knowledge the systems conceptions (in the logic and methodology of science, as well as in other

forms of reflection on science) at present rather constitute the background of such studies (scientists working in these disciplines are usually convinced that scientific knowledge and even its individual components represent the corresponding systems) than appear as constructive principles. *The explication of these intuitive conceptions and the development of methods of systems analysis of knowledge on this basis* is one of the most important problems of the methodology of scientific knowledge and the main objective of the present paper. This branch of the methodology of science is in the making, and for this reason the argument that follows should be regarded as a justification of the corresponding research programme, and not as a presentation of results on its realisation.

Our analysis will be based on the definitions of the fundamental concepts of the general theory of systems and the systems approach, which were formulated previously in our monograph *Foundations of the General Systems Theory*. The term "systems studies" (in the broadest sense of the word) will mean, in particular, the whole totality of modern scientific and technological problems and development projects which, for all their diversity, resemble each other in that they consider the objects under study as systems, i. e., as sets of interconnected elements representing a single whole.

Systems research as a whole is a complex system of interconnected elements in which one should first of all distinguish the *methodological, procedural* aspects of systems studies and the set of *positive, concrete results* obtained in them. The first aspect represents the *systems approach*, or the *systems method* which can thus be interpreted as the explicit expression of procedures for representing objects as systems and of the methods of their systems study (description, explanation, prediction, design, etc.). It is quite natural that the "systems approach" may appear in the minds of scientists and be fixed in the corresponding texts in different forms, beginning with the empirical semi-intuitive description of the specific procedures of systems research, and ending with the rigorous (in a particular case, mathematical) specification of the general systems principles and methods.

The second aspect of systems studies, i. e., the set of positive results obtained in them, can be termed *systems theories*. This group includes scientific systems theories proper (systems conceptions of biology, psychology, sociology, and so on), the formal systems theories (the control theories, the theory of organisation, etc.) and applied systems theories (the systems technology, systems analysis, operations research, etc.). Obviously, systems theories differ essentially from each other with respect to the generality and the type of scientific and technological fields for the description of which they are formulated.

In the system of modern systems studies, an important place belongs to various forms of *theoretical realisation* of systems studies—to the *logic and methodology of systems research, the general systems theory, the philosophical problems of systems studies*. It has been demonstrated convincingly in the Marxist literature published recently that the systems principle "constitutes an essential element of the dialectical method as a whole and of the dialectical and materialist theory of knowledge", "*one of the facets of the theory and methodology of dialectical and historical materialism*".¹

As for the general systems theory, far from claiming the coverage of the whole systems set of problems, it represents only one sphere of the modern *interdisciplinary* studies and formulates its tasks as: 1) the development of the methods of presenting the objects under study as systems; 2) the construction of generalised models of systems and models of various classes and properties of systems, including models of dynamics of systems, their goal-oriented behaviour, their historical development, the hierarchical structure, the control processes in systems, etc.; 3) the study of the conceptual structure of systems theories.

According to our point of view, the general systems theory should be interpreted not as a generalised scientific and technological theory on systems of any classes and types but as a *metatheory* with respect to specialised systems theories (biological, psychological, sociological, technological, etc.) and various systems conceptions and developments. Such interpretation of the general systems theory becomes more and more widespread (see in this connection the articles by P. Caws² and G. J. Klir³). Understood in this way, the specialised systems theories represent theories of various classes of real systems, while the general systems theory is a general theory of systems theories, and it is only through the latter that it applies to the world of real (material and ideal) systems.

When the above interpretation of the nature of the general systems theory is taken into account, the close relationship between the objectives and the tasks of the general systems theory, on the one hand, and the systems study of scientific knowledge, on the other, becomes obvious. In these two modern methodological disciplines, many aspects both of the objects of the study (scientific knowledge) and of the means employed for the analysis of these objects (the systems research methods) coincide. The main difference consists in that within the framework of the general systems theory we are interested in a special kind of knowledge—the systems theories, and the systems study of scientific knowledge implies the identification of the general systems properties of any kind of scientific knowledge. Thus, the mutual influence of results obtained in these two spheres of research becomes obvious.

As was already noted, the systems principles and ideas did not produce an essential, explicit effect on the development of the methodology of science; in spite of this, however, when one considers the history of evolution of methodological conceptions in the 20th century, one can discover a well expressed *tendency* to the understanding of the systems nature of scientific knowledge and to the construction of the corresponding means which would make it possible to analyse knowledge from this point of view. Speaking of such tendency, we have in mind first of all the Western logical and methodological literature of the last 5 or 6 decades. It is with the analysis of this literature that we are going to be occupied in this section of the paper. Such critical study is certainly of interest for the development of the Marxist concept of the logic and the methodology of science. We shall describe certain elements of this history which are the most essential as far as our topic is concerned, with the methodology of science being regarded in the narrow sense of the word as one of the metascientific disciplines which analyses the methods of building scientific knowledge, mainly natural scientific.

As is well known, beginning with the third decade of the 20th century, the logical and methodological concept was formed in Western literature within the framework of neopositivism or logical empiricism, which played the dominating role up to the end of the fifties and the early sixties. This concept, whose principles are widely known, developed a special understanding of the problems in the logic and methodology of science (the context of "justification", and not that of "discovery") and advanced the long-advertised ideal of the rational construction of scientific knowledge (in the form of a hypothetical and deductive system the part of the basic concepts of which are characterised by directly observable contents while the relations between its statements represent logical relations established in modern formal logic). Thereby the concept dictated the choice of problems that should be subject to the study in this field, and determined the norms and principles of scientific activity which were obligatory for the community of logicians and specialists in the methodology of science. A major role in the formulation of this concept (we shall call it, following A. E. Levin,⁴ *the standard concept of the methodology of science*) belongs to R. Carnap, H. Reichenbach, M. Schlick, Ph. Frank, E. Nagel and others who based their studies in their own turn, on the works of B. Russell and L. Wittgenstein.

Its authors, in their attempt to eliminate the internal contradictions and anomalies which came to light quite rapidly during the

development of this concept, agreed, beginning with the mid-thirties, to liberalise considerably their initial assumptions. The history of development of the standard concept is described and analysed in detail in literature, including the Marxist one.⁵

In spite of all endeavours to save the standard concept, however, which sometimes occur even at present, this concept, which was not vigorous enough to stand its ground against the numerous external and internal critics, now practically belongs to history. Yet, H. Feigl, one of its pillars, tried, even in 1974 not very convincingly to defend at least one of the basic theses of the standard concept—the empirical interpretation of the foundations of scientific knowledge.⁶

The meaning for the Western logic and methodology of science of the rejection of the standard concept was the rejection, not only of the unified but even of the more or less widely adopted system of methodological views and conceptions in general (at any rate, this is exactly the present situation in this field). Indeed, instead of the standard concept which did not justify itself historically, the numerous alternative theories, methodological approaches and loud-mouthed projects of formulation of the new logic and methodology of science appeared in the modern Western logical and methodological literature. They are all critical with respect to the neopositivist concept, with most of them (this is also how their negative attitude towards the standard concept is revealed) taking into account, not only purely methodological considerations and arguments but historical and scientific data and facts as well.

Certainly, in the present paper we cannot afford to give a detailed critical analysis of the modern stage of development of the logic and methodology of science in the West. Our consideration will be limited to just one aspect of this problem—to the comparison of the standard concept with the approaches alternative to it that appeared during the last decades, from the point of view of *their realisation of the systems nature of scientific knowledge and their striving for constructing the methodology of science on the systems basis*. It is necessary to emphasise here that in what follows the point in question will be not the philosophical foundations and problems of certain concepts of the Western scientists (neopositivism, Popperianism, the "historical school", etc.) but their, so to speak, logical and methodological skeleton which is irrelevant in some respect to the adoption of one or another philosophical position. As for the purely philosophical views of the modern Western methodological and historico-scientific schools, they have already received a detailed Marxist assessment.⁷ In this case our main thesis will consist in that as far as modern methodological approaches are concerned (in contrast to the standard concept),

the systems property in the interpretation of scientific knowledge, although frequently not formulated explicitly, represents an important factor which determines the specificity of methodological constructions.

As is well known, the essential element of any methodological and historico-scientific concept is the choice of the basic unit of analysis. Within the framework of the standard approach this role belongs to the *scientific theory*. As a matter of fact, the standard concept can be regarded as a certain method of logical and methodological analysis of natural-scientific theories, and its failure—as the evidence of the need to subject the legitimacy of singling out such basic unit of analysis to a critical study.

The rejection of the thesis of a scientific theory being a unit of methodological research can manifest itself in various forms which are determined by the nature of objects that are supposed to be considered instead of the scientific theory or alongside with it. Some of such forms of rejection (that are logically possible) are realised in the modern Western methodological and historico-scientific literature. Let us name the most important of them. In the standard concept, the scientific theory not only was separated from metaphysics but the latter was in general declared meaningless (in the above articles the term “metaphysics” means the set of philosophical statements about being. This meaning is going to be preserved here). For this reason, K. Popper's methodology of the growth of knowledge,⁸ which is more liberal with respect to metaphysics and recognises its role in the process of variation of knowledge, appeared already as a form of rejection of the above thesis of the standard concept.

If metaphysical statements are significant for scientific progress, the latter can be understood only if the corresponding scientific theories are analysed together with their “metaphysical environment”. Thus, it is not the scientific theory as such but the scientific theory combined with the related *metaphysical (ontological) assertions*—that should be the initial unit of methodological and historico-scientific research. This trend of the development of the modern Western philosophy of science became widespread,⁹ and although the problem of the functions and the role of metaphysics in the spiritual human culture cannot be regarded as completely solved, the very direction of this development expresses, as a matter of fact, a definite step forward in the understanding of the systems nature of scientific knowledge in general and the scientific theory in particular.

A number of systems consequences of such an approach can be obtained comparatively easily. If one makes use of the criterion of the scientific property, according to which a scientific theory contains only such statements that can be verified and/or falsified

empirically (this abstraction is permissible in the solution of a certain sphere of problems), the scientific theory interpreted in this way turns out to be a subsystem of scientific knowledge, and the specificity of the latter can only be understood if its other subsystems, in particular, the sets of metaphysical (ontological) assertions that are accepted in a given theory, are taken into account. At a different level of abstraction the corresponding ontological assumptions are included in the scientific theory; in this case, however, as in the preceding one, the theory appears as a wholeness, a system which stands opposed to and interacts with its environment—the empirical, metaphysical, normative, etc.

Another form of rejection of the above thesis of the standard concept consists in making an assumption to the effect that the basic object of analysis should be a certain *set of scientific theories* that are related to the study of a given sphere of reality and either coexist synchronously or historically replace each other. Although the reasons for the transition from the analysis of a single theory to the study of a set of theories may differ, the most important of them is that when an individual scientific theory is considered, the problem of the mechanisms of its growth and development not only cannot be solved but cannot even be formulated rationally. Among many modern Western concepts that follow this trend, I. Lakatos' “methodology of scientific research programmes”,¹⁰ the systems orientation of which is beyond doubt, became most widely known.

In particular, the following conclusion can be derived from the analysis of this concept: the methodology of science turns out to be capable of defining more or less adequately the concepts that are essential for it (such as the “acceptability of a theory”, the “increase of knowledge”, etc.) only when a certain sequence of theories, i.e., a *system of historically varying knowledge* is chosen as its subject-matter.

Finally, other more radical forms of rejection of the thesis about the scientific theory as the basic unit of the analysis of scientific knowledge are also possible. In this case, instead of a scientific theory, the authors suggest consideration of *scientific problems* (K. Popper), *evolving populations of concepts and explanatory procedures* (S. Toulmin), *paradigms* (T. Kuhn and his followers), and so on. Popper made the first step in this direction though it was quite a timid one (he interprets problems as the initial and the final points in a certain period of the growth of knowledge, while knowledge itself appears in the form of hypotheses or theories to the methods of the analysis of which he devoted a greater part of his publications), Toulmin, on the other hand, resolutely rejects this thesis of the standard concept.¹¹

The evolving populations of concepts are associated not with

scientific theories but with disciplines, quite different formations an essential element of which is the corresponding scientific community. The problems of the methodology of science interpreted in this manner come close to those of the science of sciences, the complex study of science.¹² In this case the systems approach to the analysis of science manifests itself, in particular, in that science appearing as a *complex evolving system in the unity of its epistemological functions and the forms of its social organisation*.

Whereas the thesis on a scientific theory being the basic unit of analysis defined a class of objects that are subject to the study within the framework of the standard conception, the *model of the scientific theory* developed in this conception determined that object content (a rigorously fixed set of aspects and properties of a scientific theory) which can be realised and subjected to an analysis by adherents of this conception. This model was based on the thesis of a scientific theory as a certain *set* (or a class) of *statements* (assertions, propositions). As quite correctly noted by W. Stegmüller, this thesis was uncritically transferred into the methodology and the history of science from modern mathematical logic and mathematics,¹³ but while it has proved fruitful in the field just mentioned, it has created many unresolvable problems in the methodology of science (Stegmüller calls it the "statement view of theory") (in particular, the problem of distinction of and connection between theoretical and empirical statements).

As far as methodology is concerned, the "statement view" means priority, the primacy of elements (individual statements) over the whole (the theory) and leads to the properties of a theory as a certain wholeness (within the framework of the standard concept) being wholly determined by the properties of the statements contained in it as well as by those logical connections that exist between these statements.

The rejection of the above thesis of the standard conception, the so called "non-statement view of the theory", is based on the interpretation of the scientific theory as a certain wholeness (system) which can be separated, depending on the problems facing the researcher, into various sets of elements. It is natural that the specific forms of the rejection of the above thesis of the standard concept can be quite different. For instance, Stegmüller, being guided by J.D. Sneed's work,¹⁴ believes that every theory is determined by the corresponding set-theoretical predicate introduced axiomatically and specific for a given theory¹⁵; in T. Kuhn's works, the theories of normal science are conditioned by the adopted paradigm¹⁶; finally, for most adherents of the "historical school in the methodology of science" the thesis of the theory's primacy over the observational statements appears in the form of ascertaining of the "theoretical ladenness of observations" (in

Western literature this assertion was first advanced by N.R. Hanson and became most radically expressed in R. Feyerabend's works).¹⁷

The thesis of the theoretical ladenness of observations which is adopted today by most West European and American specialists in the methodology and history of science represents a rejection not only of the standard understanding of the theory as a set of statements but a critical overcoming as well of concepts on the more refined structure of the theory which were developed within the framework of neopositivism. These concepts on the structure of theory are based on the separation of terms of the theory language into three non-overlapping dictionaries: the dictionary of logical terms, the dictionary of observations and the theoretical dictionary, the terms of the last dictionary being determined in one or another way (explicitly by applying the correspondence rules, on the basis of reduction statements, and by means of partial interpretation) on the basis of the terms of the observations dictionary. An essential element of such understanding of the structure of a theory is the recognition of a certain initial basis of knowledge which cannot be subjected to any doubt (the so-called thesis of "fundamentalism").

It is quite obvious that the above concept ignores the systems mutual conditionality of the elements of a scientific theory. By the thesis of fundamentalism the presence of a certain basis of scientific knowledge which is absolutely true and is independent of the remaining structure of scientific knowledge is postulated. The search for such basis, however, which was frequently undertaken during the course of history of philosophical empiricism each time ended in failure. The main reason is the artificial destruction of the wholeness of scientific knowledge under the conditions of which its certain component that was capable of functioning and being understood only as a part of this whole was ascribed an independent and isolated existence. The collapse of the fundamentalist illusions of the standard concept that manifested itself, first of all, in the firm rejection of the ideas of physicalism and the understanding of the nature of protocol sentences related to it meant also the inadequacy of the division of the theory dictionary into three isolated classes. At any rate, under the conditions of such an approach, logical empiricism, regardless of the effort undertaken, failed to establish the ways of logical connection between theoretical and empirical terms and statements, in other words, to resolve the question which was essential for the understanding of the wholeness of scientific knowledge.

Certainly, the above alternative approaches to the understanding of the structure of scientific knowledge, above all the thesis of the "theoretical ladenness of observations" which is specific for

them, represent a certain step forward in the realisation of the systems relationship between the elements of knowledge. The scientific theory does not consist of autonomous, isolated parts the logical connections between which are established only during its reconstruction; it is created and evolves as a certain whole. For this reason, if the observational statements can, in a certain sense, be used for verification of a theory, they themselves bear the stamp of the theoretical level of knowledge. One should not, certainly, overestimate the constructive possibilities of the above alternative approaches to the analysis of theory; they contain a number of problems which are formulated but are far from being solved; in spite of this, however, one should not also ignore the obvious facts of the systems nature of the scientific theory which have been revealed by these approaches.

Let us finally describe one more group of problems in the interpretation of which the most recent trends of the Western methodology and history of science oppose resolutely the standard conception. According to tradition, at least, during the last hundred years, the main task of the methodology of science has been regarded as that of *rational description of the structure of scientific knowledge*, which, as was assumed, made it possible to *rationally reconstruct the development of knowledge*. In this connection the standard conception advanced the specific understanding of *rationality*, which reduced the rational arguments to the logical reasoning, the purely empirical interpretation of the *foundations of scientific knowledge*, associated with such understanding of rationality, and the *cumulative conception of the development of science* which followed from all basic statements of the logical empiricism. All these theses of the standard conception clearly bore the stamp of reductionism as the logically opposite method to the integral systems approach. We have just demonstrated this with respect to the neopositivist understanding of the foundations of scientific knowledge; now we are going to assess other theses of the standard conception that were named above from the point of view of their aspect that we are concerned with.

In the earlier version of the logical empiricism (during the twenties and the thirties) the rationality was identified with reasoning according to the canons of *deductive logic*. Later, however, during the forties and the fifties, the sphere of the rational was expanded up to that of "generalised logic" which included, along with the classical deductive logic, the inductive (probabilistic), modal, multi-valued and other logical calculi.¹⁸ It was the last of the above interpretations that constituted one of the typical basic assumptions of the standard concept, while one of the first versions of its criticism, Popper's theory of scientific knowledge, which limited the sphere of the rational only to the

field of deductive logic, seemed to return to the historically basic theses of the standard concept. This conclusion is wrong, however. In spite of the verbal coincidence between the above theses, their real meaning is essentially different. As far as the standard concept is concerned, the deductive logic is applied to the sensorily authentic, unconditionally true statements of observation for obtaining scientific statements which are authentically true. Popper, on the other hand, firmly rejects the existence of some unconditionally true basis of scientific knowledge and uses the means of deductive logic for the rational description of the advance of new, more plausible (but nevertheless false) hypotheses that replace the old ones which are less plausible and therefore obsolete.

Present-day Western methodological literature contains also formulations of more resolute forms of rejection of the standard identifying rationality as the logical property, which belong, first of all, to Feuerabend and Toulmin. The latter believes, in particular, that the reduction of the rational to the logical does not make it possible to rationally explain the historical variation of scientific knowledge, and for this reason rationality should be understood as a set of methods and techniques of re-evaluation of the intellectual norms and positions acceptable for a given scientific community.

Thus, as a historically conditioned form of reasoning associated with the norms of scientific activity which are sanctioned by the scientific community at a certain stage of its historic development, rationality stands opposed to extratemporal, absolutely true logical assertions.¹⁹ Such understanding of rationality reveals its obvious systems orientation. Rationality, instead of being interpreted in a one-dimensional way, i.e., only from the epistemological point of view, turns out to be a complex phenomenon the knowledge of which implies taking into account the activity of the corresponding scientific communities, the scientific norms inherent in them, the nature of social relations between the members of these communities, etc.

Perhaps, the most vivid expression of the complex, systems approach to the development of the theory of evolution of science is found in the criticism of the cumulativist concept of the history of science and in the set of alternatives to this concept suggested in the modern Western literature. A. Koiré already made one of the first steps in this direction; according to him, the task of the historiography of science consists in the demonstration of the wholeness of science during the periods of its existence which are historically different; this implies the analysis of the relationships between the ideas of one or another scientist and the ideas of his scientific community. As for Kuhn's paradigm method, it should

be regarded as a certain result arrived at by modern Western thought in its attempts to construct the historiography of science through unification of the historical, methodological, social and psychological aspects of scientific knowledge.

Today many vulnerable points of Kuhn's theory of normal science and scientific revolutions are well realised. The Marxist criticism of Kuhn's concept²⁰ played an important role in their identification. It must be noted, however, that the sharp criticism resulted in some modifications of Kuhn's concept. Even the earlier argument between Kuhn and Lakatos (in the sixties) led to the revision and correction of certain statements of Kuhn's theory. This process is continuing also, in particular, in the course of discussion between Kuhn, Stegmüller and Sneed that took place during the Fifth International Congress for Logic, Methodology and Philosophy of Science (Canada, 1975). Kuhn agreed with two other participants in the discussion who stated the appropriateness and fruitfulness of the use of logical methods in the analysis of scientific theories, developed by Sneed²¹ for the revision and improvement of his concepts on science and its development.²²

We conclude now our analysis of the evolution of methodological views during the last 50-60 years. It seems to us that this consideration is sufficiently convincing to prove the fact that the modern methodology of science realises better and better both the systems nature of its object of study—science and scientific activity—and the necessity of formulation of the corresponding methods for the construction of methodological concepts. In the next section of the paper we are going to present certain considerations on how and by means of what basic concepts the systems methodology of science can be constructed.

* * *

Undoubtedly, the most important concepts in the systems study of scientific knowledge are those of the structure and the system of knowledge.

In order to define the concept or "structure", let us make use of the concepts of "the basic set of elements" and "the set of relations". With respect to any object under study, for instance, scientific knowledge or some or other fragments thereof, the set of elements of which it is composed is defined. Such a set is specified explicitly, through consecutive enumeration of its elements, through the general properties of all elements of the set, etc., and is called the basic set of elements. Let M be the basic set of elements in which subsets A, B, C, \dots, N can be identified. The relation on set M is called a subset of the product of subsets that constitute it. For subset A, B, C, \dots, N of set M the product of these subsets forms a set of ordered n -tuples of elements in which the

first element belongs to subset A , the second—to subset B , ... the n -th—to subset N . The product of the subsets (sets) is denoted by $A \times B \times C \times \dots \times N$. Thus, the set of relations R is defined as $R = A \times B \times C \times \dots \times N$.

If the number of co-factors in the product of sets is equal to two, the relation defined through such product of sets is called binary. In the case of three co-factors we obtain a ternary relation, etc. The relation between set M and the same set M is called a binary relation on set M and is denoted through $R = M \times M$.

By specifying the basic set of elements and the relations defined on this set we can describe the object under study. In this description both the elements and the relations are quite specific. If one abstracts oneself from the specific nature of elements and relations and considers them as abstract formations, the network of connections between such elements and relations forms the structure of the object under study.²³

The determination of the object structure makes it possible for us, on the one hand, to conduct a rigorous, formal derivation of the consequences concerning the elements and relations that are contained in the structure, and on the other, to establish various relationships between the structures of various objects, such as their similarity, similitude, isomorphism, etc., which allows one to use the results of the study of a single object in other fields.

The above general understanding of structure is applied for the analysis of scientific knowledge, mainly for the description of its individual aspects—the syntax and semantics of scientific language, the set of logical rules of inference which are used in a certain theory, etc. The result of this is that many different structural descriptions are constructed with respect to the same object, scientific knowledge. In this connection a question arises about the synthesis of such structural descriptions, and in order to answer it, it is necessary to employ the concept of the system of knowledge.

The concept of *system* is close, in a certain sense, to that of set (each system can be regarded as a set); the methodological natures of these concepts, however, are essentially different. When a set is formed, the basic units are the elements certain combinations of which constitute some or other sets. In the case of a system, on the other hand, the primary consideration is that it is a certain whole composed of interacting (interconnected) parts.²⁴ The elements of a system are not specified beforehand; they are constructed (or selected) in the process of segmentation of the system as a whole, with each system permitting various forms of segmentation. Each segmentation of a system represents a set, while the system itself is not a set.

The above makes it possible to identify the following informal signs of a system. First, the system represents a certain *wholeness* from which follows, in particular, the fundamental irreducibility of its properties to the sum of the properties of the elements composing it, as well as non-deducibility of the properties of the whole from the latter. Second, the system's nature is hierarchical: its every component can be regarded, in its turn, as a system, while the system under study represents just a component of a broader system. This can be used as the basis for formulation of the hierarchy principle for any system—the object is studied actually as a system only if the means of analysis of its every subsystem as a certain system and every system (including the initial system under study of the object as a whole) as a subsystem of a certain broader system are developed. Third, as far as the description of the system is concerned, the principle of *multiplicity of descriptions* holds: in order to obtain sufficient knowledge about the system, the construction of a certain class of its descriptions is required, each of which being able to cover only certain aspects of the wholeness and hierarchy of a given system.

From the general point of view, it is possible to say that the minimal requirement for any system under study is the existence of three different levels of its description: 1) based on the external, integral properties inherent in it; 2) based on its internal structure and the "contribution" of its components to the formation of the integral properties of the system; 3) based on the understanding of a given system as a subsystem of a broader system. In the concrete scientific practice, however, the number of levels of system description is usually greater. Not only each of the above levels of the description of a system may differentiate (for instance, when one analyses the internal structure of a system, one can go down to different "depths" subjecting to further segmentation those elements of the system which are interpreted as further indivisible in a different description, etc.), but for each level different descriptions of the system can be constructed.

The above considerations make it possible to formulate the generalised definition of the system concept. In the literature, in particular, in the articles by Yu. Shreider and E. Rannap the concept of system as a class of sets $S = M_i^j$, where $i = \alpha, \beta, \gamma, \dots$, for each pair of which the many-to-many correspondence $\gamma_{\alpha\beta} : M_i^j \rightarrow M_i^j$ is established.²⁵ Making this definition somewhat more specific, one should single out in the class of sets by means of which the system is described, the subclass of sets M_i^j , where $i = \alpha, \beta, \gamma, \dots$ (these sets represent the segmentations of the initial object, the system, into elements); the subclass of sets $\{L_i^j\}$, where $j = a, b, c, \dots$ (these sets are formed as a result of the subsequent segmentation of the elements of the initial object, the system); the subclass of sets

$\{K_i^k\}$ where $k = 1, 2, 3, \dots$ (each of these sets includes the object-system under study as a certain element). This procedure leads to the following general definition of the system concept: a system S is a class of sets $\{S = M_i^j, L_i^j, K_i^k\}$, where $\{M_i^j\}$, $\{L_i^j\}$ and $\{K_i^k\}$ are different subclasses (with the above interpretation of their elements) combined with the set of correspondences for each pair of sets that may belong to a single subclass as well as to different ones.²⁶

It is quite obvious that for each segmentation of the system one can define the corresponding structure. Thus, a system turns out to be a set of interconnected structures. Each structure, as applied to the study of scientific knowledge, describes one aspect of knowledge; for the description of scientific knowledge as a whole it is necessary to construct the corresponding system (of course, each system is characterised by its specific structure which, in accordance with the concept developed here, represents "the structure of structures", i.e., the structure defined on the structures of sets comprising a given system).

The conceptual apparatus of the systems approach and the general theory of systems, interpreted for description of scientific knowledge, makes it possible to consider certain properties of systems of knowledge.

Systems of knowledge can be divided into closed and open ones. By analogy with the general definitions of the concepts "the closed system" and "the open system",²⁷ for the closed system of knowledge the set of statements that belong to it is limited, while for the open system of knowledge there are no such limits, and it can be constantly replenished with new statements. The closed nature of a system of knowledge is ensured either by explicit enumeration of the statements that pertain to it or by indication of a set of possible conclusions derived from the basic statements (axioms, postulates, etc.) adopted in this system of knowledge. The addition to a complete closed system of knowledge of a statement which is not deducible in it results in a contradiction and, therefore, deprives this system of knowledge of its scientific status. Closed systems of knowledge are first of all axiomatic, formal-deductive constructions.

Empirical scientific systems of knowledge are predominantly open. As a rule, such theoretical constructions interact with the adjacent spheres of knowledge which may be regarded as their environment (medium). The process of addition to a given system of knowledge of new statements that cannot be deduced from the statements already present in the given system is possible and is being constantly realised. Such understanding of the open nature of a system of knowledge is typical of the earlier stages of the construction of a theory and mainly of the development of

theoretical knowledge. It is expedient for the description of scientific knowledge development to make use also of other systems concepts (the systems concepts employed in what follows are defined in Bertalanffy's monograph just mentioned (pp. 66-75), see also our book *Foundations of the General Systems Theory*, pp. 173-174).

Summativity within the framework of the general systems theory means that the variation of any element of the system depends only on itself. The result of this is that the variation of the whole system represents a sum of variations of its elements which are independent of each other (in this case the interaction between the elements is equal to zero, and we are actually dealing with a degenerate system). The property of summativity characterises, at least, certain stages of empirical research (individual experiments and empirical descriptions of an object may be independent of each other), as well as the first steps of the theoretical construction of knowledge (when the general principles that unify the individual elements of knowledge concerning a certain subject-matter field have not yet been established). The pure form of summativity, however, is not inherent in scientific knowledge (there is always a connection between individual elements in it, and the property of summativity may belong only to relatively isolated fragments of knowledge, and even then only at certain stages of their development). Scientific knowledge is characterised by its integral nature.

Unlike summativity, the *wholeness* of an object means that the variation of any element of a system exercises influence over all other system elements and leads to the variation of the whole system, and conversely, the variation of any element depends on variations of all other elements of the system. In this sense the formal, deductive systems of knowledge possess the property of wholeness in full measure. For open systems of knowledge the transition from the state of summativity (which is present to a certain extent) to that of wholeness is typical. This process may be called the *systematisation* of knowledge. The opposite process, *mechanisation*, which represents the transition from the state of wholeness to that of summativity, manifests itself during the radical change of the established theoretical concepts and the origination of new theoretical schemes (paradigms). A new paradigm is more summative than its predecessor, which, as a rule, has brought out to a maximal degree its wholeness-characterised potentialities, after a long evolution. Having been formulated, the new paradigm begins its life cycle when it moves from the state of relative summativity to that of wholeness.

The concepts of centralisation and hierarchical organisation of systems express other aspects of systems of knowledge. *Centralisa-*

tion represents the increase in the interaction coefficients for a part or an individual element of a system. As a result of this, insignificant variations of this part (the leading part of the system) lead to substantial variations of the whole system. The role of the leading part of the systems of knowledge belongs to axioms and rules of inference in formal deductive theories and to the basic theoretical principles in the open systems of knowledge. The inherent element in systems of knowledge is the *hierarchical principle of organisation*: the individual elements of a system represent lower order systems, while the system under consideration appears as an element of a higher order system. For instance, when statements are analysed, they may be regarded as systems of terms, and theories, i.e., systems of statements, may, in their turn, appear as elements of more complex systems of knowledge, e.g., of a certain sequence (logical or historical) of interconnected theories.

* * *

Certainly, the above considerations concerning the possibilities of a systems study of scientific knowledge are only the first approach to this problem.²⁸ It seems to us, however, that even such simple ascertainments are quite sufficient for the positive assessment of the potential of using the ideas of the systems approach and the general systems theory for further development and improvement of modern methodological concepts.

NOTES

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The Historical Experience of the Soviet Five-Year Plans

GENNADI SOROKIN

For over half a century now socialist and communist construction in the USSR has been carried on the basis of five-year plans. The Soviet experience in planning is universally acknowledged, its significance is far-ranging: practical and theoretical, historical and prospective, national and international. Without the five-year plans the practice of communist construction is inconceivable; those plans rest on the firm foundation of advanced economic theory and constantly enrich it. The five-year plans are the economic history of the USSR. The Soviet five-year plans are profoundly national but, at the same time, they have become an international feature and a part of the life of the socialist countries. The developing countries too are, to one or another extent, using the Soviet experience in elaborating five-year plans.

While implementing the five-year plans the working people learned how to manage production without shocks and dissipation, constantly increasing the national income and, thereby, raising their own living standards. The transition to planned socialist economy has enabled man to rise above production and become the master of the productive forces.

In comparison with feudalism, capitalism increased the production potential of mankind enormously but it did not, and could not, teach people how to manage production according to a plan, without exploitation of man by man, and how to distribute the product fairly. Together with the productive forces capitalism accumulates social contradictions, and, as the economic crisis of 1974-1975 showed once again, its inherent defects are incurable.

Socialism alone creates the conditions, forms and methods of economic management that correspond to the present scale of the development of the productive forces, frees the economy from crises and working people from unemployment, and gives full range for economic development in the interests of the transformation of labour and the well-being of all members of society.

* * *

All Soviet long-term plans, beginning with Lenin's plan of electrification, are distinguished by purposefulness. They all have one goal—the creation of a socialist and communist society. Each specific plan, naturally, accomplishes this task conformably to the conditions and possibilities of its time, but the main criterion has always been whether it promotes our country's further advance towards Communism. Lenin's plan of electrification (the GOELRO Plan) embodied his idea that "Communism is Soviet Power plus the electrification of the entire country". Scientists and experts when drawing up that plan took into consideration the broad prospects for economic progress opened up by the proletariat's political victory. They proceeded from the need to bring the economy up to the level of the achievements of our political system. The drafts of the First Five-Year Plan (1929-1932) set the task of advancing towards socialism as quickly as possible, and the Plan itself, as S. Strumilin put it, was to be "a part of our general socio-political Party programme. It is to set concrete assignments for the given five-year period in the field of building socialism."¹

Beginning with the 15th Congress (1927) the Communist Party has been defining the tasks of the five-year plans, above all the programmatic, i.e., politico-economic, ones. The subordination of the plans to a single goal facilitated the concentration of society's material and financial resources and their use in the decisive strategic direction, ensured the priority of social problems over purely production ones, and precluded a technocratic approach to the economy.

The 25th Congress of the CPSU (1976) defined concretely the basic questions of economic policy in the conditions of developed socialist society conformably to the Tenth Five-Year Plan period (1976-1980) and beyond this period. The economic strategy of the country's advance along the road of the steady improvement of the people's material and cultural standards has been outlined. This goal will be achieved by means of the dynamic and proportional development of social production, the enhancement of its efficiency, the acceleration of scientific and technological

progress, increased labour productivity and improvement of the quality of work at all levels of the national economy. The further build-up of the country's economic might, the enlargement and basic renewal of production assets, and the stable and balanced growth of heavy industry are the pivot of the economic strategy.

When raising the economy to the level of the demands of socialism and communism, the Soviet Union took Russia's pre-revolutionary development level in setting the targets of the five-year plans only for a short time and then began to compete with major capitalist countries that were far ahead of the young Soviet Republic. By the beginning of the Tenth Five-Year Plan period, the USSR's gross social product had exceeded the pre-revolutionary level roughly 55 times. Only 25 years ago the Soviet national income was less than one-third that of the United States; in 1975 it was already two-thirds. The USSR leads the world in the production of ores, steel, oil and coal, mineral fertilizers, cement, tractors and some other items, by the end of the Tenth Five-Year Plan period, the Soviet gross industrial output will have exceeded the US level of 1973.

The implementation of the five-year plans made it possible to resolve the very difficult problem of the social and technical transformation of agriculture. The socialist agrarian policy was carried out in two major stages. The first was the creation of a network of state farms, the organisation of 25 million peasant households into producer cooperatives and the primary mechanisation of agriculture where before the Revolution manual labour predominated. This stage is rightly regarded as a socialist revolution in agriculture. It was at that time that the socialist type of agriculture was established, whose stability even the fascist invasion and the invaders' policy of abolishing the collective farms and restoring private ownership of land failed to shake. The collective-farm system set up in the first five-year plan periods has led to the elimination of the social contradictions between private petty-bourgeois production in agriculture and socialised large-scale production in socialist industry. The necessary social and production basis was formed for the further socialisation and advance of Soviet agriculture.

Relying on that basis, it became possible to begin the second stage—the comprehensive industrialisation of socialist agriculture, raising the state and collective farms technically to the level achieved by industry, the balanced development of the two main branches of socialist production, and the accelerated overcoming of the essential distinctions between town and country. The transition to the new stage was economically prepared by the accumulation of state resources and the increased proposition of industries that supplied agriculture with the means of production.

In the Ninth Five-Year Plan period alone, capital investments in agriculture exceeded five times the total capital investments in industry between 1917 and 1941. All that made it possible to create a firm foundation for turning agriculture into a highly developed sector of the economy. In the Tenth Five-Year Plan period the comprehensive mechanisation of crop-farming will be, on the whole, completed, the level of mechanisation in other branches of agriculture, including live-stock farming, will be raised considerably.

The five-year plans ever more consistently concentrate on raising the people's well-being and on creating conditions for the free and allround development of every citizen. The plans and results achieved in this field are varied and well known. To mention only some of the achievements of the Soviet five-year plans.

It was the First Soviet Five-Year Plan that ensured full employment. Full employment has become a major feature of planned economy. Soviet people now work 40.7 hours a week, which is 18 hours less than before the Revolution. Between 1913 and 1975, the real incomes of workers increased 9.4 times, and those of peasants, 13.5 times.

The USSR leads the world in housing construction. Beginning with the Eighth Five-Year Plan period, 100 million square metres of living space are built every year, and from 10 to 11 million people improve their living conditions.

By improving the well-being of its members, socialist society thus develops the main productive force of society—man, for “the development of the productive forces of individuals is the real wealth.”² By enlarging the production apparatus and carrying out the extended reproduction of manpower, planned economy evenly develops all factors of production and gives it new impetus. The plans envisage the achievement of a social homogeneity of labour, the elimination of its unskilled or low-skilled forms and the gradual obliteration of the distinctions between manual and mental work. The intellectual level of people of the new, socialist, system constantly rises. In the USSR universal secondary education has been achieved, in the main; specialised secondary and higher education is widely accessible, the mass vocational training of workers and farmers is carried out at the expense of society. In 1974 alone, vocational schools graduated nearly 2 million skilled workers, trained 1.1 million machine-operators for agriculture, while 27 million factory and office workers trained in new trades and professions, improved their skills without discontinuing work.

The state takes upon itself the health protection of the population. In the years of Soviet government, the number of doctors has increased 28 times. Forty-three million people spend

their holidays at various health centres and resorts every year.

The five-year plans have given life to vast economic areas, particularly to the formerly backward outlying national areas which was of not only economic but fundamental social significance. The population of many formerly backward areas entered socialism, by-passing capitalism. This experience can be useful to many countries and peoples of the world.

The economic victory of socialism is, to an ever greater extent, based on growing efficiency in all spheres of economic activity. The socialist economy has been created on the basis of its own resources, without any assistance from the outside, and despite the counteractions of imperialism and the devastating wars it unleashed against the Soviet Union.

Acceleration of scientific and technological progress, allowing for the broad application of intensive methods of production, underlies the plans of developed socialist society. It is not, of course, a matter of intensifying labour but that of sharply increasing economic efficiency through the application of new implements of labour, technology, automation, i.e., of everything that accelerates and makes production cheaper and lightens labour. There are all the conditions in the USSR for scientific and technological progress. There are 1.3 million research workers in the USSR. Its economy employs 3.2 times more qualified engineers than the USA. The allocations for research make up about five per cent of the national income. The production basis for introducing new technology is highly developed.

The tasks of the USSR's development and the scale of its economic activities expanded with every five-year period. The first Five-Year Plan was oriented towards an offensive against the capitalist elements, economic construction under the slogan “Who will beat whom?”, the socialist restructuring of small-scale commodity production and increase in the share of the socialised sector in the national income up to 65-67 per cent. It was a plan of building the foundation of a socialist economy. Today, when a developed socialist society has taken shape, the Tenth Five-Year Plan advances new, more far-reaching socio-economic tasks: the further rise of the mature socialist economy, the creation of the material and technical basis of communism, the gradual transformation of socialism into communism.

The major social task of the First Five-Year Plan was the reduction of unemployment and partial absorption of the agrarian overpopulation through the intensified development of the branches of agriculture employing mostly manual labour. It was planned to cut unemployment in the towns from 1.1 million to between 511 and 835 thousand people, and the agrarian overpopulation from 8.5 million to between 2.6 and 4.9 million

people. The successful implementation of the First Five-Year Plan in industry and collectivisation put an end to both unemployment and agrarian overpopulation. The socialist society ensures full employment; even more, there is a certain shortage of manpower. This will be overcome through the elimination of unskilled manual labour and by increasing the labour productivity of all workers in every possible way. The Tenth Five-Year Plan provides for big allocations to improve working conditions and the capital-to-labour ratio. Nearly 6 million workers engaged in unskilled manual labour are to be shifted to mechanised or automated jobs.

The First Five-Year Plan began the fulfilment of a most difficult task, that of moulding a socialist intelligentsia, and first and foremost training engineers from among workers and peasants. The success of industrialisation and of the First Five-Year Plan depended on specialists. Industrial higher educational institutions were to train 39,000 engineers in five years. Today, the country's technical institutes graduate more than 250,000 specialists annually. At the beginning of the First Five-Year Plan period, the share of engineers among industrial workers was 3.7 times less than in Germany. Today, the share of engineers in the Soviet economy is several times greater than that in the industrialised capitalist countries. When the First Five-Year Plan period was launched, the country was 50 per cent illiterate, and the average educational level of a worker was 2.5 grades of primary school. By the end of 1975, 77 per cent of the people engaged in the national economy had a higher or secondary (complete or incomplete) education, while almost the entire rising generation had a secondary education.

The scale of production and technical modernisation has also expanded. Compared with 1932, the national income in 1980 will increase 40 times, the production of steel, 28, oil, 29, mineral fertilizers, more than 700, tractors, 39, and consumer goods, 32 times.

A still greater expansion of the scale of production and consumption is envisaged for the period following the Tenth Five-Year Plan period: in 1976-1990 the country's material and fiscal resources will double as compared with the previous 15-year period.

* * *

The elaboration and implementation of the socialist economic plans served as the basis for one of the most remarkable economic doctrines of the 20th century—the theory of planning. It stems from the many-faceted practice of communist construction which also protects it from scholasticism and red tape. During the heated

debates about the First Five-Year Plan, G. Krzhizhanovsky, a prominent figure in planning, said: "The methodology which is based on generalisations in abstract writings is one thing; the methodology which grows on the soil of real practice is quite another thing. I think that the science of planning, just like any other science, grows at the junction of theoretical thought and practical activities. Therefore when some comrades tell me that the methodology of planning should be created anew, I reply: "Sorry, but this methodology has been created in part and its most 'scientific' part probably lies in the practical experience that the country has already gained."³

Today, when, besides the GOELRO Plan, we have the experience of working out ten five-year plans, the science of planning has become a theory that has fused with practice and has been tested by life itself. The theory of planning together with political economy has successfully solved the following problems that are of prime importance for the organisation of planned work:

- that of the historical conditionality of planned economy and its emergence on the basis of socialist property and socialist relations of production;

- that of the correlation between objective economic laws and planning, of the latter's dependence on the development of objective relations of balanced development, of the law of balanced, proportionate development;

- that of planning as the key element of economic management; the state nature of planning under socialism; the need of the CPSU's guidance of planning, the CPSU having a scientific programme for building communism;

- that of a system of plans (long-term, five-year, annual, national, branch, regional and comprehensive programmes, plans of enterprises, counter-plans (see "Our Glossary" section of this journal—*Ed.*), social development plans);

- that of the methods and principles of elaborating plans, and first and foremost a single state plan (the study of social requirements, the determination of rates and proportions, the planning of scientific and technological progress and economic efficiency, a system of general and particular balances, an automated system of accounting and target calculations, coordination of the plans of the socialist countries, the joint planning of integration measures);

- that of the organisation of the implementation of the plans and the check-up of their fulfilment with the broad use of economic levers influencing production, the ever broader involvement of the working people in planning, and with the use of state statistics and accounting;

-that of planning in the world socialist system, the methods and principles of coordinating the national economic plans of the socialist countries, the joint planning of integration measures and branches of industry.

A great contribution to the theory of socialist planning was made by the 25th Congress of the CPSU which outlined a broad programme for improving planned economic management. Of fundamental importance is the orientation of planning on complete solution of the agrarian problem, the acceleration of scientific and technological progress, the enhancement of efficiency and improvement of quality, the orientation on the ultimate economic goals; fuller account of social requirements and their satisfaction at a minimum cost; the improvement of the methods of solving major national, inter-branch and territorial problems in complex; on full account of the time factor, i.e., account of not only material and financial resources but also of the terms of realising various projects; on a more skillful combination of branch and territorial planning (see "Our Glossary"), of long-term and current problems; on ensuring a balanced economy; the improvement of the comprehensive planning of economic and social development.

The restructuring of the economic mechanism charted by the congress has greatly influenced the content of planning, and required that the target figures be supplemented with measures to ensure their achievement, and that the organisation and check up of performance be improved. Thus, the study of social requirements should be accompanied by offering the consumer broader opportunities of influencing production, and the fulfilment of the production and construction plans should be ensured by a skillful utilisation of economic incentives and levers in order, first of all, to achieve high efficiency and quality.

In this connection the great importance should be noted of researches both into general problems of the theory of planning and into specific methodological problems, because it is on the success achieved in this field that the further improvement of practical planning in many respects depends. These researches and broad scientific discussions have already yielded valuable results and made it possible to formulate a number of important propositions and useful recommendations. Some conclusions, however, seem insufficiently substantiated and debatable.

In our opinion, a rather typical theoretical mistake is the one-sided explanation of planned development only by the character of the modern productive forces, when, in fact, it is a characteristic feature of the relations of production under socialism. Of course, today's gigantic productive forces can be rationally used only according to a plan. The Magnitogorsk Steel

Works, for instance, produces three times as much steel as the entire metallurgical industry of tsarist Russia used to produce. It is quite clear that the provision of such a giant with raw materials and fuel and the use of its produce are tied up with the entire national economy, with the systematic guidance of the enterprise by the whole of society.

All the expanded branches of the national economy, the transport and energy systems, the network of oil- and gas-pipelines, the irrigation system, etc., call for planned management. The high level of the development of the productive forces is but a material precondition for a planned economy. Its successful functioning calls for socialist relations of production. Relations of planned development can emerge only on the basis of socialist property and of relations of comradely cooperation in production, distribution, exchange and consumption. It is only in these conditions and in accordance with the aims of socialist production that harmonious proportions between various aspects of reproduction and the branches of the national economy emerge and are consciously maintained. Only comradely cooperation, the absence of exploitation, an equal attitude towards the means of production and distribution according to work done can ensure stable links between all sectors of production, emulation among them, and explain the mechanism of the movement (self-movement) of socialist proportionality.

On the other hand, the characteristics of the complex totality of the relations of production include definition of the objective foundations and quantitative proportions in the distribution of the means of production and labour according to the spheres of activity, the objective foundations and quantitative proportions in the distribution of the product, i.e., definition of the type of economic relations in the process of reproduction.

Many bourgeois economists assert that planning is inherent in the "technological civilisation" of capitalism. J. Galbraith, for instance, believes that the broad use of modern technology and the character of the use of time and capital connected with it have constantly dictated the development of planning in all industrialised societies. He thinks that a "planned system" emerges within bourgeois society and that a sort of "capitalist State Planning Board should be set up". Such an approach tends to ignore the differences between the productive forces and the relations of production and leads to the emasculation of the very essence of planned development. The technology of production prescribes only some proportions in the distribution of the means of production, but it does not determine the mechanism of that distribution, the basic proportions or the general nature of proportionality.

The progress of the socialist productive forces and the relations of production also means the development of principles of planning. In the conditions of mature socialism, the basic economic law, the law of balanced, proportionate development, manifests itself more fully and proportionality is perfected. The expansion of production in the interests of the full satisfaction of requirements, and the increasing social homogeneity of socialist society demand a more perfect type of proportionality and, in particular, a new correlation between accumulation and consumption, between the heavy and light industries, industry and agriculture, a levelling up of the incomes and consumption by workers and collective farmers, and accelerated development of the non-productive sphere. Proceeding from that objective necessity, in the seventh, eighth and ninth Five-Year Plan periods every larger resources were channelled to improve the well-being of the people, to raise and industrialise agriculture, and to increase the incomes of the collective farmers.

The fusion of the advantages of socialism with the scientific and technological revolution conditions the changes in the branch structure of the national economy, and the priority development of the industries facilitating the acceleration of technological progress. Technical modification and the intensification of production lead to a growth in economic efficiency which becomes an important condition for the balanced development of the economy. The Tenth Five-Year Plan envisages an improvement in the proportions in the said directions. An increase of the share of consumption in the national income, especially consumption by the collective farmers, is planned. Enormous financial and material resources are channelled to the agro-industrial complex. The production of progressive implements of labour and production in the chemical and power industries are growing rapidly.

We regard planned development as an advantage of socialist relations of production and hold that it is impossible under capitalism; therefore, for one thing, the theory of the convergence of socialist planning and capitalist programming is untenable, and, for another, planning at the socialist enterprises is basically different from the organisation of production at the capitalist factories and mills. In this connection, let us recall what Engels wrote about one of the contradictions of capitalism—the contradiction between the organisation of production at individual factories and the anarchy of production in the whole of society,⁴ which is not always understood correctly. Some authors interpret the first part of Engels' statement as planned development of capitalist enterprise. In fact, however, the organisations of such an enterprise is based on antagonistic relations of production, and capitalist cooperation is an act of capital which uses and

exploits many workers at the same time. "Their union into one single productive body and the establishment of a connection between their individual functions, are matters foreign and external to them, are not their own act, but the act of the capital that brings and keeps them together. Hence the connection existing between their various labours appears to them, ideally, in the shape of a preconceived plan of the capitalist, and practically in the shape of the authority of the same capitalist, in the shape of the powerful will of another, who subjects their activity to his aims."⁵

Socialist planned development however expresses the relations of production in production, distribution, exchange and consumption, the relations in production being of prime importance. Such a methodological approach shows the absurdity of the statement that in planning only one part of its relations, say, that connected with exchange, should be taken. That is what the advocates of "market socialism" suggested when they declared market relations to be the chief motive force of planned economy and counterposed the market and the plan. They believed that relations of exchange could not be of a planned character. And when they found it inconvenient to deny planning in the sphere of distribution, they spoke about a "synthesis" of the plan and the market, in which demand and supply, free prices and competition were to play the key role.

The system of relations of planned development also includes the objective mechanism for implementing the plans and the incentives that bring about the coordination of work at all the stages of reproduction. It follows from theory that each of the phases of reproduction exerts its own influence on this coordination and, in totality, ensures the planned character of extended reproduction. Relations of exchange influence reproduction and can be built only in connection with and under the decisive influence of relations of production and distribution.

The knowledge of the laws of development of the objectively existing relations of socialist planned development and their utilisation are the basis of the Soviet state's planning activity. The five-year plans have shown the necessity for the entire era of socialism of state guidance of the elaboration and implementation of the plans, the growing role of the Communist Party in economic and social activities, and of strict observance of the principles of democratic centralism in planning. Some bourgeois theoreticians use the state and directive character of planning to frighten off the man in the street. To directive Soviet planning they counterpose so-called indicative (optional, facultative) planning. The economic life of the capitalist countries in the conditions

of the economic crisis graphically shows just how "effective" the latter is.

Contrary to the recommendations of their economists, the monopolies inflate prices and increase profits, unleash inflation, and leave millions jobless. Many Western authors are swayed by prejudice when they speak about the directive character of the Soviet plans. They associate it with the administrative functions of the state and not with the nature of large-scale machine production, which always demands unity of will and firm guidance. The socialist state assumes the planning functions because it represents the whole of organised society, including the united producers. The state, of course, uses its power to translate its plans into reality. The necessity of guidance of the economy is basically predetermined by the nature of socialised production, and this guidance is effected on the basis of the knowledge and utilisation of economic laws.

The Soviet methodology in planning is evolved in conformity with the theory of extended socialist reproduction and does not exist separately from the laws of development of the socialist economy. There is no methodology that suits every type of reproduction, every historical period. It develops and is successful only if and when the methodological constructions are compatible with the nature of the object of planning. Many of the models built by bourgeois economists prove to be useless because they ignore both the socio-economic nature of the objects for which the models have been built, and the laws of their development. Before the five-year plans were implemented, when small peasant farming dominated in Soviet agriculture, which did not lend itself to direct planning, it would have been utopian to use the methodology of planning employed in large-scale industry in prognosticating agricultural development.

The elaboration of general theoretical and methodological problems implies the priority of the general theoretical approach in any research, which is an indispensable condition in the working out of methodological problems on the basis of Marxism-Leninism.

* * *

The First Five-Year Plan amazed the world. The working people saw in it the dawn of a new, socialist life, free from exploitation, unemployment and crises. In the Soviet Union, it evoked great labour enthusiasm which found expression in the socialist emulation of millions of people for its fulfilment ahead of schedule. The famous English writer Herbert Wells after studying the targets of the plan changed his sceptical approach to assessing Soviet plans. He said that the Five-Year Plan was the most important thing that was being done in the world at the time.

The five-year plans may be said to have become world propagandists of socialism. Jawaharlal Nehru wrote that the Soviet five-year plans had evoked a new wave of interest and enthusiasm in respect to the USSR. Many former colonies are trying to use planning for raising their national economy and ensuring its independence. To the extent that these countries embark on the road of non-capitalist development, their state economic policy becomes a factor of their economic progress. However, the economic backwardness inherited by the former colonies, the pressure of the imperialist monopolies and the struggle of the national bourgeoisie for its clan interests create many obstacles to economic development, and establishing the state sector which is the base for carrying out regulating measures. A progressive role in the development of the national economies of the newly independent countries is played by the assistance of the Soviet Union and other socialist states in creating key industries there.

Many statesmen and theoreticians of the industrialised countries who began with sweeping criticism of socialist planning, soon pondered the possibilities of utilising its principles for stabilising the capitalist economy. At the time when the USSR was reviewing the results of the First Five-Year Plan, US President Franklin Roosevelt called for a "new deal" and a planned economy. Since then, many economic programmes, plans, including five-year ones, have appeared in the capitalist countries. It is through this type of plans that state-monopoly capital performs some regulatory functions, but on the whole, they could not, and cannot, change the main direction of economic development, give it different, non-capitalist, goals, and secure it against crises. And what is more, the general crisis of the capitalist system keeps growing more acute as are also the contradictions between the social nature of capitalist production, which calls for planned economic management, and capitalist appropriation, which is an irremovable obstacle to a planned economy.

Analysing imperialism, Lenin came to the conclusion about the universal replacement of the anarchic capitalist economy by the socialist planned economy. He wrote, "... there is a tendency towards the creation of a single world economy, regulated by the proletariat of all nations as an integral whole and according to a common plan. This tendency has already revealed itself quite clearly under capitalism and is bound to be further developed and consummated under socialism."⁶

When the proletariat of a number of countries won political power and production was socialised in a socialist way, the said tendency manifested itself in the development of national planning and in the formation of a world socialist economy which is planned by the joint efforts of the socialist states. When charting

their national planning the socialist countries drew extensively on the experience of the Soviet five-year plans. Addressing the 25th Congress of the CPSU, L. I. Brezhnev said: "Our country was the first to begin planning economic development. Dozens of countries have learned and continue to learn this complex art from us."⁷

At the close of the 1940s and beginning of the 1950s, five-year plans appeared in Bulgaria, Hungary, the GDR, Mongolia, Poland (six-year plan). The Korean People's Democratic Republic adopted its First Five-Year Plan in the late 1950s. In 1975, the First Congress of Cuban Communists adopted Cuba's First Five-Year Plan. In 1976, a five-year plan for the development and transformation of the economy and culture was approved in Vietnam. The five-year plans have become the main form of planning in the socialist countries. They coordinate the respective plans, outline the direction of the development of the world socialist economy. A coordinated programme of integration measures has been elaborated and adopted for the next five-year period. The five-year plans of the socialist countries have the same ultimate goals, are all orientated on achieving a substantial improvement in the people's well-being. At the same time, each plan has its distinctive features stemming from the specificity of socialist construction in this or that country. These plans have enriched the practice and theory of planning with international experience.

The impressive successes of the Soviet economy are a direct result of the fulfilment of the five-year plans. The historical significance of the theory of planning created under socialism is quite obvious. All that, however, does not mean that the successes were easy to achieve or that there are no shortcomings, difficulties or unsolved problems in the USSR today. This was broadly discussed at the 25th Congress of the CPSU. It charted the main directions of the Tenth Five-Year Plan and showed how the difficulties of the growing socialist economy should be overcome. A prominent place here belongs to planned economic management.

NOTES

¹ *The USSR State Planning Board. Long-Term Orientations for 1927/28-1931/32*, Moscow, 1927, p.3 (in Russian).

² K. Marx and F. Engels, *Works*, Moscow, Vol.46, p.476 (in Russian).

³ G. M. Krzhizhanovsky, *Works*, Vol.11 Moscow-Leningrad, 1934, p.364 (in Russian).

⁴ F. Engels, *Anti-Dühring*, Moscow, 1969, p.321.

⁵ K. Marx, *Capital*, Moscow, 1969, Vol.1, p.314.

⁶ V. I. Lenin, *Collected Works*, Moscow, Vol.31, p.147.

⁷ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy. 25th Congress of the CPSU*, Moscow, 1976, p.102.

Scientific Knowledge and Labour

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Ever since science became an independent social institution it has been interacting with the most diverse areas of society's life. A point that must be made is that much as the emergence of science was the result of fairly long historical development and the synthesis of earlier heterogeneous elements of culture, its acquisition of various social functions is the result of complex and contradictory processes taking place partly consecutively and partly simultaneously. A characteristic feature, however, is the irreversibility of these processes stemming from the irreversibility of social progress and manifested in the steady expansion of the sphere of science's operation which fans out into ever new fields of man's activities.

We shall emphasise that here we observe processes of interaction in which science not only exercises a diverse influence on man's activities, culture, and society, but is itself influenced by them, getting new impulses for development and in one way or another changing some of its own characteristics, be it organisational forms, the correlation between different orientations of study, and so on. Science's relative independence as a social institution by no means obviates its inclusion in the life of society and culture or the circumstance that it is science that enables us to see most clearly some specific characteristics of culture as a whole.

The process of combining science with material production has had particularly profound consequences. The present stage of this process is best characterised by Marx's thesis that science is becoming a direct productive force. This process, which is even

today far from consummation, evidently could begin only when science and social production had reached a definite level of development, when capitalist relations of production became predominant in the most highly industrialised countries. There is no need to consider all the resultant changes that have taken place in society, changes that were so strikingly described by Marx and Engels in the first chapter of the *Manifesto of the Communist Party* and thoroughly researched by Marx in his preparatory manuscripts for *Capital*.

All of man's activities, chiefly, of course, his activities in material production, are now clearly seen as activities aimed at gaining control of and remaking the external world. It is becoming possible to correlate the means, aims, and results of activity rationally, and objectively assess its efficacy. Activities oriented externally and yielding a directly tangible, quantitative (and actually measurable) result may be improved endlessly, and each step in the direction of its improvement may be recorded unambiguously (for instance, an increase of the output of some product per unit time). Under conditions of practically unbridled competition, the continuous rise of production efficiency becomes a matter of life and death for each producer.

The traditional modes of regulating this activity inherited from feudalism prove to be totally insufficient: today it requires a rational attitude to itself. There arises not only the abstract possibility but also the practical need for measuring how efficiently some kind of activity or other is realised, and how far the means conform to the aims for the attainment of which they are used. Of course, its means, which are the most mobile element in the structure of activity, are improved first of all.

For a fairly long time the means of production were rationalised chiefly on a practical, empirical basis, while material production and technology developed, on the whole, independently of what was taking place in science. This was expressed and seen, in particular, in the fact that men of science were in many cases separated from men of technology by social partitions. Such temples of science as the French Academy or the German universities were mostly closed organisations and in this sense resembled mediaeval guilds. (Recalling his work in Cambridge in the 1920s-1930s, i.e., only some 50 years ago, the British scientist and author Ch.P. Snow characterises the atmosphere of those years as follows: "We prided ourselves that the science we were doing could not, in any conceivable circumstances, have any practical use. The more firmly one could make that claim, the more superior one felt.")¹ At the same time, for that external world itself the knowledge that was built up by science was, at best, what had to be mastered and not what had to be applied in

practical activities. Thus, although it had won recognition as a questor of truth and although it had pressed theology as the theoretical foundation of the world outlook, science still had to traverse a difficult road before it came to be regarded as a powerful and absolutely vital means of human activities.

Cases when the results of science found practical use were few until the mid-19th century. They were, metaphorically speaking, those solitary swallows that do not make a summer. These episodes did not go beyond the framework of individual cases because they did not become the mainspring for understanding and rationally using the possibilities held out by the practical application of the results of scientific research.

However, as time passed, it grew obvious that the purely empirical foundation was much too narrow and could not ensure the steady development of the productive forces, technological progress, and the improvement of the means of man's activities in production. In the quest for a source that could ensure a steady flow of innovations, engineers and inventors began to look increasingly to scientific knowledge. As a result, it was quite quickly found that scientific research could yield a very large practical and quite concrete and tangible effect amenable to a quantitative calculation. Thus, people became aware that science could be a powerful catalyst of a process that had begun earlier and was becoming increasingly necessary—the process of continuous rationalisation of the means of production activities. This led to a sharp modification of the attitude to science and was an essential precondition enabling science to effect a decisive turn towards practice, towards material production.

The point is, however, that scientific knowledge yields the most tangible practical result not when it is used to improve established branches of production and technological processes but when it is the foundation for radical changes and steep advances in the development of the productive forces. An example is the appearance at the close of the 19th century of entire industries such as the pharmacological and electrical engineering industries that develop mainly through the application of scientific achievements. Here, to quote Academician N. Semyonov, science is turned from a handmaid into the mother of production. The result of the universality implicit in scientific knowledge is that in this case science cannot be confined to a subordinate role for long; it shows its potentialities quite quickly as a force that radically changes the make-up and character of production.

But this new function of science had still to win social recognition and consolidation. Even at the beginning of the present century the link between science and production was built up on a relatively broad foundation, but that foundation was not

very reliable. Let us assume that an engineer has drawn from the armoury of scientific knowledge what enables him to resolve a problem confronting him, or that a scientist has discovered a phenomenon that may be used in practice with benefit and without much trouble. In these cases science and technology have interacted on the whole purely externally—the link between them is not yet what is called socially organised and has no permanent channels. Underlying it is a chain of fortuitous finds (tangible to society only to the extent the process has acquired a mass character).

In the 20th century there appeared, alongside this mechanism of free quest, which largely characterises the specific nature of basic research (which, it must be noted, is to this day the most fruitful reserve of fundamental scientific discoveries making it possible to create new industries or radically restructure old industries), a new sphere of science or, to be more exact, of scientific-engineering activities—applied research and development. The employment of scientists in laboratories and design departments of industrial firms became a mass phenomenon. The work of the scientist was given an industrial basis: he was set concrete tasks dictated by the need to improve technology. Scientific knowledge is now vital not merely for technological progress “generally”, but for the development of specific industries, for improving the technical and economic efficiency of specific industries and enterprises. The creation of such permanent channels for the practical application of scientific knowledge (something of the kind takes shape in the wake of industry in other branches of material production and even outside it, in other spheres of human activity) yields substantial results for both sides.

As regards science, in addition to receiving a powerful impetus for development, its application “in direct production” now becomes for it “one of its determining and inducing elements” (Marx). It acquires a form of organisation that greatly facilitates the use of its results in practice. For its part, practice begins to orient itself more and more distinctly on its stable and continuously expanding link with science.

For modern production (and far from only for it) scientific knowledge is becoming not merely desirable, it not only enhances efficiency—its ever broader application is now a mandatory condition for the very existence and reproduction of many forms of activities that had in their time emerged outside science, to say nothing of the forms engendered by science itself. Today much has a scientific basis, rests on the scientific knowledge that has been accumulated and—this is particularly indicative—on knowledge that is still to be obtained.

It is only today that we are able to appreciate fully the depth of these diverse changes and effects, both immediate and long-term, which the synthesis of science and technology has brought into the life of society and individuals. Some of these changes and effects are more in evidence and have been studied in detail and described repeatedly, others are less evident but no less vital. Among the former are mechanisation, automation, new highly productive implements of labour and technological processes, new industries, new sources of energy and materials, the more comprehensive use of resources already drawn into production and the enlistment into production of new natural resources, revolutionary changes in the organisation of production, and much else.

However, we would be giving a much too narrow interpretation of the process of science's conversion into a direct productive force and, generally, of the role of the productive forces in the functioning and development of society if we limited ourselves to an examination of only these aspects of the process. In addition to what we have already said, under certain social conditions science profoundly influences also the subjective element of the productive forces—man—substantially changing his role in production and the content and character of his work. A new significance is acquired by the very concept of the subjective capacity for work.

In his analysis of the changes that were taking place in the character of labour under the impact of science and technology, when the synthesis of science and technology was more promising than reality, Marx shed two trends. The first trend of the development of machine systems, a trend that on the whole gave rise to that system, was, to quote Marx, “the analysis that through the division of labour increasingly turns the operations performed by workers into mechanical operations so that at a definite stage their place may be taken by machinery.... What was the activity of a living worker becomes the activity of a machine.”² Here the worker is directly involved in the technological process, and the fragmentation of labour operations makes him an appendage, a link of the system of machines. The system of machines dictates to him not only the character of the operation fulfilled by him but also the rhythm and productivity of his work. “The system of machines... makes the worker dependent, makes him appropriated,”³ and for his part the “worker treats it (the system of machines — *Authors*) as a wage worker, as an active individual generally—as only a worker.”⁴ This was not only the historically initial trend, but for some time it was the predominant one.

However, in the development of labour Marx distinguished another trend, which arises “only when large-scale industry has reached a higher development level and the whole of science is

placed in the service of capital, and the existing system of machines itself has considerable resources. Then invention becomes a profession in its own right, and the application of science to direct production becomes for it one of its determining and inducing elements".⁵ At this stage labour acquires new features—it "comes forward not so much as an element of the process of production as labour in which man, on the contrary, treats the very process of labour as its controller and regulator".⁶

The conversion of the second trend into the predominant one is linked with the commencement of the scientific and technological revolution, and its development depends upon the social conditions of labour. Of course, we do not wish to say that labour in the modern industries engendered by the scientific and technological revolution has become predominant in the quantitative respect. It has not become such so far either in the West or in the socialist countries. But the fact that the trade of adjuster, operator, monitor, and programmer of computers, i.e., the trades of "controller and regulator" have today become massive, the fact that the number of scientific workers in the USSR has reached the impressive figure of 1,200,000, and a host of other facts of the same kind, permit us to speak of a substantial and rapid growth of the economic and social significance of these trades.

The basic characteristics of the two historical trends distinguished by Marx in the development of labour are in many ways contradictory. In particular, this concerns the role played by scientific knowledge relative to the direct process of labour. In the first case, it stands, as it were, outside this process, inexorably and rigidly determining all its features. From the point of view of the worker, science is nothing more than an opposing objective element that lies entirely outside his control and which requires him to conform to it and which itself does not conform to his subjectivity. Here, as Marx noted, "objective conditions of labour acquire a steadily growing colossal independence relative to live labour",⁷ increasingly subordinate it, reducing the element of human subjectivity to the minimum possible limit, and depriving the process of labour of a human content proper. Labour is as indifferent to the concrete individual as it is itself indifferent to the content of the operations performed in the process of labour. In the product of labour man embodies only those qualities and potentialities that are implicit in him as an abstract "person generally"; at best he can be not a uniform but a concrete individual only outside his working time.

Being entirely subordinated to the objective and depersonalised character of scientific knowledge, labour requires man to strain himself only "in a definite manner to which he is schooled by the

forces of nature".⁸ As a result, the enhancement of labour efficiency is identified with the minimisation of the time and physical effort necessary for the performance of labour operations. Only some aspect, some individual capability of man as an integral individual is in fact involved directly in production activity. Man himself is compelled to be present only to the extent that in his physical existence he cannot separate this aspect from himself.

Here the significance of activity thus proves to be external and programmed in advance. From the standpoint of a concrete individual the regulator of his activities under capitalist relations of production consists of rationality and expediency that are external, incommensurate, and incommensurable to him.

When it stands, as it were, above man's activity, alienating from it its significance, this embodiment of scientific knowledge is an objective mainspring of mystification so characteristic of the modern bourgeois consciousness—mystification as a result of which science either becomes an object of blind worship or (in its more modern variants) regarded as a fate awakened by man's presumptuousness, and punishing him for this presumptuousness.

However, as science increasingly penetrates production and, accordingly, with the further development of labour, the part played by science in production grows richer, acquiring essentially new features. In its developed forms this labour presupposes not only the consumption of knowledge acquired earlier and materialised in implements of labour, but also the direct participation of the worker in the creation of new knowledge. Here the element of subjectivity, formerly liable to elimination, proves to be essential in some respects. Not only production as a whole, but labour itself increasingly comes forward as the application of science. "In this conversion," Marx wrote, "the principal basis of production and wealth is not the direct labour performed by man himself, and not the time he spends in work, but the appropriation of his own universal productive force, his understanding of nature and supremacy over it as a result of his being as a social organism, in short, as a result of the development of the social individual."⁹

A person engaged in modern forms of production is required to have considerable social knowledge and the ability to apply this knowledge in specific situations. He must react quickly to unforeseen changes in the situation, energetically intervene in the technological process controlled by him if some parameters of this process go beyond permissible limits, independently perform innumerable operational tasks, and so forth. This shows that the modern worker must have diverse skills, that he must be versatile—physically, mentally, emotionally, morally, and intellectually—that he must be prepared for production activities. As

distinct from labour entirely subordinated to the system of machines, this labour increasingly acquires a human content and becomes a field for the application of the entire sum of human strength and abilities.

Of course, the element of subjectivity in modern forms of labour should not be absolutised. Labour is by no means becoming independent either in the sense that in the process of labour man realises only the aims he sets himself or in the sense that in the process of labour man can step beyond the objective limitations set by technological expediency. But technological expediency—in socialist society this is reinforced by social expediency—today requires man's many-sided development and does not permit him to be bound by a specific function. In conformity with this expediency he must display his subjectivity, i.e., participate in the labour process as an integral individual.

Take, for example, a designer working on a unit of a new machine for which he has a clearly formulated assignment. Instead of a transmission he cannot design, say, a lubricating device. He is restricted also by technological considerations: he has to strive for standardisation; he cannot use materials at whim; he must take into account the possibilities of the processing equipment, the assembly, the specifications for the installation and operation of machines, and so forth. Nonetheless, all these restrictions do not dictate a single way of carrying out assignments, and analogous designs of one and the same unit made by different designers will always differ from each other, in other words, each design will bear the imprint of its author's individuality. This element of creativity, of subjectivity, is implicit in practically every modern kind of labour; where it is non-existent, where the entire labour process is built up algorithmically and can be completely objectified, man is sooner or later replaced by an automatic machine.

In this connection it would be in order to recall the destiny of the computer, the most characteristic brainchild of the scientific and technological revolution. At first the development of modern computers was accompanied by stormy discussions about whether a machine could perform specifically human functions. But as computers became "cleverer", people saw that "specifically human" functions were not individual, not even intellectual, functions but those that ranged beyond them.¹⁰

These changes in the character of labour due to its closer link with scientific knowledge are reflected, so to speak, in scientific knowledge itself, particularly in branches studying various aspects of this activity. Indicative in this respect is the evolution that has been undergone by our understanding of man-machine systems, consisting, on the one hand, of man and, on the other, of intricate cybernetic regulating devices. These systems are being used more

and more widely in the regulation of various technological processes and in many other areas—medical diagnostics, information services, control of transport, control of sophisticated flying machines (aircraft, missiles, spaceships), and so on.

Only recently, some 15-20 years ago, the predominant view was that man was only one of the functional organs of the system of control alongside others, that he was an organ whose specifications and parameters had to be built into the parameters of the system and conform to its requirements. Moreover, this proved to be far from an ideal organ—it was not very dependable, not very operational, with a limited speed and memory. In short, in the system of control man was regarded as necessary only to the extent some functions had not yet been turned over to automatic devices. Underlying concepts of this kind was the notion that machines enjoyed primacy over man, that man was unconditionally subordinated to the regimens, rhythms, and parameters dictated by the system. Man had to adapt himself to machines, and not vice versa.

However, the concepts underlying the planning of man's activities as operative in the system of control has now undergone some modifications. Above all, the roles played by man and machines in the system are now understood differently. The point is that man is not merely a unit of the system, but its dominant, decisive element—decisive in both the metaphorical and direct sense, because the function of decision-making devolves on man. Correspondingly, the automatic and computing devices in the system are interpreted as means making it possible to rationalise, optimise, and facilitate the decision-making: they thus complement man but by no means replace or can replace him. For that reason, in planning the work of the operator, the accent is now placed differently, with a view to ensuring the best conditions and possibilities for his work. This is the standpoint from which the parameters of the man-machine system of control are designed, selected, and assessed. For example, it has now become axiomatic that the information circulating in the system of control must be based not on the volume that a computer can process but on what can be absorbed by man and what is needed by him for decision-making. "It may be asserted," G. Smolyan writes in this connection, "that a computer and its store of mathematical and other information is a tactical instrument for resolving problems, but man always remains the exponent of strategic thinking. This must be the determining concept when the human factor is taken into account in a socio-economic analysis of systems."¹¹

Similar changes in the aspect interesting us have also taken place in the science of management, particularly of the management of man's labour activities. In the first sufficiently mature and

influential theoretical concept formulated in this field—the Frederick Taylor concept—one of the basic premises (although it was not put forward by Taylor himself) was the understanding that the operator was a specifically schooled force of nature. Consequently, the rise of the labour efficiency of each operator is identified with the minimisation of the time and physical effort needed for the fulfilment of labour operations. Here, too, it is implied that man is subordinated entirely to the regimen set in this case by the conveyor. Man's participation in the direct process of production was regarded only from the standpoint of necessity: first, technological necessity arising from the fact that some operations could only be fulfilled by man; second, socio-economic necessity springing from the laws of the capitalist mode of production; third, and last, from the standpoint of the operator himself his participation in the labour process is an external necessity because for him labour is the source of his livelihood and of the satisfaction of his needs lying wholly outside his activities in the sphere of production. The anti-humane character of Taylorism is due to the fact that it spelled out stark naked and therefore ruthless rationalisation and expressed the anti-human substance of the exploiting system. Moreover, Taylorism was fully consonant with the conditions under which the first of the two trends highlighted by Marx in the development of the productive forces was predominant.

However, today we see that the science of management gives increasing attention to the socio-psychological, engineering-psychological, aesthetic, and moral aspects of labour. In this manifested the understanding that the traditional interpretation of man's attitude to labour is narrow and insufficient, the understanding that a participant in the process of labour is man as a whole and not some of his specific capabilities. The resultant changes that have taken place in theoretical concepts are evidently a reflection of the changes that have occurred in the character of labour and in the attitude to it linked with the increasing application of science in direct production.

Of course, in the diametrically opposed social systems the character of these changes is essentially different.

It is characteristic that in the two cases we have examined the orientation of the theoretical movement proves to be identical—activity in the sphere of production is both the object of designing (in the first example) and the object of optimisation of management (in the second). This is further evidence that as science becomes a direct productive force the role of the subjective factor grows sharply in the structure of the productive forces. Man and his activity are the agent ensuring science's link with the direct process of production.

Note must be made of yet another circumstance. While production activity undergoes a transformation under the impact of scientific knowledge, it in turn stimulates the growth of that knowledge. It not only brings to life new scientific disciplines such as the sociology of labour, engineering psychology, technical aesthetics, and ergonomics that serve it, but also sets the orientation for their theoretical development.

The inclusion of science in production through the participant in production makes it vital for that participant to have a certain amount of scientific knowledge. This means that the training of man for labour is increasingly becoming a process of acquiring scientific knowledge and the ability to use that knowledge independently. But in obtaining the general and professional training necessary for participation in labour, in other words, acquiring and assimilating the knowledge produced and stored by society and passed on by it to the individual and developing his intellectual abilities again through the system of public education—without this man simply would have been unable to participate in modern production—the individual is himself drawn into new and closer ties with society. In its turn, the process of obtaining and using scientific knowledge becomes an increasingly more universal type of interaction between individuals.

The broad use of scientific knowledge directly in the process of labour thus results in the social links between individuals becoming more purposeful, richer and many-sided. Since the acquisition of a steadily growing volume of certain scientific knowledge proves to be vital not merely to becoming a "cultured person" but also to the training of man for independent participation in society's activities, chiefly in production, because this knowledge is becoming social in the true sense of the word, i.e., universal property—some quantity of scientific knowledge is possessed by every worker in modern forms of labour and is used actively by him.

The prerequisites are thus being created for surmounting the bifurcation of universal human existence resulting from the historically developing forms of labour. "*The surplus labour of the working masses* has ceased to be the condition for the development of common wealth, much as the *non-labour of a few* has ceased to be the condition for the development of the universal force of human intelligence."¹² Of course, this can only be achieved in a socialist society, in which scientific and technological progress does not conflict but is closely linked with social progress.

Labour subordinated entirely to a system of machines and requiring man's efforts only as a specifically schooled force of nature could create only a purely economic form of the individual's dependence on society under which the labour power of the individual, his capacity for labour is nothing more than a

commodity; by selling this commodity the individual gets the possibility of satisfying his most vital requirements. Accordingly, under these conditions the social links between the individuals has a limited foundation, manifesting itself chiefly in the form of external compulsion. Conversely, the increasing scientification of the process of labour in a socialist society enlarges the foundation of the individual's links with society, and the development of these links shows "the extent to which the conditions of the socially vital process itself are subordinated to control by the universal intellect and remade in accordance with it."¹³

We thus see that in the course of the scientific and technological revolution science is becoming an essential element of the productive forces, inducing diverse structural changes in them. The content and character of man's activities in production undergo considerable transformations under the impact of scientific knowledge. Moreover science's conversion into a key productive force creates the preconditions, the springboard for the further many-sided inclusion of science into the life of society and of the individual.

NOTES

- ¹ Ch. P. Snow, *The Two Cultures: and a Second Look*, Cambridge, 1965, p.32.
- ² K. Marx and F. Engels, *Works*, Vol. 46, Part II, p.212 (in Russian).
- ³ *Ibid.*, p.210.
- ⁴ *Ibidem.*
- ⁵ *Ibid.*, p. 212.
- ⁶ *Ibid.*, p.346.
- ⁷ *Ibidem.*
- ⁸ *Ibid.*, p.110.
- ⁹ *Ibid.*, pp.213-214.
- ¹⁰ Yu. A. Shreider, "Is Intelligence Implicit in a Machine?", *Voprosy filosofii*, 1975, No.2.
- ¹¹ G. L. Smolyan, "Man and the Computer," *Voprosy filosofii*, 1973, No. 3, p. 33.
- ¹² K. Marx and F. Engels, *Works*, Vol.46, Part II, p.214.
- ¹³ *Ibid.*, p.215.

The Development of Sociolinguistics in Conditions of the Scientific and Technological Revolution

YUNUS DESHERIEV

The character of present-day social development, the scientific and technological revolution, and the natural sciences have made language an extremely important problem of science and the practical activity of people. This is due to many factors of immense social, epistemological, and practical significance.

* * *

In speaking of social factors, it must be noted that considerable changes have occurred in the development of the world lingual process after the Second World War as a result of the downfall of the world colonial system, the growth of the national liberation movement, and the emergence of many new independent states. The languages of numerically small peoples began to develop in Asia, Africa, and South and Central America, and in many cases written languages were evolved where such were non-existent.

Some scholars believe that out of a total of from 2,500 to 3,000 languages (this is the figure most frequently mentioned, although it must be specified), only between 15 and 20 have the socially-conditioned potentiality for fulfilling the functions of languages of international association, of scientific and cultural intercourse on a world scale. In many ways language barriers prevent scientific, technological, and cultural achievements from adequately reaching all people through their languages. Suffice it

to note that in order to make translations from only 50 languages it is necessary to have 2,450 different dictionaries, a huge army of translators, and so forth. Most, particularly small, countries are unable to cope with this task.

In the complex, dialectically contradictory, language situation prevailing in the world, there is a growing need for resolving the sociolinguistic problems of world social development. The problems have arisen of an auxiliary language of science and international intercourse, bilingualism, the spread of the most developed international and world languages,¹ prognostication of the linguistic process considered from the standpoint of the operation of socially conditioned regularities of the function of the languages of the world.

This has generated universal interest in the various scientific concepts of the further development of mankind's lingual life, of the fundamental principles of language policy in different regions of the world, of the present and future of national languages, and of the role of international languages in the development of science, technology, and culture, in the spread of scientific, technological, and cultural information, and of international experience of resolving language problems.

From the social angle, the formulation and solution of language problems are linked with questions of method, theory, and practice: basic socially-conditioned tendencies of the development of the social functions of long-established and new written languages, and unwritten languages of the world; language policy and language planning under various socio-economic and political conditions of the development of multi-national and mono-national states; language and man in the epoch of the scientific and technological revolution; international significance of the problem of bilingualism; natural languages and the social aspect of formulating the problem of an artificial ancillary language; the social aspect of language formalisation; the problem of language as a social phenomenon and as a semiotic system; the problem of the social differentiation of language; international experience of accelerating cultural-language development and its significance to developing nations; sociolinguistic problems of applied linguistics; social linguistics and the ways of its development; sociolinguistic problems of mass communication, sociolinguistics and the sociology of language,² and some other problems.

According to UNESCO statistics, there were nearly a billion illiterate adults in the world in the first half of the 1960s. In some countries there was increase in the number of illiterate people. What must be the role of native languages in the accelerated elimination of illiteracy and semi-literacy? In which of the present unwritten languages should a written language be evolved? On the

basis of what local dialects and on what graphic foundations should these languages be created? What must be the social functions of these new written languages?³ Should their social functions be confined to instruction at elementary schools and the publication of periodicals and belles lettres, or is it necessary to organise instruction in the abovementioned languages at secondary schools and institutions of higher learning? The formulation and solution of these and other problems of applied sociolinguistics depend on many factors: specific socio-economic, cultural and historical, and ethno-linguistic conditions; the language situation and language policy in the education of the masses. An illiterate or semi-literate person cannot properly use the great achievements of science and technology. His personal tragedy is compounded by the fact that in a certain sense he becomes a "burden" to society. It was justifiably noted in *Courier UNESCO* that these are morally disgraceful facts, that they are evidence of injustice, of monstrous losses of intellectual labour.⁴

In this light it would perhaps be advisable to set up a special commission at the International Committee for Sociolinguistic Research in order to help evolve written languages, draw up scientific and practical recommendations on the use of native languages in the education of their users and on language policy in African, Asian and Latin American countries.

Other sociolinguistic problems of modern social development and the scientific and technological revolution are dealt with in special literature.⁵

* * *

Sociolinguistics has a part to play also in the epistemological problems of the scientific and technological revolution linked with the functioning and development of languages, with the reflection of the scientific and technological revolution in different languages.⁶

It may be regarded as universally accepted that "modern scientific theory is language, i.e., the sum of means used to construct and express thought...Behind the language of scientific theory is a system of knowledge needed by man to understand the phenomena and processes of objective reality. The question of what is the system of knowledge and what is its objective content may be answered by interpreting not only individual terms and sentences of theory, but also its entire language."⁷

At the 14th International Philosophical Congress (Vienna, 1968), the problem of language was the third theme discussed at the plenary sitting. It was considered mainly in the philosophical

aspect of epistemology, of a logical analysis from the standpoint of different philosophical schools.⁸ Here we are concerned with the philosophical, epistemological aspects of its examination only to the extent that this is necessary for a sociolinguistic and sociological elucidation of this problem.

Mathematics is often called the language of science. However, not only mathematics but also any other branch of knowledge, any sphere of human activity is mirrored in a natural language. Thus, in its nature language is a universal form, a universal means of human communication, of scientific-theoretical and artistic thought.

However, all branches of science and technology and all scientific theories are represented and reflected in far from all the languages of the world. If one proceeds from approximate data, it will be seen that of the 2,500-3,000 existing languages only 250-300 are written languages (in which some scientific theories may be mirrored to one extent or another). The remaining 2,200-2,700 unwritten languages remain almost entirely divorced from the highroad of modern science and technology. The vast majority of the users of these languages speak only their native language and thereby have no access to many modern theories and achievements of science and technology.

This has given rise to social and sociolinguistic problems of worldwide significance: What are the ways and means of rapidly raising the social self-awareness of the users of the vast majority of languages of the world, i.e., of the vast majority of mankind, to the educational level of modern advanced nations? By what means can all the peoples of the world be given access to modern scientific and technological information? Of course, this can only be achieved with the aid of language, for human language is the sole all-embracing universal means of expressing systems of scientific theories, of artistic, aesthetic understanding of reality. In the languages of international communication—English, Russian, French, German, Spanish, Chinese, and also Japanese, Italian, and some other of the more developed national languages—are reflected practically all modern scientific and technological theories and achievements.

Various ways are suggested for utilising different languages to raise the education and cultural level of all the peoples of the world. Some suggest disseminating world languages everywhere, and organising instruction in these languages. Others propose that national languages should be developed, that they should be made languages of education of all levels, and of science and technology. International experience of accelerated cultural-language development and education of formerly backward peoples shows that these key social problems of the modern world may be resolved by

various ways and comprehensive methods. Much depends on the existing political systems, on socio-economic conditions, and on national-language policy.⁹ With the assistance of scientists working on problems of applied sociolinguistics and sociology, and also of specialists from interested countries, the exponents of synchronous sociolinguistics should evidently work out a general range of problems and map out scientific-practical measures with the participation of UNESCO and the countries concerned with the purpose of finding the best ways of resolving these problems.

* * *

What are the orientations of the world linguistics process? The historical approach to social phenomena, the study of these phenomena in the process of their emergence, functioning, and development helps to gain a better understanding of their present and forecast their future. From this angle it would be expedient to study the language life of mankind as a social phenomenon.

Of all man's acquisitions throughout the history of civilisation the most important, most valuable, most vital social phenomena are labour, language, and consciousness, which developed historically in indissoluble inter-relation with each other. To quote Engels, first labour and then together with it coherent speech were the two most essential stimuli of the formation of the human brain, of its development, and also the development of the senses.¹⁰ "Language is as old as consciousness.... Consciousness is...from the very beginning a social product, and remains so as long as men exist at all."¹¹ Labour, language, and consciousness are thus socially conditioned. They are studied in all their varieties and manifestations: physical labour, mental labour; physical labour has its own gradations, and mental work has its own. Language is also studied as an extremely complex, many-sided phenomenon. The same may be said of thinking and consciousness. However, the social aspects conditioning labour, language, and consciousness in all their varieties and manifestations are still not studied as a special category that has a structure, functions, and diverse manifestations of its own. But the social aspect underlying all social phenomena ranges far beyond sociolinguistics. This is a general sociological category, a general sociological problem. In language we deal with its universal manifestations, as in the case of consciousness and labour. We feel that it would be of the utmost importance to evolve a theory of the human language, thinking, and consciousness in their close interaction under the conditions of the scientific and technological revolution.

From the standpoint of manifestations of social aspects, of their

theoretical and practical significance to modern social development and the scientific and technological revolution, we distinguish the following branches of sociolinguistics: general theoretical sociolinguistics engaged in the elaboration of a general theory,¹² methodology¹³ and methods of sociolinguistic study; and also synchronous sociolinguistics; retrospective sociolinguistics; perspective sociolinguistics; specific sociolinguistics; comparative sociolinguistics, and interlinguistics.

The purpose of synchronous sociolinguistics is to work out current general and specific problems of the functioning and interaction of languages under different socio-economic, ethno-linguistic, socio-political, and cultural conditions, in other words, the problems of the language situation.¹⁴ The most important of these are the problems of systematic research into the world sociolinguistic (language) process in the context of modern social development and the scientific and technological revolution, including the functioning of long-established and new written languages and unwritten languages; modern international languages; the implementation of language policy in different countries.¹⁵

One of the basic features distinguishing synchronous from retrospective sociolinguistics is that the former takes into account the spontaneous and conscious influence of social factors on the functioning of language and, consequently, gives more attention to conscious influence.

Until the 1950s, no branch of linguistics had set itself the task of elaborating sociolinguistic and other problems of the development and interaction of the languages of the world in such a broad sociolinguistic plane as is done by prospective sociolinguistics. Its cardinal aim is to plan and prognosticate language development. National-language policy, the conscious influence of society on the development and interaction of languages receives priority attention, as was shown in the Soviet experience of planning and prognosticating language development.¹⁶

This concerns prognosticating the development of the social functions of languages with all the ensuing consequences. Some inner-structural processes, for instance, phonetic and grammatical phenomena, may also be prognosticated and even planned. But the point is, first, that the social importance of these processes is very insignificant; second, that these are extremely slow processes. On the other hand, the development of the social functions of literary languages is of immense social significance.

Until approximately the 1940s applied problems of the science of languages were raised chiefly in the context of society's conscious guidance of the functioning and development of languages: the creation of alphabets, the compilation of spelling

rules, the replacement of obsolete by improved alphabets, development of the social functions of languages, elaboration of terminology, questions of the culture of language and speech, and norm-setting for literary languages.

In the early 1950s new problems of applied linguistics arose in connection with machine translation and the formalisation of language. The study of these questions is regarded as the main task of applied linguistics, which develops in close interaction with structural linguistics. Applied linguistics is confronted mainly by tasks of a "technical" character.

Applied sociolinguistics takes its departure from a definite methodological conception, from a sociological theory of social development, from socio-language problems and language policy. Thus, the sociolinguistic aspect is the point of departure for establishing the correlation between borrowed and one's own terms in the terminological system of one language or another, and for the struggle against purist aspirations and against the pollution of a language with unnecessary borrowings. It is also the point of departure for the most complex social problems of the spelling of borrowed words and the setting of forms of literary languages, particularly in a multinational state.

In this work cooperation between exponents of applied sociolinguistics and structural linguistics would be extremely useful. Some scholars hold that social linguistics and structural linguistics are antipodal, incompatible, even hostile, that they exclude one another. In my view, this is wrong. Structural and mathematical methods, in particular, statistical methods, serve sociolinguistics. Both schools benefit from tangible theoretical and practical achievements. They complement each other.¹⁷

It would be expedient for experts in sociolinguistics and structural linguistics to cooperate, to help each other. This is a dictate of the times, of the present state and development prospects of the scientific and technological revolution. The interpenetration of different sciences and the further intensification of this process are a hallmark of the development of both modern sociology and the science of language.

Specific sociolinguistics studies sociolinguistic problems of specific areas of the use of language: for example, the theory of bilingualism,¹⁸ and the social differentiation of language. Under conditions of the scientific and technological revolution it is vitally important to study the processes of the socio-professional differentiation of language. In this area there are many special problems: the sociolinguistic problems of the genesis of specific features of the language of each socio-professional group of people; the question of so-called sublanguages, and so forth. Local dialects and, in socialist countries, so-called social dialects disappear

gradually. At the same time, the socio-professional differentiation of language grows more pronounced. In our age of rapid scientific and technological progress languages mirror the complex social conditions of their functioning, cultural-historical factors, and also factors of the intellectual perception of scientific-technical reality with its aesthetics, its special vision characteristic of different socio-professional groups.

Specific sociolinguistics covers also the sociolinguistic problems of the development of art in conditions of the scientific and technological revolution.¹⁹ The study of language as an aesthetic category is an important task of this branch of sociolinguistics. To some extent every language reflects industrial aesthetics, its contribution to the development of elements of a language's internal structure, to the shaping of new special means of expression for the enrichment of social consciousness, the aesthetic perception of reality in the given language, and so forth. It would be hard to overestimate the theoretical and practical significance of elaborating the sociolinguistic problems of a branch of specific sociolinguistics such as mass communication (problems of the language of the press, radio, television, and films). Sociolinguists must cooperate also with philosophers in studying the problem of the language of science in its sociolinguistic and epistemological aspects.²⁰

The task of working out the methods, the conceptual apparatus, and the terminology of synchronous, applied, specific, and prospective sociolinguistics is consistent with the requirements of modern social development and the scientific and technological revolution.

Interlinguistics stands somewhat detached among the various branches of sociolinguistics. Essentially speaking, this is an inter-branch discipline. The problems of interlinguistics have to be worked out on the basis of definite methodological and ideological guidelines, and also with account of the present state and prospects of social development. Moreover, the common and local interests of nations must be taken into account. It is important methodologically and ideologically to consider the languages which the creators of one or another artificial language draw upon, and so on.

In raising and resolving these problems interlinguistics rests on sociolinguistics. However, in resolving the problem of creating the most perfect alphabet and phonetic system, rules of grammar, and vocabulary, interlinguistics uses the methods and principles of structural linguistics. The principal aim of interlinguistics is to resolve the problems of creating a perfect artificial ancillary language of science. To this end it examines various projects, the questions of the functioning and further dissemination of current-

ly existing artificial languages, their merits and shortcomings, and problems of the social functions of an artificial language and the sphere of its application.

The aforesaid leads to some general conclusions:

1. The development of the multinational and multilingual Soviet society, the international experience of resolving national language problems, and the scientific and technological revolution have eloquently shown the untenability of the widespread concept that linguists are merely passive onlookers recording spontaneous processes of language development and language changes that cannot be purposefully regulated by society. The long Soviet experience of language development has demonstrated that sociolinguists number among scientists called upon to play a vigorous role in directing the functioning and development of languages. They have created written languages for more than 50 formerly unwritten languages; extended the social functions of languages by organising instruction in native languages at elementary and secondary schools, and institutions of higher learning; promoted culture, science, and mass communication in native languages; created terminology systems in cooperation with scholars in other branches of knowledge; worked out spelling; resolved problems of the culture and aesthetics of language and speech; planned language development, and so on.

2. There is no area of social life where language is not used, much as there is no area of social life that does not require the active guiding and regulating assistance of sociolinguistics in formulating and resolving language problems. The present-day social development and the scientific and technological revolution prove that insufficient attention to the development of sociolinguistics is fraught with serious consequences.

3. Sociolinguistics is faced with interlinguistic and intralinguistic problems of the modern functioning of the languages of the world, and of planning and prognosticating their immediate and more remote future. In working on the broad social, methodological, theoretical, and practical aspects of these problems, sociolinguists have to cooperate with representatives of sociology, philosophy, history, literary criticism, psychology, and other branches of knowledge.

4. Many modern philosophical, sociological, linguistic, and psychological schools overestimate or underrate the role and significance of language when they consider various aspects of social life.

The role played by language categories in reflecting reality is exaggerated also by Ludwig Wittgenstein, founder of a new school of linguistic philosophy, who believes that "a sentence is a model of reality".²¹ I feel it is wrong to identify in everything the fact of

reality with its language expression, the object with the activity of the subject. W. Humboldt once wrote that the word is not the equivalent of the sense perception of an object.

At a sitting of the Sociology and Politics Committee during the 7th International Congress of Sociologists an attempt was made to prove that the main contradictions in the development of Third World countries are due to language distinctions and barriers. This exaggeration of the role of language in political orientation and in socio-economic development is totally untenable.

Sociolinguistics is called upon to combat underestimation of the role of language in social development, material production, and cultural life. For instance, individual exponents of some schools of structuralism demanded what amounted to the total isolation of language analysis from social life, although everybody is aware that language is the product of society, that it can function and develop only in society. Louis Hjelmslev, one of the founders of Danish structuralism (glossematics), maintained the view that "understanding of language as a pure structure of relations, as a pattern, as something that is antipodal to the causal...is the realisation in which this pattern comes forward".²² Of course, language may be studied for definite purposes as a pure structure of relations (for instance, for cybernetic purposes, for the formalisation of language), but it is wrong to reduce to this what is cardinal in the nature of language. We must bear in mind the sociolinguistic nature of language and its relatively isolated structure, and remember that language is "the most important means of human intercourse",²³ that it "represents a specific, historically-shaped system, the features and inner laws of functioning that cannot in all cases be directly linked with the features of society's development in different historical epochs".²⁴ The historical relative dependence of the inner lingual structure on the content reflected by it explains each language's potential possibility of expressing non-class phenomena, any culture, and any ideology. But even in this case one should not ignore the social nature of language as is done by another proponent of glossematics, H. J. Uldall, who contends that the main task is to eliminate the human factor in the study of language.²⁵ The Soviet linguist V. Abayev justifiably writes on this score that the "unfolding of language as a social cultural value and the study of history as a continuous creative process are consistent with the tasks of humanistic education."²⁶

Moreover, it is important to bear in mind that as a social phenomenon with many aspects, language has a binatural foundation—socio-physiological (biological). When we speak of the physiological (biological) foundation of language (speech) we have in mind the central nervous system, the brain, the natural ability

for thinking and speech that may be realised only in a human collective, in society. But without the biological foundation the social foundation cannot create and develop language (speech). The excitation received by man through oral signals were called by Ivan Pavlov "signals of the second signal system".²⁷ The generalisation implicit in a word "comprises...the special human, higher thought".²⁸ Unity between thought and language (speech), that has a dual social and biological foundation, predetermines the features of thought as a stage of cognition and as a process. "The consciousness is the reflection of reality refracted through human experience and reflected in language. In the meaning of words... reality is reflected deeper, more fully than in a direct impression."²⁹ To quote L. Vygotsky, speech and its basic element—the word—underlie the appearance of the most intricate functional systems.³⁰ He attached the greatest significance to the role of language in the formation of the highest functions of the human mind, in the development of consciousness and knowledge. That explains the great importance of elaborating socio-biological (physiological) problems of the optimal use of the potentialities of the human brain to reflect new scientific and technological achievements by means of sound language, and also of studying the role of the social and the biological in the functioning of speech under conditions of the scientific and technological revolution.

Language is an intimate phenomenon and must have the closest attention from sociolinguists. This intimacy gives expression to the features of language as a social phenomenon. This was noted by Bertrand Russell: "When a man says, 'I can never convey the horror I felt on seeing Buchenwald...' he is saying something which is strictly and precisely true: he possesses, through his experience, knowledge...not completely capable of verbal expression. If he is a superb literary artist, he may create in sensitive readers a state of mind almost similar to his own, but if he tries scientific methods the stream of his experience will be lost and dissipated in a dusty desert.

"Language, our sole means of communicating *scientific* knowledge, is essentially social in its origin and in its main functions."³¹

Sociolinguistics has the important task of studying language in all its social diversity without either overrating or underestimating it.

5. Much has been done in this field in the multinational USSR, where special concern has always been shown for the development of national languages and for the elaboration of sociolinguistic problems. In the Soviet Union language development comprised a far-reaching programme of the education of numerous formerly backward peoples on the basis of their native languages. This entailed the comprehensive solution of innumerable scientific,

organisational, financial-economic, cultural, educational, and linguistic-theoretical problems of immense social, state, scientific, and practical significance: the organisation in non-Russian regions of tens of thousands of schools, hundreds of institutions of higher learning, research institutes, academies of sciences and branches of these academies, theatres, clubs, and a periodical press using local languages; study of questions related to the development of the social functions of languages, the elaboration of phonological and graphical foundations of alphabets, and so on. The Soviet government made large allocations for language development. More than 50 peoples received written languages. This is more than was created in Europe throughout its recorded history. Language development on this scale became possible in conditions of socialist construction one of whose tasks was the practical implementation of the famous proposition by Marx and Engels, who wrote, having language in mind: "...the individuals at some time will take completely under their control this product of the species as well".³² Fulfilment of the complex task of language development was one of the channels for the successful implementation of the programme for the comprehensive development of socialist nations and nationalities and of their cultures.

The assertion of some authors³³ that steps to create a written language and to develop some national languages were taken only in the 1920s and 1930s, and that consequently this work was halted and the Russification of the languages of the peoples of the USSR was started does not conform to the facts. Actually, the development level of the languages of the peoples of the USSR has never been as high as it is today. This is eloquently shown by the following facts. In 1913, the Kirghiz people had no written language. That language was created in 1924. By 1971, more than 450 titles with an aggregate printing of 3,824,000 copies had been published in Kirghiz. In the Yakut language, which is spoken only by 296,000 people, 100 titles with a total printing of 1,035,000 copies had been brought out by 1971.³⁴

In the 1914-1915 academic year, the Ukrainian language was not used in any of the secondary schools or institutions of higher learning in the Ukraine. In 1940, the institutions of higher learning in the Ukraine had a student body of 196,800, most of them receiving instruction in the Ukrainian language. In the 1970-1971 academic year, the student body numbered 806,600 in the 138 institutions of higher learning and in the 1975-1976 academic year, it numbered 831,300 in the 142 institutions of higher learning, in most of which instruction was conducted in the Ukrainian language.

The press gives the following picture: in 1914, only one Ukrainian language newspaper was published in the Ukraine; in

1950, there were 1,693 newspapers with a circulation of 575 million, and in 1970, there were 2,618 newspapers with an annual circulation of 3,478 million. In 1970, there were 105 scientific, socio-political, belles lettres journals and other periodicals with a total annual printing of 11,682,000 copies, and 394 newspapers with a circulation of 1,052,000,000 in the Uzbek, Kazakh, Tajik, Kirghiz, and Turkmen languages.³⁵

Analogous data may be cited with reference to other literary languages of the peoples of the USSR, the social functions of which have widened immeasurably in Soviet years.

From this data it is obvious that Elliot R. Goodman had no grounds for writing of a decline of the languages of the peoples of the USSR, of their Russification.

Nobody was so consistent and resolute in opposing the forcible imposition of any language, including the Russian language, on people speaking other languages, and nobody had so emphatically upheld the complete equality of languages and peoples as the Marxists-Leninists. It was Lenin's maxim that no nation and no language should be accorded privileges.³⁶

Goodman's book is certainly no model of impartiality. It does not help to foster understanding between peoples and states. However, in the USA there are scientists who endeavour to give an objective picture of the life of the peoples of the USSR, of Soviet reality. We value their works highly. One of them is Professor W.C. Townsend, author of the book *They Found Common Language*.³⁷ We are in agreement with Professor Joyce O. Hertzler, who wrote that more than any other country the Soviet Union appreciates the importance of studying languages. "The Communists," he writes, having the USSR in mind, "appreciate fully the force of language as an instrument of indoctrination, they are showing the world that words, especially in the people's own languages, may be far more effective than bombs."³⁸ We thus see that the sociolinguistic problems of the scientific and technological revolution are linked also with an acute ideological struggle.

From the aforesaid it follows that the role and significance of sociolinguistics will unquestionably grow with the further development of society and the scientific and technological revolution.³⁹

NOTES

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From the History of the Chinese Communist Movement

EVGENI KOVALEV

China is one of the countries that came under the powerful influence of the Great October Socialist Revolution. It was the October Revolution that imparted to the Chinese national liberation movement a qualitatively new direction and facilitated the emergence in China of new social and political motive forces of that movement. This occurred in the middle of the first five-year period following the October Revolution of 1917, when, to cite Lenin, China was "seething".¹

What made China, soon after the October Revolution and under its impact, occupy one of the foremost places among the oppressed nations of the East, in terms of the development level of the national liberation struggle? The answer, it seems, lies in the fact that, owing to the great acuteness of the internal and external contradictions affecting China, she was one of the weakest links in the colonial system of imperialism.

By the end of the 19th and the beginning of the 20th century, China had become a semi-colonial country which was economically, financially, and politically dominated by foreign capital and which was socially and economically backward to the extreme. During the First World War, when the attention of the belligerent powers was diverted from China, a national industry emerged there and, with it, an industrial proletariat, and national-patriotic feelings were awakened. Economic and social changes aggravated the contradictions between the Chinese people and foreign capital, and also the contradictions between the Chinese people and the domestic semi-feudal system which was backed by imperialism.

These internal and external contradictions, the most glaring of which were those between the Chinese people and imperialism, formed the objective basis for the ripening and development of the Chinese national liberation movement in the new internal and international conditions that had taken shape under the impact of the Great October Socialist Revolution.

Of the various factors of the influence of the October Revolution on China, the most important was the impact exerted by the first news reaching that country about the October Revolution, by Lenin's foreign policy line, by the spread of Marxism-Leninism in the country, and by the first contacts between the world Communist movement [the Comintern and the Russian Communist Party (Bolsheviks)] and the Chinese Communist movement that had just emerged in China. These important developments facilitated the laying of the ideological and organisational foundations of the Communist movement in China, and this was a great achievement by the Chinese working class at that time.

* * *

On the eve of the October Revolution, various sections of the Chinese intelligentsia had shown a keen interest in the events taking place in Russia. The victory of the February bourgeois-democratic revolution had greatly stirred the revolutionary democrat Li Ta-chao, who became subsequently one of the organisers of the Communist Party of China (CPC). On March 29, 1917, he published an article in the Peking liberal newspaper *Chiayin* (Tiger), of which he was the editor, entitled "The Influence of the Great Russian Revolution". In it Li said that the Russian revolution encouraged the Chinese to fight for "a strengthening of the republican system" and to oppose the restoration of the monarchy in China.² In the following April, an article by Chen Tu-hsiu, a representative of bourgeois radicalism, appeared in *Hsin chingnien* (New Youth), a monthly magazine of the bourgeois-democratic intelligentsia published in Shanghai. Chen pointed out in his article that the February revolution in Russia had helped "arouse" the Chinese people.³

For the first time in the Chinese press, the events taking place in Russia at that time were linked with the name of Lenin and his struggle for peace. Thus, *Hsin chingnien* reported that "Lenin is actively seeking people who share his views for the purpose of conducting peace propaganda", and that "troops at the front that had been won over to Lenin's Party have practically abandoned the war".⁴

News about the victory of the October Revolution reached

China on the third day after it took place. It was reported in *Minkuo jihpao* (The Republic), a Shanghai newspaper published by Sun Yat-sen's supporters, on November 10, 1917. The next day it was reported in the major bourgeois newspapers in Shanghai and Peking. Those earliest reports were no more than an announcement of the fact and were not always accurate, and in some instances were accompanied by malicious attacks against the revolution. Nevertheless they introduced to the Chinese public social ideas which were hitherto unknown to it and which therefore aroused tremendous interest among various social groups. From newspaper reports they learned that Russian revolutionary workers, sailors, and soldiers had overthrown Kerensky's government and that Lenin at the Second All-Russia Congress of Soviets called for the conclusion of a peace treaty, for turning over land to the peasants, and for solving the country's economic problems.⁵ They were no longer satisfied with knowing that a revolution had been accomplished in Russia, but wanted to learn about the nature of that revolution, about Soviet power, the Party of the Bolsheviks, and Lenin's role in the October Revolution.

The revolutionary democrat Sun Yat-sen and the democrats who grouped around him hailed the October Revolution. In a conversation with Japanese and Indian journalists in the spring of 1918, Sun Yat-sen spoke in favor of recognition of Soviet Russia by Asian countries and of publishing reports in their press about the achievements of the October Revolution.⁶ It was probably then that Sun Yat-sen sent a cable to the Soviet government and to Lenin, in which he, on behalf of the parliament of South China and his party, expressed admiration for the successes of the Bolsheviks and the hope that the Revolutionary Party of China (Chungkuo Koming tang) and the Russian Communist Party (Bolsheviks) would unite their efforts in joint struggle. Later Sun Yat-sen wrote that the Russian revolution "was for China an example of how a country can liberate itself from the fetters of foreign aggression and injustice",⁷ and that "if from now on we do not follow the example of Russia, our revolution will fail".⁸

Chinese students also responded with enthusiasm to the October Revolution. In a petition addressed to the government, dated May 21, 1918, a group of students wrote: "The new Russian government, which has set as its goal the creation of a communist society, has already declared that it will under no circumstances commit aggression against another country."⁹

The October Revolution was of such epochal significance that in China even those whose ideology and political views were opposed to scientific socialism came under its liberatory influence and showed a keen interest in what was happening in Russia.

Thus, the monthly journal *Laotung* (Labour), edited by one of China's first anarchists, Chich-huei, which came out in Shanghai between March and July 1918, made an attempt to explain the character, meaning, and goals of the October Revolution. In the article "War in Europe and the Working People," published in the first issue (March 20, 1918), it was pointed out: "Events [in Russia] are developing in such a direction that the workers, having overthrown those who held power, will themselves govern the country and in the future will probably put an end to war for ever."¹⁰

The response in China to the revolutionary events in Russia, and the attempts of various bourgeois and petty-bourgeois groups in China to understand these events, clearly show that the October Revolution awakened the political consciousness of these groups, made them aware that a social revolution, the greatest in mankind's history, had taken place, and compelled them to ponder the meaning of this fact and the possible course of development of China herself. The truth of what was taking place in Russia—and this was something that the ruling circles in China and Western bourgeois propaganda could not conceal from the Chinese people—was that for the first time in history political power was wrested from landowners and capitalists and taken over by the working people, i.e., workers and peasants.

The effect of this event on the Chinese public was enormous. Later, the outstanding organiser of the working-class movement, Teng Chung-hsiang, who called the October Revolution "the greatest event in world history", wrote: "Chinese workers, living under unbelievably wretched conditions, greeted with joy the news about the world working-class movement. They especially rejoiced at the news about the triumph of the Great October Socialist Revolution in Russia. This was an inspiring event for Chinese workers and deeply influenced the development of the revolutionary movement in China."¹¹

Lenin's foreign policy exerted a tremendous revolutionary influence on China. The legislative acts adopted by the government of Soviet Russia, the country of victorious working class, in the years following the October Revolution, set an unprecedented example of how international relations should be conducted. As is known, as soon as the workers' and peasants' government was formed, it called on all belligerent nations and their governments immediately to begin talks on concluding a just and democratic peace. The Decree on Peace also declared null and void the secret treaties acceded to or concluded by Russia prior to October 25, 1917. On November 15 (28), the Soviet government called on the governments and peoples of the belligerent countries (including China) to hold armistice talks.¹² On December 2, 1918, the

Presidium of the All-Russia Central Executive Committee resolved to annul the treaty which Russia concluded with China on August 25, 1901, under which the latter was to pay indemnities to Russia in connection with the Boxers' Uprising.¹⁵

The government in Peking headed by Tuan Chi-yui did not respond to the Soviet proposal, broke off negotiations on establishing friendly relations between the Soviet republic and China which were started in November-December 1917 on the initiative of the Soviet government, and at the end of March 1918 recalled its envoy to Russia, thus virtually severing relations with the Soviet Republic. That the Peking government was hostile to the RSFSR was also seen in its direct involvement in anti-Soviet actions conducted by White Guard bands in Northeastern China, and in its open support of former tsarist diplomats stationed in China. On May 16, 1918, a secret Japanese-Chinese agreement on joint military actions against Soviet Russia was concluded. In accordance with this agreement the Japanese and the Peking governments sent troops under Japanese command to the Soviet Far East and to Siberia. After that other agreements were signed by Peking and Tokyo which turned China into an instrument in the struggle against the world's first socialist state.

Despite the anti-Soviet intrigues, the Peking government could not suppress the feeling of sympathy which the Chinese masses had for Soviet Russia. Its policy of promoting peace and friendship and equality of the peoples, the first of its kind in the history of international relations, convinced the Chinese people that new Russia, where a socialist revolution had been successfully carried out, was a sincere friend of their country.

Soviet Russia tried to establish friendly relations with the Chinese people on the basis of joint struggle against imperialism. In a letter (August 1, 1918) to Sun Yat-sen, People's Commissar for Foreign Affairs of the RSFSR G. Chicherin said that at a time when imperialist powers were trying to destroy the Russian revolution and "when the Peking government set up by foreign bankers was ready to join forces with the plunderers... the Russian toiling classes appeal to their Chinese brothers and call on them to wage a joint struggle."¹⁴

In the summer of 1919, the young Soviet Republic made yet another effort to establish good-neighbourly relations with China. In the "Appeal of the Government of the RSFSR to the Chinese People and the Governments of Southern and Northern China," dated July 25, 1919, it was said that the Soviet government was "ready to reach an agreement with the Chinese people ... on cancelling all acts of coercion and injustice against China concluded by previous Russian governments jointly with Japan and the Allies," that "it renounces the indemnities to be paid by

China in connection with the Boxers' Uprising of 1900, and proposes that the Chinese government establish official relations with the government of Soviet Russia."¹⁵

In China, response to the Appeal was enthusiastic. Organisations of workers, students, businessmen and industrialists, journalists, etc., sent messages of greetings to Soviet Russia, and a movement for extending recognition to the Soviet Republic got under way.¹⁶ The Chinese Association of Labour sent a message to the workers, peasants, and Red Army men of Russia, in which it said: "All our people greatly admire your creative efforts and your spirit of self-denial, which are especially cheering and inspiring for our working people. They wish to cooperate with the workers, peasants and Red Army men of Russia, who rose up under the banner of humaneness and justice, and through joint efforts to wage the struggle for overthrowing the privileged classes and for achieving the great world unity."¹⁷

Under the pressure of public sentiments the Peking government sent a military-diplomatic mission to Soviet Russia to discuss preliminary conditions for holding possible Chinese-Soviet negotiations. On September 5, 1920, the mission, headed by Chang Seu-lin, arrived in Moscow.¹⁸ The Soviet government, out of respect for the Chinese people and wishing to normalise relations with China, accorded the Chinese delegation a cordial reception. This was acknowledged in Peking. On September 18, the Peking government notified the former tsarist missions and consulates in China that they should discontinue their activity. But the Peking government went no further.¹⁹ Owing to pressure of foreign powers, the Peking government declined to establish diplomatic relations with Soviet Russia.

Continuing the policy of normalising Soviet-Chinese relations, the government of the RSFSR, on September 27, sent a note to the government of the Chinese republic proposing that they start negotiations on the conclusion of an agreement. "Between the Russian and the Chinese peoples there are no questions which cannot be settled to the advantage of both peoples," the Soviet note said. "We know that the enemies of the Russian and the Chinese people are trying to prevent our being friends and drawing together; they well understand that friendship and mutual help between the two great peoples will make China stronger."²⁰ Lenin received Chang Seu-lin before the latter left Moscow on November 2, 1920.²¹

Since "the Peking government does not express the will of the Chinese people and is waging a struggle against the people of South China who have revolted against the reactionary North,"²² the Soviet government decided to support the proposal of Sun Yat-sen, President of the national government formed in Canton

in the autumn of 1917, for establishing contacts with Soviet Russia. A letter sent by G. Chicherin on October 31, 1920, conveying greetings and proposing that trade be re-established between Russia and China reached Sun Yat-sen on June 14, 1921. In his reply of August 28, 1921, Sun Yat-sen wrote: "I am extremely interested in your cause, in the organisation of your Soviets, your army and your educational system. I would like to know all that you and your colleagues can tell me about these questions, and especially about the educational system. In the same spirit as that displayed in Moscow, I would like to lay the foundations of the Chinese Republic deep in the minds of the younger generation—the working people of tomorrow. With the best wishes to you and to my friend Lenin and to all those who have done so much for the cause of human liberty."²³

The Peking government was unable to check the growing influence of the revolutionary ideas coming from the Republic of Soviets. The very existence of Soviet Russia, and her attitude towards China based on the principle of equality won the hearts of the working people and progressive circles in China, opened before them the hope for a better future and awakened in them the desire to fight for it and also to support the world's first state of workers and peasants, and to work for the recognition of new Russia.

* * *

Response of the Chinese liberal press to the October Revolution was sympathetic, and the assessment of the Russian revolution by progressive groups in China was objective; and this had a perceptible influence on Chinese public opinion. However, they had not as yet answered the question of how to put China on a revolutionary path. Sun Yat-sen's group rejected class struggle and believed that the reconstruction of Chinese society could take place within the capitalist system. As for the Chinese proletariat, it was still a "class in itself" and did not yet realise that a correct application of the theory of scientific communism was what made possible the victory of the revolution in Russia.

Marxism was little known in China before the October Revolution of 1917 in Russia. After the October Revolution and under its influence there appeared in China, from among the most progressive circles of the Chinese revolutionary-democratic intelligentsia, the first representatives of a revolutionary-socialist intelligentsia, and from among these—the first followers and propagandists of Marxism. The transition from the revolutionary-democratic to the revolutionary-socialist outlook, and from the

mastery of the theory of scientific communism to the dissemination of it, was not an easy one.

For, in the conditions then prevailing in China, revolutionaries were under the constant threat of imprisonment and torture.

It was also difficult to discard many political and social concepts which had been implanted in people by education and social environment. Thus, among the first and relatively few representatives of the revolutionary-socialist intelligentsia, there were not only firm supporters of scientific socialism, but also temporary fellow-travellers who in the beginning were attracted to the new theory but had not really understood it and who later withdrew from the revolution. Nevertheless the very emergence, in Chinese society, of revolutionary-socialist intelligentsia, whose outlook was completely opposed to that of the other strata of Chinese society, was a qualitatively new phenomenon in the ideological and political life of the country.

Among the first to join the ranks of the revolutionary-socialist intelligentsia was Li Ta-chao, who became a propagandist of scientific socialism among the working class and helped found the Communist movement in China. From revolutionary democracy to Marxism and proletarian internationalism—such was Li's political path. And an important landmark along this path was the Great October Socialist Revolution in Russia. Li was the first among the Chinese revolutionary-socialist intelligentsia to hail the October Revolution, and also the first to analyse the situation in his own country in the light of the ideas of the October Revolution. He called on the Chinese people to take the path that had been opened up by the proletarian revolution in Russia. In his articles "Today" and "The New! The Old!" published in the spring of 1918, Li pointed out that China could liberate herself from the unbearable situation she was in, and solve her domestic and foreign policy problems only through active struggle by the masses against the old political system.²⁴ In the earlier revolutionary movement in China, only a relatively small group of revolutionaries understood the necessity of struggle against the old system, but they were cut off from the masses and there was a gap between their theory and practice. Li Ta-chao's thesis was a completely new one. It differed from the views of the other members of the *Hsin chingnien* group. Thus, Chen Tu-hsiu, who rejected the idea of the struggle of the masses since he believed that the weaknesses of the Chinese revolutionary movement were due to the feudalistic mentality of the people, held that China's road to liberation consisted in the establishment of a bourgeois-democratic republic. For Dr. Hu Shih, China's salvation lay not in breaking-up the existing system but in carrying out changes in the cultural and educational fields. Li Ta-chao alone raised the basic

question about the path of China's further development, and was guided in his thinking by the experience of the October Revolution.

Marxism-Leninism reached the Chinese working class only after a bitter struggle against pseudo-socialism, reformism, anarchism, and other political and ideological trends which were alien to scientific socialism and which shackled the Chinese intelligentsia with Western bourgeois ideology. The ideological struggle between the Chinese supporters of Western political views and concepts, and the revolutionary-socialist intelligentsia in the first years after the October Revolution became increasingly sharp as it became more and more involved with problems of vital importance to the Chinese people—problems of war, peace, and revolution which had arisen after the end of the First World War and in connection with the forthcoming signing of a peace treaty.

In his article "A Comparison of the French and the Russian Revolutions" (July 1918), Li Ta-chao, proceeding from internationalist positions, expounded the thesis about the need for active struggle by the masses against the old political system. Showing a level of understanding unusual for China at that time, Li emphasised the international character of the October Revolution. He pointed out that whereas the French Revolution was carried out under the slogan of nationalism and in the interests of one country, the Russian revolution was "a socialist, a deeply social revolution of the type that will triumph throughout the world".²⁵ In his article "The Victory of Bolshevism" (November 15, 1918), Li regarded the October Revolution as a victory "of socialism and Bolshevism... of the world working class", and said that the organiser of this victory was the Bolshevik party whose activity was based on the theory of Marx and Lenin. Li wrote: "Although Bolshevism was created by Russians, it reflects the awakening of all mankind in the 20th century."²⁶

Li's articles had a great revolutionary influence on the Chinese public, an influence which was much more significant than that exerted by any other publications or speeches by Chinese progressives at that time. In defending the Russian revolution and its basic principles in debates with members of the bourgeois and petty-bourgeois intelligentsia, Li Ta-chao became an active spokesman for the emergent Marxist intelligentsia which was numerically small and not sufficiently steered ideologically.

The voice of the Chinese Marxist intelligentsia calling for a positive response to the October Revolution, and the foreign policy of Soviet Russia aimed at establishing equal, good-neighbourly relations with China, were important factors in the shaping of national and political consciousness among broad sections of the Chinese people. In late April 1919, at the Paris Peace Conference

the Chinese government delegation demanded an end to the policy of carving out spheres of influence, lease of territories, concessions and extraterritorial rights and other privileges of foreign nationals in China, in particular, Japan's claim to Shantung. But the demand was rejected. This aroused widespread indignation in China. On May 4, 1919, a mass patriotic anti-imperialist movement got under way.

In the May 4 Movement the Chinese working class took the first step towards independent political struggle. But ideologically and organisationally it was still immature, and this prevented it from becoming the leader and the main motive force of the movement. But even so, it demonstrated that the Chinese proletariat was already beginning to play an independent role and to realise its place in the revolution, and in this way hampered the efforts of the bourgeoisie to seize control of the revolution.

The ideological struggle between the supporters of Western bourgeois political views and concepts and the revolutionary-socialist intelligentsia led to a further ideological and political differentiation among the members of the Chinese petty-bourgeois and bourgeois intelligentsia. The differences between the two currents of ideological-political thought in China found expression in the struggle for two possible paths of development of the country: the socialist and the capitalist. The position of the bourgeois intellectuals represented the interests of the national bourgeoisie who wanted national independence but was in favour of the capitalist path of development and of the dictatorship of the bourgeoisie. But the victory of Marxism-Leninism in Russia showed that it was also possible for China to take the socialist path. And this was the path advocated by the revolutionary-socialist intelligentsia who believed in the resurgent force of the ideas of communism and who therefore not only propagandised these ideas but took part in actual revolutionary struggle and began to introduce the ideas of scientific socialism to the working class.

Under the conditions of the colonial regime and the constant persecution of everything that was progressive, the process of maturing of the Chinese revolutionary-socialist intelligentsia, of propaganda of Marxism-Leninism, and of the Chinese public's acceptance of scientific socialism, was a complex and difficult one. Thus, for example, Tsü Chiu-po, one of the organisers of the Chinese Communist Party, described social thinking in China in the 1919-1929 period as follows: "Discussions about socialism usually arouse in us a boundless interest. However, we still have only a hazy notion about socialism; it is as if we were seeing the sunrise through a window with the curtain drawn. We have no

clear notion about existing socialist trends, and the very idea of socialism remains vague to us."²⁷

Thus a twofold task was to be carried out: to give the Chinese public a clear idea of scientific socialism, and to defend scientific socialism in the struggle against its opponents. And in fulfilling this task, of great importance was the work of propaganda of Marxism conducted by Li Ta-chao. A special issue of *Hsin chingnien* (May 1919), which he edited, was devoted to problems of Marxist ideology. It contained the first part—the second part appeared in the following issue—of a theoretical article by Li, entitled "My Conception of Marxism".²⁸ In it Li noted the international character of Marxism; he wrote that since the revolution in Russia, Marxism had become a current of thought that had penetrated all corners of the world, and that one revolution after another had broken out in Germany, Austria, and Hungary, of which the principles of Marxism were the guiding principles.

After the government had temporarily banned the *Hsin chingnien* in June 1919, Li Ta-chao continued to carry out Marxist propaganda and the struggle against the liberals and reformists. Earlier, at the end of 1918, he founded the weekly *Meichou pinglun* (Weekly Review), which he edited. Li realised that class struggle was the motive force of history; and expounding this Marxist thesis by referring to the history of the struggle of the Russian working people, he pointed out in his article "Class Struggle and Mutual Aid": "Class struggle is the road leading to the elimination of class society. This road cannot be bypassed; it must be traversed."²⁹ In the issue of August 17, 1919, there appeared Li's article-letter "Once More About Concrete Problems and 'Isms'", which was a reply to an article published in the weekly by Hu Shih, who called for the study of "concrete problems" instead of theoretical questions (i.e., Marxist-Leninist ideas), who rejected the Marxist theory of class struggle and proposed that the Chinese people take the path of compromise and consensus, of class collaboration and reform. Li, on the other hand, called for the study of Marxism and its practical application, pointing out that scientific socialism was the weapon with which the proletariat could put an end to social injustice, "destroy the class of capitalists", and "drive out our rulers who live on the labour of others".³⁰

The debate between Li Ta-chao and Hu Shih was of fundamental political importance. It signalled a split of the Chinese intelligentsia into two groups—a Marxist group and a conciliatory group—over the question of whether the Chinese people should take the revolutionary or the reformist road. For the small group of Chinese Marxists, the ideological struggle

against bourgeois reformists was a serious test of their ideological maturity. This struggle became in part an effort to disseminate Marxism and carry out revolutionary activity among the working class.

Of great significance for the formation of a Marxist intelligentsia in China, for the laying of the ideological and organisational foundations of the Chinese communist movement, and for the uniting of scientific socialism with the working-class movement were the first congresses of the Comintern and the first contacts between the Comintern and the Chinese Marxists.

In April 1920, the Far Eastern Secretariat of the Comintern sent its representatives to Peking—G. Voitinsky, I. Mamayev and Yang Ming-chai.³¹ There they got in touch with Li Ta-chao, and with a letter of introduction from Li they went to Shanghai³² to meet Cheng Tu-hsiu who was then editor of *Hsin chingnien*. The meeting proved to be of great importance for Chinese Marxists who, as Li Ta-chao wrote later in his memoirs, thus "came to know better the situation in the Soviet Republic, and to learn more about its Communist Party. The result of all this was clear for us: we must go the way Russia is going."³³

Lenin took a keen interest in the revolutionary movement in China and in the work among the Chinese working people living in Russia. On November 29, 1918, he received Chang Ying-chung and Liu Tse-jung (Lau Hsiu-chau),³⁴ representatives of Chinese workers living in Russia. On April 11, 1920, Lenin met again with Liu Tse-jung.³⁵

Since the ideological struggle between the Marxists, on the one hand, and the reformists and pseudo-socialists, on the other, turned on the question of "for or against the dictatorship of the proletariat, for or against a centralised and disciplined party",³⁶ it hastened the ideological polarisation of the Chinese intelligentsia and confronted the Marxists with the necessity of uniting their efforts. One stage in the achievement of this end consisted of the formation of Marxist circles (Communist groups). The first Marxist circle was organised by Cheng Tu-hsiu in May 1920 in Shanghai.

Before the summer of 1920, Marxism spread mainly among the petty-bourgeois intelligentsia and was almost unknown among the working class. The formation of Marxist circles in Peking, Wuhan, Canton, Tsinan, Tientsin, Hangchow, and Changsha made it possible to organise propaganda of Marxism-Leninism among the workers and to raise their class consciousness, and thus to unite the theory of scientific socialism with the working-class movement. Dissemination of Marxism-Leninism was conducted by *Hsin chingnien*, which had now become the legal organ of the Marxist circle in Shanghai.³⁷ The theoretical journal of the

Chinese Marxists was the illegal monthly *Kungchang tang* (Communist), the first issue of which came out on November 7, 1920.

The growth of political consciousness and organisational skill of the Chinese proletariat was stimulated by the celebration of May Day, for the first time in 1920. A special committee was formed in Shanghai, which called on social organisations in other cities to mark the holiday. *Hsin chingnien* published an article by Li Ta-chao on the history of May Day; in the article Li urged the workers to wage political struggle.³⁸

On the initiative of the Marxist circles, weekly publications for workers were put out in industrial cities, which carried articles on the fundamentals of Marxism-Leninism and reports on the political struggle waged by working people. Translations of works by Marx, Engels, and Lenin also appeared.³⁹

The effectiveness of political propaganda conducted by the Marxist circles became soon apparent. In 1920, there were 46 strikes by workers, with 19 of them involving a total of 46,140 workers; in 1921, there were 49 strikes, with 22 of them involving a total of 108,025 people.⁴⁰ Some strikes bore an anti-imperialist character.

The formation of Marxist circles represented an important stage in the ideological maturing of the Marxist intelligentsia and in the spread of Marxism-Leninism in China. However, the forces of the Chinese Marxists remained scattered, and this hampered the propaganda of Marxism and its uniting with the working-class movement. It became necessary to establish a single Marxist party. The experience of the October Revolution, of the Russian Communist Party (Bolsheviks), of the Comintern, and of the Chinese Marxists themselves convinced them of the need to unite progressive workers in a proletarian party which would lead the struggle of the popular masses against the imperialist and feudal forces. A favourable circumstance here was that in China there was no aristocracy of labour such as that which existed in the West and which, as is known, served as the basis of reformism in the working-class movement. But there were also negative factors—a backward, agrarian economy, the small size of the proletariat, and its being strongly influenced by petty-bourgeois peasant ideology. Later these negative factors had their effect on the activity of the CPC leadership.

The ideological growth of the Chinese Marxists, their contacts with the Comintern, the Marxist circles, and propaganda of Marxism-Leninism among workers formed the ideological and organisational basis for the establishment of the CPC. The foundation of the Communist Party of China was officially proclaimed at its First Congress which took place from July 23 to August 5, 1921, in Shanghai. This was a victory of Marxism-

Leninism, a concrete proof of the influence of the Great October Socialist Revolution on China, and an outstanding event in the history of modern China. It meant the uniting of the Chinese working-class movement with Marxism-Leninism, and the participation of the Chinese Communist movement in the struggle of the international proletariat.

* * *

The historical experience of world socialism “has convincingly shown the universal significance of the main laws of the socialist revolution and of the building of a new society which were disclosed by the science of Marxism-Leninism and which were implemented for the first time in the October Revolution. It has confirmed the need for creatively applying these laws to concrete conditions and for taking the specific features of individual countries into account.”⁴¹ Since the October Revolution, nationalists, revisionists, and bourgeois ideologists have tried to discredit the general, objective laws of social development, the historical initiative of the working class, and the revolutionary-transforming influence of the Great October Socialist Revolution.

For contemporary Chinese historiography, the basic theoretical, ideological and political document is the “Decision on Some Questions Concerning the History of Our Party,” written by Mao Tse-tung, and adopted at the 6th Session of the 7th Plenary Meeting of the CPC Central Committee on April 20, 1945.⁴² This document is a striking example of the violation of the Marxist-Leninist principles of historicism, the substitution of a subjective, voluntarist approach to social phenomena, in this case the communist movement in China, for the objective methodology of the study of historical process. Distorting Lenin’s theory of the forms of transfer of power, Maoist historiography tries to belittle the historical experience of the October Revolution. Maoist historians declare that the proletarian revolution in Russia testifies to the fact that there is only one possible form of transfer of power, which is the forcible, armed form.⁴³ They maintain a deliberate silence on the role played by Chinese revolutionaries-internationalists in laying the ideological and organisational foundations of the Communist movement in China.

The Great October Socialist Revolution which, under the banner of Marxism-Leninism, broke through the front of world imperialism and ushered in the epoch of mankind’s transition from capitalism to socialism, dealt a crushing blow at the entire system of imperialism. It greatly stimulated the growth of the national liberation movement in the colonial and dependent countries, and showed the Chinese people the way to struggle for

liberation from the yoke of imperialists and feudals. In the very first years after the Great October Socialist Revolution and under its influence, the national liberation movement swept through China, which laid the foundation of the process of eliminating the semi-colonial and semi-feudal regime in the country, imparted to the struggle of the Chinese people a pronounced anti-imperialist and anti-feudal character and, with the support of the forces of socialism, democracy and peace, ended in the victory of the people's revolution in 1949.

NOTES

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- ³ *Hsin chingnien*, April 1, 1917, Vol. 3, No. 2, pp. 1-3.
- ⁴ *Ibid.*, June 1, 1917, Vol. 3, No. 4, p. 2.
- ⁵ "News Reports about the October Socialist Revolution in the Chinese Press in 1917", *Lishih yenchiu*, 1954, No. 4, p. 52.
- ⁶ S. L. Tikhvinsky, *Sun Yat-sen. Foreign Policy Views and Practice*, Moscow, 1964, p. 222 (in Russian).
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- ¹⁰ *Ibid.*, p. 63.
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- ¹² *USSR Foreign Policy Documents*, Vol. 1, Moscow, 1957, pp. 11-13, 15, 28-30 (in Russian).
- ¹³ *Ibid.*, p. 593.
- ¹⁴ *Ibid.*, pp. 415-416.
- ¹⁵ *Ibid.*, Vol. 2, Moscow, 1958, pp. 222-223.
- ¹⁶ Pung Ming, *A History of the Chinese-Soviet Friendship*, Moscow, 1959, pp. 72-74 (in Russian).
- ¹⁷ *Hsin chingnien*, May 1, 1920, Vol. 7, No. 6, Supplement 10, pp. 7-8.
- ¹⁸ *USSR Foreign Policy Documents*, Vol. 2, pp. 498-499; Vol. 3, Moscow, 1959, p. 214; M. S. Kapitsa, *Soviet-Chinese Relations*, Moscow, 1958, p. 51 (in Russian).
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- ²⁰ *USSR Foreign Policy Documents*, Vol. 3, p. 214.
- ²¹ V. I. Lenin, *Complete Works*, Moscow, Vol. 41, p. 685 (in Russian).
- ²² *USSR Foreign Policy Documents*, Vol. 1, p. 110.
- ²³ *Soviet-Chinese Relations. 1917-1957*, Moscow, 1959, pp. 58-59 (in Russian).
- ²⁴ *Hsin chingnien*, April 15, 1918, Vol. 4, No. 4, pp. 307-310, and also May 15, 1918, Vol. 4, No. 5, pp. 446-449; Li Ta-chao, *Selected Works*, Peking, 1959, pp. 93-110 (in Chinese).

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- ²⁶ *Ibid.*, pp. 69, 75-76, 78, 81.
- ²⁷ Tsü Chiu-po, "Travel Notes About New Russia", *Collected Works*, Vol. 1, Peking, 1954, pp. 23-24 (in Chinese).
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- ³¹ Ting Shou-ho et al., *op. cit.*, p. 166; Yu An-li, "The Communist International and the Birth of the Communist Party of China", *Communist International*, 1929, No. 9-10, p. 181; Chi Wu Lao-jen, "Before and After the Formation of the Communist Party of China", *Hsin kuanhsa*, 1957, No. 3, p. 16.
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Imperialism and the Liberated Countries

KAREN BRUTENTS

In the 1970s the antagonism between imperialism and the liberated countries grew more acute. Leaning on the changed correlation of class forces in the world and on the support of socialism, and utilising the relaxation of international tension, the peoples of these countries achieved new successes. Their international position has grown stronger, progressive changes have taken place in many of them.

The defeat of imperialism's policy impelled its authors to make certain modifications in the strategy and tactics of neocolonialism, to look for new ways of attaining its objectives.

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The facts show that in the last few years a substantial, even a qualitative, change has been achieved in each of the main directions of the anti-imperialist struggle of the peoples of the liberated countries.

It is during these years that the last colonial empire collapsed and as Leonid Brezhnev noted, "the colonial system of imperialism in its classical forms can, on the whole, be regarded as having been dismantled".¹ Of the world's 160 states more than 90 gained their sovereignty as a result of the breakup of this system. The walls of the remaining racist bastions are also beginning to crumble.

Appreciable successes were achieved in the confrontation with political neocolonialism as the overthrow of the puppet governments in Indochina most strikingly demonstrated. In several of the African countries the neocolonialist regimes were abolished, a

number of states of Southeast Asia, Africa and Latin America rejected the inequitable treaties and agreements imposed by the imperialist powers. The political independence of the young states began ever more to acquire a substantial content.

The present stage of the liberated countries' confrontation with imperialism is distinguished by a sharp upswing of the struggle to restrict and abolish the exploitation of these countries by the capitalist world. This has manifested itself mainly in two interconnected processes. One of them, that of the nationalisation of the property of foreign companies, was observed before. But it has now acquired such scope that it has become a qualitatively new phenomenon embracing, according to incomplete data, more than forty young states of different orientations. The wave of nationalisation extended from Peru to India, from Lybia to Madagascar, striking a telling blow at the powerful international monopolies, at the entire system of neocolonial exploitation created by world finance capital.

The other front of struggle was opened when the young states advanced their platform of a "new economic order", demanding the radical restructuring of economic relations with the imperialist world. Their joint stand in defence of their interests, their increased unity in the face of imperialism and the influence of socialism make these demands a material force.

These actions became particularly effective when the economies of the leading capitalist states found themselves dependent, as never before, on raw material imports. Even the USA, which has large oil deposits of its own, has to import up to 48 per cent of its oil consumption.

The massive nationalisation of monopoly property, the collective actions for a "new economic order" marks the beginning of a new stage in the relations between the liberated countries and imperialism, one which in its implications is comparable to the collapse of the colonial empire.

All these changes have made for the enhancement of the role that the former enslaved countries now play in world politics. A new, important frontier has been reached in this process which is characteristic to one extent or another of the entire postwar period. This has found expression in the increased activity of the non-alignment movement.

The consolidation of the positions of the young states in the anti-imperialist struggle is bound up with the deep-going internal changes which are putting an end to the colonial past in politics and economics, in social relations and in spiritual culture. This process is not a straightforward one, it is marked by zigzags and even retrogression, it is beset by enormous difficulties. But this is only natural for a process of such dimension and complexity, and

does not in the least detract from its world historic significance.

The economic pattern of many of the young states has altered considerably, although their position in the capitalist world economy has not undergone any fundamental change. Industry accounts for about 15 per cent of the GNP of the former colonial and dependent countries. Although the need for national cadres is still acute, many of these countries already have a large number of specialists who have been trained to a large extent with the help of the socialist world.

The number of former colonies and semi-colonies which have still not decided on their path of development is steadily decreasing. They are mainly the more backward states of Tropical Africa. The countries which have taken the capitalist path differ both in the level and character of their development. Some of them have reached the middle level of capitalist development, although their economies have been deformed by colonialism. Different is the situation also in those countries whose economies might conditionally be called "dependent" capitalism, and in those which in their confrontation with neocolonialism are trying to advance along the path of national independence while retaining the capitalist system.

Capitalist development—all the more along the lines of national independence—does not remove or even blunt the antagonism between the young states and imperialism; all it does is modify it by introducing an element of intercapitalist contradictions. V.I. Lenin substantiated the conclusion that imperialism, by accelerating the development of capitalism in the enslaved countries "thereby extends and intensifies the struggle against national oppression".² As the experience of the young states shows, this tendency operates today as well, it resists the attempts of certain groups of the local bourgeoisie to enter into "partnership" with the imperialist monopolies.

In the socialist-oriented countries too the trend of development varies. The course of events has confirmed, by and large, that the trend towards the socialist orientation originates from the liberation struggle of the peoples of Asia and Africa, that it is reproduced again and again, the difficulties and temporary setbacks notwithstanding. The circle of countries of this orientation has expanded, in many other countries the position of the revolutionary-democratic forces has grown stronger. As the 25th Congress of the CPSU noted, new, progressive changes are taking place in the economic and political life of the socialist-oriented states many of whom have entered the third and fourth five-year period of their existence.

The increasingly distinct crystallisation of the trend of development of the young states is leading to a change in the correlation

of the liberation struggle's national and social features, to an intensification of class clashes and their expansion into national clashes. True, this often takes forms reflecting an insufficiently explicit social demarcation and the incompleteness of the nation-formation process. The national, anti-imperialist and anticolonial development trend does not lose its paramount importance, but the class struggle increasingly becomes a key factor also in national liberation issues.

Social differentiation in the former colonial and dependent world makes itself felt ever more strongly also at the interstate level, giving rise to contradictions and conflicts which painfully tell on joint actions against imperialism. The prevalence of capitalist relations in some of the liberated countries and the growth of exploiter classes there tend to give the processes, which are progressive on the whole, certain contradictory features. Thus certain forces in these countries want to pursue a course of "equal opposition" in world politics; they ignore the fundamental difference between the imperialist and the socialist states. And restriction of the monopolies' plunder of the former colonies and semicolonies at times leads to the enrichment of the élite of these countries, which uses the new financial opportunities in the interests of reaction, in the interests of imperialism.

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The successes of the liberated countries in the anti-imperialist struggle, their enhanced international prestige in connection with general world developments engendered crisis phenomena in neocolonialism both as regards its policies and the forms of dependence it had imposed. These and other events of recent years compelled the imperialist powers to reappraise, as it were, the political and social importance of the young states for the capitalist world.

Obliged to pay greater attention to the former colonies and dependencies, the imperialist countries began to "modernise" their neocolonialist policy with an eye to adapting it to present-day reality and the specifics of the liberation struggle of the peoples. First of all, a system of measures was elaborated promoting the accelerated development of "dependent" capitalism in the liberated countries through their more intensive inclusion in the international capitalist division of labour. In pursuance of this course, the imperialists sometimes make certain concessions, look for solutions that are more or less acceptable to the ruling groups of the young states.

Special efforts are concentrated in the economic sphere where imperialism holds strong positions while those of the liberated countries, on the contrary, are still vulnerable. The gap between these countries and the imperialist states in a number of important economic indicators continues to grow. In 1963, the per capita GNP in the former colonies and semicolonies was 12.5 times less than that in the industrialised countries; in 1974, it was already 14.1 times less (\$321 as against \$4,550). The foreign debt of the liberated countries has increased, according to some data, up to 200 thousand million dollars which, of course, makes it difficult for them to carry out an independent economic policy.

The policy of the neocolonialists is aimed at creating in these countries not only ancillary but also a number of basic industries, including a heavy industry oriented largely on exports to capitalist states. The former colonial and dependent countries are being assigned the role of raw-material and industrial-agrarian appendage of world capitalism.

Together with private capital, imperialist states are making, often on a collective basis, the implementation of this policy, of concrete economic projects and programmes their direct concern.

One can already now speak of scientific and technical dependence as one of the main reasons for the subordination to imperialism of the liberated countries that have made the greatest headway economically. The dependent character of industrialisation is further secured by the dominant role in it of foreign capital, of multinational companies. In 1975-1976, for example, the flow of direct private investments from capitalist states to the developing countries totalled 18,376 million dollars, which was 1.5 times more than in 1973-1974 and 2.2 times more than in 1971-1972. It is no accident that in their bilateral relations with the developing countries and also at international forums the imperialist states in every way possible publicise the "mission" of private foreign capital and insist on privileges for it.

Thus, neocolonialism's strategy remains essentially the same; the only alteration is with an eye to the opportunities opened up by the scientific and technological revolution. It is now setting its sights on a higher level of economic (read: capitalist) development of the liberated countries and more sophisticated forms of dependence. In fact, a new attempt is being made to solve a problem imperialism has been grappling with during the whole postwar period: to blunt the anti-imperialist struggle of the liberated countries, to secure the entrenchment in them of both capitalist relations and "dependent", that is, "backward" capitalism.

In respect to the demand for a "new economic order" the imperialists are pursuing procrastination tactics so as to gain time

and inveigle the liberated countries into a "dialogue". They reckon on causing a split among these countries and on inducing them to withdraw their demands. Exploiting the economic difficulties of many of the young states and also the growing socio-political stratification in them, the neocolonialists are particularly zealously provoking discord among them.

The imperialists cloak their negative attitude in loud declarations about "good will" and their readiness to create a fund of one thousand million dollars to aid the developing countries and to hold talks on stabilising raw-materials prices. They also resort to such manoeuvres as encouraging the tendency to artificially divide the world's states into "rich" and "poor", and thus instigate the liberated countries to accept the thesis of the "common responsibility" of all the developed countries for the existing socio-economic situation in the former colonies and semicolonies. This form of subversive actions against the cooperation of the socialist and the developing countries is being widely used by imperialist propaganda and diplomacy; it is one of the main directions of the neocolonialist strategy.

Changes are also observed in the political methods of realising neocolonialism's socio-economic and political course. In the period of the collapse of the colonial system and especially beginning with the 1960s, neocolonialism had two courses open to it. One was to instal dictatorial and tyrannical pro-imperialist regimes which, in one way or another, resisted change. The other was to support the moderate reformism of regimes with a bourgeois-democratic façade, so as to draw the broadest possible social forces into the orbit of "dependent" capitalism.

With the advent to power of the Carter Administration in the USA the accent has been shifted—at any rate in some regions of the former colonial and semicolonial world—to the reformist variant not excluding, of course, support of military dictatorships.

The new threads of the neocolonialists stretch to the social hierarchy of a number of liberated countries, which is using the aggravation of the energy-raw-materials problem to enrich itself.

Financial cooperation of a type unprecedented in the past is being established with the object of "coupling" the interests of the ruling circles and of the big bourgeoisie emerging in these countries to the interests of private and state monopoly capital of the imperialist powers. At the same time, the political actions of neocolonialism and local reaction, directed against the progressive forces in a number of regions of the world, are being coordinated. A new international reactionary social coalition of a specific character is taking shape.

One of the forms of this cooperation is the recirculation of "oil dollars", that is, their flow back to the industrialised capitalist

countries where they are put in government securities, in the assets of major industrial, commercial and insurance companies. In 1975-1976 alone, 22 thousand million dollars were recirculated back to the USA. Further, "oil dollars" are actively used for boosting capitalist development and expanding the imperialist world's economic-trade ties not only with the oil producing countries but also with other former colonial and dependent countries, as well as for bringing pressure to bear on the policies of the progressive young states.

The coalition, it appears, has broader spheres of political interaction. Thus, Saudi Arabia's oil minister has stated that his country is against raising oil prices since it is interested in the political stability of the countries of Western Europe and in preventing the Left forces there from strengthening their positions.

The course neocolonialism is steering towards creating "subimperialist" centres and bases in various regions of the Third World is becoming ever more apparent. It concerns primarily the countries whose policies are expected to chime in with those of imperialism and whose claims to a dominating position in the corresponding regions imperialism is prepared to support on these conditions. They are expected to act, and are acting, as an essential factor of struggle against the socialist, anti-imperialist orientation in the Middle East, in the Persian Gulf zone and in other regions of the world.

Another trend that is manifesting itself is the trend towards collective "neocolonialism". Despite differing approaches assumed by the USA and EEC states to some of the problems of the relations with the liberated countries, and despite their growing rivalry in this sphere, the imperialists are trying to muffle the contradictions that have become so obvious in recent years, to coordinate actions and even to contrive a kind of "division of labour" when it is a matter of fighting against the liberation movement. China takes a certain part in this "division of labour"; witness its participation in the international arena in the bloc of the most reactionary forces.

Imperialism employs a special tactic in relation to the countries of socialist orientation. Open hostility is being replaced by a policy of outward loyalty; but this policy is simply a cover for its continuing efforts to undermine this orientation. Every possible means is employed to this end, from forcible actions to attempts to stimulate a reactionary regeneration with the aid of political, economic and ideological levers.

As we see, the plans of the neocolonialists represent a source of danger for the young states. But these plans suffer from a fundamental, and one might say also a traditional, weakness: they

underestimate the historical potential and will of the peoples of the liberated countries that have overthrown colonial rule. Inspired by the example of socialism and leaning on its support, these peoples are determined to fully realise their aspirations for independence and social progress.

"No power on earth," said Leonid Brezhnev in his report "The Great October Revolution and Mankind's Progress", "can wipe out the results of the heroic liberation struggle of the millions upon millions of people in the former colonies and semicolonies of imperialism. The cause of the peoples' liberation is invincible, the future belongs to it. The light kindled by the October Revolution shall not fail on this front of world history either."³

There is every reason to believe that before long the system of neocolonial dependence, created by imperialism on the ruins of its colonial empires, will show signs of new breaches.

NOTES

¹ L. I. Brezhnev, *The Great October Revolution and Mankind's Progress*, 1977, p. 21 (in Russian).

² V. I. Lenin, *Collected Works*, Moscow, Vol. 23, p. 78.

³ L. I. Brezhnev, *op. cit.*, p. 22.



Unemployment in the Capitalist World

The Institute of the World Economy and International Relations of the USSR Academy of Sciences held a special session of its Scientific Council on Problems of Unemployment in the West. We present a review of the contributions on the key issues prepared by V. Novikov of our senior editorial staff. The materials on the session were published in full in the August and September issues of the *Mirovaya ekonomika i mezhdunarodniye otnosheniya* (The World Economy and International Relations) journal for 1977.

S. NADEL: Unemployment is a key problem influencing all aspects of life in capitalist society: economic, social, political and cultural.

The principal issue of the economic aspect is the fact that large segments of the able-bodied population are denied the opportunity to earn a living and are forced to rely on unemployment allowances. The society senselessly wastes its manpower reserves, reducing the nation's productive forces and irreparably losing potential opportunities for increasing the public wealth.

The social aspect of the problem is that unemployment affects the broadest sections of factory and office workers in all spheres of the economy, as well as the interests of non-proletarian segments of the working people, especially certain intellectual groups.

Work is not only a means of earning a living. It is in many ways a basis of self-respect, self-assertion and human dignity. One can imagine the moral state of young men and women embarking on a life of their own in queue before labour exchanges and of families where adults have despaired of finding work.

It should be noted that today unemployment differs in a number of ways from the unemployment of the prewar and postwar years. The share of white-collar workers, especially women, skilled workers and people with a higher education is much higher. Almost half the total number of jobless are young people.

Formerly there was a fairly stable statistical relationship between the rise in employment and decline in unemployment. This was especially apparent during periods of economic revival following an economic crisis. Thus, between 1933 and 1934 the workforce in the United States increased by 2.1 million people, while the number of unemployed declined by 1.5 million. A growth in the workforce by 1.1 million between 1950 and 1951 was accompanied by a decline in unemployment by 1.2 million.¹ This more or less stable inverse relationship existed up to about the mid-50s, when the decline in unemployment during periods of economic revival began to lag appreciably behind the increase in the number of jobs. From March 1975 (the lowest point of the crisis curve) to November 1976, the workforce increased by four million, whereas the unemployment level remained unchanged.²

The very fact that the upward tendency in business activity, accompanied by an increase in the overall workforce, is not accompanied by any reduction in the number of job seekers is evidence that today mass unemployment is not only of a cyclic nature.

* * *

The factors that led to the mass increase in unemployment can, as we see it, be classified into several groups:

— factors associated with the decline of small businesses, the ruin and proletarianisation of the urban petty bourgeoisie and farmers;

— factors affecting intensive development of large-scale capitalist production, including structural reconstruction of enterprises, spheres and branches of the economy. The mounting replacement of human labour by machines and mechanisms and the breakdown of production structures create numerous redundancies among workers and employees because, among other things, the unplanned nature of the economy makes the flow of manpower difficult, leads to considerable disproportions in the distribution of manpower by region, industry, trades and skills, sex and age, and to the development of a situation in which, against a background of general unemployment, some industries experience manpower shortages;

— demographic factors: a considerable increase in the number of young men and women on the labour market (as a consequence of the "labour boom" of the 1950s); a sharp increase in the number of working women over the last few decades; international migration of manpower, which has aggravated the employment

problem at the most critical juncture in the change of the phases of the cycle;

— factors associated with the expansionist policies of monopolies and the export of capital, which restricts opportunities for creating additional jobs at home;

— external factors affecting the internal economic situation: international division of labour, world trade, fluctuations of prices of raw materials and industrial commodities on commodity markets, trade policies of different countries and groups of countries. The 1970s have proved unfavourable for the industrial development of capitalist countries in all these respects. In a situation of heightened competitive struggle, many companies are forced to wind down production, with all the accompanying consequences for their workers and employees;

— closely intertwined cyclic and long-term factors the operation of which was in the past never so simultaneous or intensive.

It should be noted that factors associated with the impact of the scientific and technological revolution on unemployment and, in the wider aspect, the impact of scientific and technological progress in its most universal meaning, are involved directly or indirectly in the above classification.

In effect, all the aforementioned factors of unemployment represent different forms of the manifestation of the universal law of capitalist accumulation in contemporary conditions, since the excess labour population is a product of the development of wealth on a capitalist basis.³ True, relative overpopulation is a broader category than unemployment, insofar as it includes groups who earn a living as day labourers and people forced to work shorter hours, as well as many other segments which could legitimately be included under the heading of excess working population. But even leaving aside the mass of working people falling within concealed forms of relative overpopulation which defy accurate estimates, the reserve workforce in the industrial capitalist countries is far greater than indicated by official figures on the number of totally unemployed. Thus, according to US government sources, in the first quarter of 1976 the number of unemployed was 7 million, while according to the AFL-CIO there were 9.9 million unemployed, or 10.5 per cent of the aggregate workforce.⁴ According to average statistical data, there were 7.8 million jobless in 1975, while actually 20 million workers and employees were out of work during the year for various periods of time.⁵

Much is said and written in the West about the excess of manpower being an inevitable consequence of the scientific and technological revolution. There is no question that technological progress reduces the relative, and often absolute, numbers of

employees. However, that manpower is redundant only from the point of view of the need of capital in self-growth, but not from the positions of satisfying genuine social economic requirements.

* * *

Bourgeois governments do not set themselves the practical task of providing work for all those who wish to, and can, work. Measures of state-monopoly regulation reduce to ensuring the normal course of capitalist reproduction and preventing the development of the revolutionary situation for which a high level of unemployment may be one of the contributing factors.

In their efforts to fill all job vacancies, the authorities increasingly resort to methods of direct pressure on the unemployed, forcing them to accept lower-paid jobs than those they had held before dismissal. In the United States, in particular, to this end the time in which an unemployed is entitled to benefits has been reduced.

The forms, methods and specific measures of employment policies differ from one capitalist country to another. Substantial differences exist in a number of points. In Sweden, for example, an unemployed who agrees to resettle in an area with a manpower shortage is offered fairly substantial privileges. Sweden leads the capitalist world in the share of workers attending retraining courses. Certain restrictions on dismissals by employers have been introduced, and methods of stimulating business are more diversified.

The Swedish experience is indicative in two respects: on the one hand, it shows that the working class of industrial capitalist countries can achieve certain gains in the struggle against unemployment; on the other hand, it shows that within the framework of the existing socio-economic system these opportunities are restricted.

* * *

Unemployment, as is known, is quite alien to socialist society, the supreme law of which is the fullest satisfaction of the steadily rising material and cultural requirements of man. Unlike capitalism, where profit is a dominant objective, under socialism economic development is wholly subordinated to the improvement of the people's well-being and enhancement of their cultural standards, it serves the continued social progress. The fact that

technological progress reduces manpower requirements in various spheres of material production is, in socialist society, a boon, not an evil, since it makes it possible to reduce working hours and provides more manpower for spheres which create non-material forms of public wealth and services (education, science, health, culture, etc.).

The experience of the socialist world system offers convincing proof that the road of democracy and socialism opens up the broadest opportunities for drawing people into various spheres of socially useful activity.

N. IVANOV: The mainspring behind rising labour productivity is, to an ever greater degree, increased automation of production, in which science and technologically new products play an ever greater role. When market competition is not based on prices such qualitative characteristics become of decisive importance.

In this light the theoretical constructions of English economist A. Philips concerning the effects of unemployment upon inflation are hardly valid. His arguments in effect come to the idea that in conditions of mass unemployment labour intensity rises. This in turn leads to higher efficiency and lower costs per unit of output. Furthermore, high unemployment keeps wages down, which also contributes to lower production costs and, thereby, prices.

Actually it is all quite different. Today labour intensity is not the only contributing factor to efficiency. More, with the existence of the socialist world system and a powerful organised labour movement in capitalist countries, the monopolies are not always able to reduce the level of nominal wages during crisis periods.

Crisis recession and growing unemployment result in idling of highly productive equipment, while research and design are not fully realised. As a consequence fiscal and research costs per unit of production rise and, accordingly, so do prices.

But if prices continue to rise in conditions of recession, how can the monopolies market their produce? A tremendous and ever mounting role in this is played by state purchases, a substantial portion of which are military procurements associated primarily with the arms race. Furthermore, to support effective demand the state is compelled to allocate funds for unemployment allowances. Anti-crisis measures lead to a steep rise in state expenditure and are thus a significant factor contributing to inflation. Thus, inflation and unemployment during crisis periods operate as mutually reinforcing factors, as was apparent in 1974-75. One can presume that future economic crises will be accompanied by climbing prices. It should, however, be borne in mind that there is no one-to-one connection between inflation and unemployment,

which are due to a series of factors that manifest themselves differently at various stages of the economic cycle.

In the post-crisis period the rate of inflation declined somewhat in most industrial capitalist countries, but unemployment remained high and even continued to grow in some countries (for example, the FRG). At the root of this phenomenon is the re-equipment of industry with more efficient machines, making it possible to increase output without increasing the number of jobs. In Great Britain, for example, the output of the manufacturing industries in 1970-75 increased by 1.5 per cent, the number of jobs declined by 10 per cent, while output per worker increased by 12 per cent.

What are the employment and unemployment prospects in view of the continuing processes of automation and mechanisation? It seems logical to assume that the average growth rate of output per man-hour in the manufacturing industries of developed capitalist countries in the 1970s will be maintained over the coming five years at 3.8 per cent per year in the United States, 5.8 per cent in Japan, 5.5 in the FRG, 3.9 in France, and 3.8 in Great Britain.⁶ Thus, the growth rate of output should in future be no lower than these figures only to keep the number of jobs in the manufacturing industries at the present level.

Furthermore, the demographic factor must also be taken into account. In 1982, there will be one million more young people in the 15 to 24 age bracket in the FRG than in 1977, and 690,000 more in Great Britain.⁷ To create new jobs for young people and absorb the existing army of unemployed the rate of growth of industrial output must increase several times over. This is hardly feasible for the economies of capitalist countries subject to such long-term factors as the energy, raw-materials and ecological crises.

But perhaps employment may rise substantially in the service sphere? It should be noted that this sphere is not wholly autonomous in its development. It is linked fairly rigidly with overall material production and cannot expand without a corresponding increase in the growth rates of the latter. This is especially apparent in such spheres as trade, finance and technical services.

Education, public health, social security and the civil service are less directly linked with the volume of material production. On the other hand, the development of these spheres is financed mainly from the state budget. Hence, any attempts to artificially expand them with the purpose of creating new jobs (all other conditions remaining unchanged) can only boost the rate of inflation.

The basic causes of inflation and unemployment are rooted in the capitalist production relations and can be eliminated only if

those relations are eliminated. To be sure, the pressures of inflation and unemployment can be alleviated, but this requires restriction of monopoly power, far-reaching democratic changes, and changes in the objectives and trends of economic and social policy. Crucial to this is rejection of the arms race and reorientation of the funds so released to solve the burning issues of our time: the environment, big cities, public health, energy, food, etc.

F. BURDZHALOV: In present conditions it is important to have a clear idea of the socio-economic appearance of the modern unemployed, of the current content of the concept of unemployment. While noting the universal spread of unemployment, it should, at the same time, be emphasised that it has by no means lost its selective character, in the first place by virtue of differences in the degree of professional adaptability of workers to modern working conditions. In the FRG, for example, two-thirds of the unemployed youth and 56 per cent of the adults have no trade. Nor can the importance of so-called formal education be completely ignored. In the United States, for instance, in March 1975 unemployment among high-school leavers was 20 per cent, and 34 per cent among drop-outs.

As a rule, it is the relatively low-skilled and poorly educated workers, young people lacking adequate work experience, workers, especially old people, whose trades and skills have become obsolescent from the point of view of the demands of technological progress, inhabitants of backward regions, etc., who are most likely to join the chronically unemployed. It is significant that in Great Britain, for example, more than half (58.8 per cent) of those without a job for a year or more are 45 and older.

Of interest, in our view, is an analysis of the breakdown of jobless according to the immediate causes of unemployment. Referring to US statistics, the unemployed can be classified in 4 groups. The first and most numerous are workers dismissed for economic, disciplinary and other reasons. In August 1976, 49.3 per cent of all jobless belonged to this classical category. The second group—12.4 per cent—includes people who never worked before. The third group—25.2 per cent—includes people looking for jobs after a period of voluntary withdrawal from work. Finally, the fourth group—13.1 per cent—includes people who gave up their jobs to seek for better ones.

An analysis of this classification indicates that the portion of people who had never worked before, young people in the first place, is increasing. Even in favourable economic conditions the number of new jobs usually lags behind the number of young men

and women entering the labour market for the first time. During crisis the gap increases sharply.

There is nothing new in these phenomena, but today they are acquiring unprecedented scope. The existence among the jobless of people ill-adapted to production processes in the conditions of the scientific and technological revolution, as well as people with no prior employment, makes it possible to take a different approach to certain questions. Notably, can unemployment be equated to a reserve labour force, implying that the latter consists of potential workers who could be expected to rejoin the working class during an economic revival? In our view, today more than ever before, there are no grounds to consider the two concepts to be identical in content.

Another question: do today's unemployed represent competition on the labour market, and if they do, to what extent? Is monopoly capital as capable as before of using unemployment as a tool for bringing pressure to bear on working people?

Competition on the labour market is determined by the state of three groups of indicators. Firstly, the economic situation, the demand for manpower of a certain quality, that is, the number and structure of vacancies, the feasibility of employment. Secondly, the site and composition of the reserve labour force, length of stay in its ranks, or more specifically, the readiness of jobless to take jobs with worse conditions. Thirdly, the strength of trade unions opposing monopoly capital's attempts to set various sections of the working class against each other on the labour market.

The labour movement is more than before capable of overcoming and neutralising the pressures of the reserve labour force on trade union positions during collective bargaining. An indirect manifestation of it is the rise in nominal wages even during the 1974-75 crisis. The strength of labour unions in industrial capitalist countries is in many cases a reliable means of protecting the material interests of the working people.

In recent years American economists (notably W. Barnes in 1962 and S. Stephenson in 1971) carried out a number of studies of the unemployed. Their findings had a direct bearing on the questions posed and made certain tentative conclusions possible. At present the rise in unemployment during an economic crisis does not cause an equivalent increase in competition on the labour market. The various detachments of the reserve labour force represent a potential competitive threat to highly varying degrees. Finally, in present-day social and economic conditions, the unemployed can hold out for longer and refuse jobs, especially at substantially lower wages. To a large degree it is due to one of the principal gains of the working class of capitalist countries in the socio-economic sphere: unemployment insurance.

It should, however, be noted that not all workers and employees are covered by it. In 1975, for example, 18 per cent of the gainful population of the United States had no unemployment insurance. In Great Britain, about one-sixth of all registered unemployed received no material aid from the state or private organisations. In France, only 44.4 per cent of the registered unemployed received allowances. This situation is also typical of other capitalist countries. Besides, unemployment allowances only partially compensate for loss of income due to dismissal, and furthermore, they are restricted in time.

Obviously, even the most sophisticated social security system cannot solve the unemployment problem, because it does not affect its causes. The purpose of such systems is only to somewhat cushion the contradictions of capitalist society and direct development into a channel presenting no threat to the ruling class.

The sharp increase in unemployment and major changes in its composition confront bourgeois society with a variety of economic and social problems. In the first place, mass unemployment causes major economic losses. From the point of view of social rationale, its existence is a vivid example of waste of the main and most precious productive force, manpower.

Instead of utilising these resources to the full the capitalist system prefers to pay off the unemployed temporarily by stepping up exploitation of the employed. Payment of allowances thus reduce social tensions to some extent. However, with unemployment rising and benefits increasing, under pressure of the labour movement, the importance of the essentially economic aspect of the problem has increased considerably. Thus, in the United States expenditures related to unemployment insurance almost tripled between 1972 and 1975, from 6,500 to 18,100 million dollars, and accounted for 1.2 per cent of the gross national product (GNP). In the same period similar expenditures in the FRG increased 7-fold to 0.9 per cent of the GNP, and in France they quadrupled to 0.6 per cent of the GNP. The main source for meeting these expenditures, as is known, is the income tax.

Lately the system of unemployment insurance has become a target of especially acute class struggles in which representatives of bourgeois political economic thought take an active part. Some of them strive to interpret the socio-economic content of this type of insurance as practically the main obstacle to the reduction of unemployment. Thus, in the view of J. Taylor (Great Britain), M. Feldstein, G. Ehrenberg, and R. Oaxaca (United States), unemployment allowances are so high that they deprive recipients of any incentive to find a job as quickly as possible.

Such claims ignore the positive significance of allowances in the purely economic sense as an additional source of effective

demand, especially important in times of economic crises; they are also refuted by specific studies. First of all, if they were correct the number of available jobs should have increased with the rise of unemployment, or at least remained unchanged. Actually, the ratio between vacancies and unemployed is increasing towards the latter. According to US economist S. Marston, no more than 0.2 to 0.3 per cent of the unemployed labour force can be put down to unemployment insurance. Investigation of this question in England has shown that various types of allowances delay the return to employment of some 70,000 out of more than one million jobless.

The degree to which the jobless are satisfied with their position is indicated by an opinion poll conducted in Great Britain in 1975, in which 76 per cent rejected the contention that higher unemployment was a lesser evil than inflation. Another poll revealed that three quarters of the population preferred lower living standards to longer unemployment.

Reducing unemployment and increasing employment is a prime consideration for all working people in both the active and reserve labour force. The labour force movement fighting for this defends the most vital interests of the working people of capitalist countries.

A. MILEIKOVSKY: Claims are sometimes voiced that today unemployment is more stagnant than before. This apparently implies a comparison of its extent in the phases of cycles. There are insufficient grounds for such conclusions within the scale and historical framework of the general crisis of capitalism. As is well known, in the 1930s there were periods of protracted, chronic mass unemployment. After the Second World War, unemployment in the industrial capitalist countries no longer faced millions of people with the threat of starvation and death. The troubles of the jobless in the 1970s can hardly be compared with the sufferings of the workers and employees who lost their jobs during the crisis of 1929-1933.

This is, in the first place, a result of the gains of the working people won in stubborn struggles for their economic and social rights, gains which could only be won in conditions of the deepening general crisis of capitalism and changes in the balance of class forces on the world arena in favour of socialism.

Soaring unemployment in the mid-1970s is doubtlessly evidence of the bankruptcy of the bourgeois policy of "full employment". However, the fact that since the war state monopoly capitalism has managed to create certain levers for regulating crises should not be discounted. It is not surprising that, when the crisis of 1974-75 began, the ruling circles of the United States and

Western Europe regarded as danger No. 1, not unemployment, but inflation; it was only gradually that their priorities in social and economic policies began to change. Most bourgeois governments came to the conclusion that it was unemployment that threatened the very foundations of capitalism.

The thing is that today the overwhelming majority of the working class refuses to live on charity and demands work not only in the name of their daily bread. The working people are waging a stubborn class struggle for guaranteed and real full employment. This is a new characteristic of the labour movement in the conditions of the scientific and technological revolution and the deepening of the general crisis of capitalism.

The working class in the industrial capitalist countries has become more organised and its general educational standards have risen. It is increasingly difficult to convince it of the need to live with the difficulties of crises in the name of so-called "national interests". It can compare the movement of the wage index, which tends to decline, with the vast growth of bourgeois profits.

Today, when the labour movement is faced with the need to work out a practical democratic alternative to state monopoly capitalism, the problem is not only to do away with unemployment, but also to reconstruct fundamentally the economy which would yield an entirely new structure of employment than that which has formed under capitalism.

G. DILIGENSKY: Working people today treat unemployment differently than in the 1930s. Then it was regarded as something unavoidable, fatal, associated with a stage in the cycle which had to be suffered and endured. The reaction today is much more involved: first of all, it finds expression in refusal to accept unemployment as an unavoidable evil. Indignation at a situation in which the society is incapable of assuring jobs for all people has been mounting in a number of capitalist countries since the 1960s. The scale of mass struggle against unemployment expanded sharply in the 1970s, when the traditional relation between the level of unemployment and strike action changed.

New trends have of late been apparent in the treatment of the unemployment problem by the bourgeois propaganda machine and publicists. It is claimed, in particular, that in the conditions of scientific and technological progress it is becoming something of a "normal" development, characteristic of the "post-industrial society" and fully in keeping with the trend towards the establishment of the "leisure society", in which the role of work decreases sharply and hedonistic guidelines and values acquire leading significance in the way of life. For that part of the population which is used to viewing work as only a means to provide for a

certain level of material welfare, such an approach may be acceptable.

Such moods are intertwined with, and opposed by, others, associated with the growth of social expectations regarding work. They increasingly manifest themselves in demands for meaningful, interesting work capable of bringing out a person's abilities. Thus, polls conducted by D. Yankelovich in the United States showed that at the end of the 1960s and mid-1970s a virtual revolution took place in the system of values of young American workers: approximately half of them consider creative content of work a more important criterion for its evaluation than the level of material remuneration. Characteristically, in the later 1960s the percentage of such replies was insignificant. Similar findings were revealed by polls conducted in France.

Unemployment is doubtlessly due to economic causes and has a specific mechanism. But there is no doubt either that it is closely linked with the broader social problem of the content and motivations of work as a prime component of a society's way of life, with the processes involved in the crisis of the bourgeois way of life as a whole.

The situation developing in a number of capitalist countries, where the labour movement successfully defends the immediate interests of the working people and fights against unemployment and its attending phenomena, frequently poses the task of putting forth "partial" concrete programmes for providing jobs which can be carried out in the existing socio-economic conditions. That is why in a number of cases the labour movement adopts programmes supported by bourgeois parties and achieves their consistent realisation.

YU. GARUSHYANTS: Today the problem of employment (as one of the key problems in the complex of relations between labour and capital) is the focus of attention of political parties and organisations of different class nature in industrialised capitalist countries.

The bourgeois parties ensuring the functioning of the system of state-monopoly capitalism gradually pinpoint, in whole and in part, many socio-economic contradictions, elaborate methods of "cushioning" them, which they present as the only feasible, democratic perspective, while describing communist positions as "destructive" or "utopian".

In this connection it is important to stress that, unlike these parties, the Communists do not elaborate strategies of reformist "patching up" of bourgeois society. They refuse, making no secret of it, to assume responsibility for solving the irreconcilable social

and economic conflicts of this society within the framework of the existing logic and mechanism of its functioning.

At the same time, they invariably support those reforms within the framework of the existing system which benefit the working people and provide greater social security and democratic rights.

In the context of the Marxist understanding of the democratic alternative, Communist parties elaborate and continuously perfect their long-term plans of struggle for employment. As an inalienable part of the whole programme of anti-monopoly change, these plans are comprehensive and integral, being drawn up with due consideration of the diversity of long- and short-term factors, the struggle for employment being waged constantly regardless of the situation on the labour market.

In posing various major socio-economic or political problems, the Communists invariably link them with questions of employment. Whether the issue is of the negative consequences of the domination of multinational corporations, racial or national oppression, the need for a new regional or energy policy, disarmament or the establishment of equitable economic cooperation with the socialist countries, it is all viewed from the aspect of finding new jobs.

Communists are, of course, aware of the objective and subjective difficulties, associated, among other things, with a certain lack of contact between various sections of the labour force, especially in countries where there are powerful trade union centres led by reformist leaders. But even so they come out actively in support of all worker demands, regardless of who initiated them, demonstrating in practice their readiness for joint action.

New to the policies of Communist parties is the fact that anti-crisis measures of combatting unemployment are elaborated not only on the basis of cyclic factors in the development of capitalist production, but also taking into account the crisis of the structures of state-monopoly capitalism.

As for concrete demands, they possess certain common characteristics, though they may vary depending upon national conditions. It is important to note that Communists supplement socio-economic demands with political demands: introduction of the constitutional right to work, legislative prohibition of mass dismissals and closing down of enterprises, the right of workers and their organisations to challenge and discuss all management decisions concerning dismissals in bodies of law.

A major achievement of the Left forces and Communist parties is their activity aimed at shifting the struggle for employment from the national sphere to the international arena proceeding from recent trends in the development of integration processes

(within the framework of multinational monopolies and the Common Market).

I. GURYEV: Summing up the results of our discussion, note should be made of the unusual character of the economic crisis of 1974-1975 which conditioned important features of unemployment, first of all the fact that it acquired a massive, universal character. Its average level increased two- or three-fold in all industrial capitalist countries in the mid-1970s as compared with the end of the 1960s, and no substantial change occurred in its nature with the revival of economic activity.

The scope and consequences of unemployment are especially dramatic in the Third World, where hundreds of millions of working people and members of their families have been affected. But most significant is the aggravation of the employment problem in countries with highly developed state-monopoly economies. In the 1950s and 1960s, characteristic of them, and especially a number of West European countries, was a shortage of manpower rather than its excess. This to a considerable degree helped to propagate the myth that modern capitalism had allegedly acquired the capability of overcoming crises and unemployment through relevant state policies and of creating a society of universal affluence.

Today unemployment has embraced all spheres of the public economy. Its level is highest in metallurgy, textiles and a number of other fundamental industries. Virtually all categories of workers have been affected by unemployment, from unskilled labourers to graduate engineers and technicians. According to our data, in 1976 white-collar workers in the United States accounted for 29.4 per cent of all job seekers; in the FRG, 45 per cent of the unemployed had complete vocational or professional training; in France, 52.1 per cent of the "redundancies" were skilled workers and employees, engineers and technicians.

It is also necessary to note such features of contemporary unemployment as the considerable growth in the number of unemployed in all sex and age groups; this is already affecting, and will inevitably continue to affect, the socio-political situation in industrial capitalist countries.

Mounting unemployment among people over 45 years old, who are the majority in the category of persons out of work for more than a year, is naturally reflected in the features of present-day unemployment as a whole, enhancing stagnation characteristics.

The chronic character of unemployment, that is, its not being linked solely to the economic crisis, has again increased. Mass unemployment has become a permanent feature of modern

capitalism and is associated not only with unfavourable economic situations.

The aggravation of the unemployment problem and its prime features are due to specific causes. Without belittling their significance, it must be stressed that the basic cause of unemployment in bourgeois society is the fundamental production relation of capitalism: capitalist ownership, which economically separates manpower from the means of production and allows them to merge only through the sale and purchase of labour power. In purchasing labour power, capital, according to its objective nature, pursues the goal of obtaining the greatest possible mass of living labour (surplus labour in the first place) from the fewest possible number of workers. This is a law of capitalism which operates at all its stages.

The possibility of selling and buying labour power is determined by the concrete conditions of accumulation of capital. In this aspect the features of modern investment processes constitute the dominant cause of the present aggravation of the unemployment problem.

In practically all industrial capitalist countries the whole post-crisis period up to the very latest time has been marked by an unusually low rate of growth of investment. The volume of new investment is incapable of leading to an increase in manpower demand that would make possible a sharp reduction in the level of mass unemployment, which had jumped up in 1974-1975.

At the same time, the overwhelming majority of investments go not into the creation of new jobs, but into the re-equipment of old ones. Current changes in the structure of investment reflect the trend towards further expansion of capitalist rationalisation and are an embodiment of the features and properties of an intensive type of reproduction, while at the same time undermining prospects of solving the unemployment problem.

Demographic features play a considerable part in the current aggravation of the employment problem. However, they are not simply a factor operating on the side of offer of manpower and explaining the high unemployment rate among young people. The cause here is that, firstly, the influx of young workers has exceeded the demands of capital prompted by accumulation conditions, and secondly, the inability of the bourgeois state to provide young people with work and vocational training. This inability, moreover, is not always due to objective restrictions of a legal or financial nature. As often as not, the bourgeois state is wholly indifferent to the fate of young people.

Since the mid-1970s, mass unemployment, as is known, has been accompanied by rising inflation. The simultaneous development of these processes raises a number of serious problems, and

not only in the theoretical aspect. One of them is the character of the interaction of these phenomena.

Different points of views have been voiced on the subject. There are, in particular, claims that in conditions of contemporary capitalism inflation and unemployment operate as mutually reinforcing factors.⁸ The basic premise of this view, namely that the level of unemployment and level of prices are in a state of dynamic mutual influence, is open to challenge.

Special works and, indeed, the experience of the recent years have convincingly demonstrated the insolvency of one of the corollaries of this premise: the "Phillips curve" constructed according to the principle of inverse dependence of the quantitative values of unemployment and inflation. Substitution of the opposite dependence, where the growth of unemployment is treated as a cause of inflationary growth of prices, hardly adds convincingness to the initial premise.

According to this notion, the inflationary level of prices (the commodities and services market) is determined by the unemployment level (the manpower market) and vice versa. However, the mechanism and main directions of the interaction of these two markets remain unrevealed. Conclusions are drawn where questions should be raised. On the other hand, the inflationary price spiral and unemployment both have their respective roots in the sphere of production. Unemployment is, as is known, inseparable from the conditions of accumulation of capital. Inflation is based in the processes of capitalist socialisation of production and monopolisation. However, these circumstances are not reflected in the aforementioned view, which virtually separates turnover from production.

By interpreting inflationary growth of prices as a result of increases in social expenditures of the state, this view aims in practice at depriving the working people of capitalist countries of even the small protection from social evil for which they had fought through decades of stubborn struggle.

At the same time, such an interpretation also restricts the opportunities for evolving a democratic alternative to the reactionary bureaucratic trend in the functioning of modern state-monopoly capitalism. Yet it is obvious that unemployment and inflation expanding simultaneously have a powerful destructive effect on the socio-economic situation of the working people which substantially exceeds the net force of destruction caused by each of these social evils separately.

Forced idleness of one section of the working class is accompanied by mounting predatory actions of capital with respect to the other section, and this also decimates the principal productive force. Unemployment has been and remains the most

potent means which capital uses to step up exploitation of wage labour.

Mass unemployment is characterised by mounting political instability, aggravation of the class struggle in capitalist countries. A shift to the left is taking place in the political moods of the working people, with growing mass support for Left parties and organisations. As for the bourgeoisie, characteristic of a substantial portion of it is the desire to turn political life to the right. And if today reactionary circles are unable fully to realise that desire, the reason is only that they are opposed by the mounting political might of the working class relying on the alignment of forces in the world arena, which has changed in favour of socialism.

NOTES

¹ *Historical Statistics of the United States. Colonial Times to 1957*, Washington, 1960, p. 70.

² *The New York Times*, September 9, 1976.

³ K. Marx, *Capital*, Vol. I, Moscow, 1969, p. 592.

⁴ *The AFL-CIO Platform Proposals Presented to the Democratic and Republican National Conventions*, 1976, Washington, 1976, p. 3.

⁵ *Ibid.*, p. 15.

⁶ Estimated according to *Monthly Bulletin of Statistics*, No. 3, 1977, pp. 14-16, 22-31.

⁷ Estimated according to *Demographic Yearbook 1973*, New York, 1974, pp. 150, 158.

⁸ *National Journal*, August 21, 1976, p. 1176.

CRITICAL STUDIES AND COMMENT

The Fetishist Basis of Contemporary Western Political Economy

VLADILEN AFANASYEV

The unique situation that has arisen in the second half of the 20th century due to the historic victories of the world revolutionary movement exerts a decisive influence on the evolution of contemporary Western political economy. Today the transition from capitalism to socialism has assumed very clear and distinct forms, and has directly involved a substantial number of countries and peoples. The fact that capitalism is not a stable system and that there are active socio-economic changes taking place in the world is no longer just a scientific concept, it is understood by all working people. As was pointed out at the 25th Congress of the CPSU, "this is an epoch of radical social change... Development of the socialist countries, their greater might, and the greater beneficial influence of their international policy—this is now the main direction in mankind's social progress."¹

These circumstances compel Western theoreticians to change the forms of their apologies for the capitalist system. It is these circumstances that are responsible for the seemingly paradoxical shifts in the views of Western economists, who have always affirmed the eternal and natural character of the capitalist order. Such shifts include formal recognition (in theories of the "industrial", "post-industrial", "super-industrial" and "techno-tronic" societies) of the transitional nature of the present age and of the non-capitalist orientation of current socio-economic development (which they also try to represent as being non-socialist). In fact, Western political economy is no longer capable of defending capitalism without recognising its historically trans-

ient nature. This adaptation to the progressive development of the world revolutionary process, however, is not in a position to conceal the actual stagnation and degradation of current political-economic thought in the West.

Indeed, what new and really major scientific ideas has bourgeois political-economic thought come up with this century? Has it, for instance, solved the extremely important problem of capitalism's economic essence in the imperialist stage of its development?

"The question of imperialism," Lenin wrote, "is not only one of the most essential but is probably the most essential question in that sphere of economic science which traces the change in the forms of capitalism in modern times."²

The problem of imperialism's economic nature was not only formulated, but also resolved by Marxism-Leninism over sixty years ago, but for Western political economy it remains unsolved. The American economist Lee Preston, for example, admits that the problems of determining the nature of large corporations and their relations with the economy and society "have never entered the main stream of modern economic analysis".³ He goes on to say that a large corporation has little in common with the abstract "firm" still referred to in economic theory.

Neither has Western political economy solved the problem of state-monopoly capitalism.

In recent decades, Western ideologists have done everything to exalt the Keynesian theory of state control of the capitalist economy. They have declared that Keynes' book *The General Theory of Employment, Interest and Money* (1936) provided them with the key to the secrets of capitalist reproduction which would make it possible to ensure full employment and a growth of production without crises.

Even mature state-monopoly capitalism has been unable to achieve this, however. The 1973-1975 world economic crisis, the worst since the Great Depression of the 1930s which led directly to the creation of the Keynesian doctrine, dispelled any remaining illusions concerning its effectiveness. The American economist Robert Eisner notes that, decades after *The General Theory* was published, "at the policy level, professional as well as public bewilderment grows through months of increasing inflation and unemployment".⁴

These statements are more than justified. State control of the capitalist economy has been unable to avert economic crises of overproduction, galloping inflation, substantial underloading of productive capacity, and mass unemployment.

The Keynesian revolution, as it is sometimes called, which claimed to reveal the economic mechanism of state-monopoly

capitalism, has proved incapable of eliminating the contradictions within the capitalist economy. Moreover, it has also failed to diagnose correctly the diseases that have affected the very foundations of the capitalist economy.

This was naturally to be expected, for contemporary bourgeois political-economic thought remains, in spite of all the "revolutions" it is supposed to have undergone, an essentially unsuccessful economic ideology, which retains its fidelity to the general principle of vulgar economy formulated right at the beginning of the 19th century.

* * *

The economic life of society consists mainly of labour and for this reason all economic categories used in political economy are merely various designations of the work process, its consequences and results, its material content and socio-economic form. Marx established that labour has a dual nature: as a useful, purposeful form of man's working activity (concrete labour), and as the expenditure of manpower in the physiological sense (the historical form of this aspect of work, which is characteristic of the commodity economy, Marx called abstract labour).

If labour is at the basis of all economic processes and, at the same time, has a complex structure, being a dual phenomenon, it follows that all the economic phenomena of capitalism are also dual in nature. They are all various manifestations of the processes of concrete labour, on the one hand, and of abstract labour, on the other, the two comprising all the economic processes and phenomena of the capitalist mode of production.

The Marxist concept of the dual nature of labour makes it possible to reveal the dual character of all the phenomena of the commodity economy, clearly distinguish between their material content and socio-economic form, and reveal the specific economic laws governing any historically determined mode of production. In as far as this concept reflects the general features of economic processes, it contains specific information not only about economic phenomena that have been studied, but also those that have not. On the whole, it makes it possible to resolve two major tasks faced by economics: to elaborate, first, scientific economic concepts, and second, an entire scientific theoretical system.

Marx attached extreme importance to revealing the dual nature of labour embodied in the commodity, and considered this, together with the discovery of the law of surplus value—the economic law governing the movement of the capitalist mode of production—as the greatest achievements of his economic theory.

He saw the dual nature of labour as the point of departure for scientific analysis of capitalism, and thus an understanding of all political economy.⁵

There is another aspect to this proposition: failure to understand the dual nature of labour and its special role in the capitalist mode of production predetermines failure to understand the nature of individual economic processes and phenomena, and the entire system of deep-running laws governing the capitalist system as a whole. At the same time, this means that if the concept of the dual nature of labour is taken into account in a criticism of Western political economy, the true content of both its individual propositions and theories, and of them all in their entirety will be disclosed.

It is characteristic of Western political economy to identify concrete with abstract labour, which is ultimately due to its class limitations. The fact that capitalism is doomed is due to its main contradiction: the growing divergence between capitalist relations of production and the increasingly social character of productive forces. Western political economy does not formulate this contradiction; more than that, it fails to see the very distinction between the productive forces and relations of production under capitalism, which is the generalised and final expression of the difference between the processes of concrete and abstract labour. The essence of the universal principle of vulgar political economy is to equate these processes.

For vulgar political economy, this principle is universal being characteristic of all unscientific categories, theories and systems of political economy. Either directly or ultimately, this principle underlies the various forms of superficial, fetishist interpretations (commodity-fetishist, production-fetishist, technico-fetishist, and so on) of the economic phenomena and processes of contemporary capitalism in Western political economy with a view to concealing their socio-economic essence and providing an apology for the capitalist order. It also acts as a universal principle in the sense that it constitutes a resumé of the entire methodology of unscientific political economy (the metaphysical approach to economic phenomena and either their idealistic or vulgar-materialistic interpretation).

Marx's critical analysis of the vulgar political economy of the first half of the 19th century shows that it was widely based on an identification of the process of concrete labour with that of abstract labour. Such, for instance, is Senior's "Last Hour" theory, which breaks down working time into time for transferring old value (wear and tear of machinery, production buildings and so on), and time for creating new value (net profit). These processes, however, take place *simultaneously*, thanks to the dual nature of

labour. The old value is transferred by means of a specific form of labour while the new value is created by abstract labour. Senior's apologetic conclusion that the working day could not be cut was based on an identification of the functions of the first aspect of labour with those of the second.⁶

The same is true in relation to the still surviving theory of factors of production, which presents things as if the means of production, including land and the forces of nature, are independent sources of value along with human labour. Capital, in particular, is defined as one of the major factors of production, consisting of property or wealth giving rise to an income expressed in the form of money and capable of being used to produce new property or wealth.⁷

The reason that this theory has survived so long in vulgar-apologetic political economy is that its ultimate goal is to prove the untenable thesis that the capitalists do not exploit the wage workers. One of the most recent versions of the theory is an attempt to represent automatic instruments of labour not only as a factor in the production of the use-value of a commodity, but also of its value.⁸ The apologetic conclusions of the factors-of-production theory are also based on an identification of the creation of new value, in which only abstract labour participates, with the creation of use-value, in which means of production and nature participate along with concrete labour.

For all the changes that vulgar political economy has undergone, it remains faithful to its own universal principle. One of the most recent examples is a Western interpretation of the category of the "economic system". As the well-known American economist John Galbraith testifies, the dominant opinion holds that its purpose is to provide the goods and render the services that people want.⁹

Galbraith believes this interpretation of the economic system as such is oversimplified, but his own view cannot provide a scientific answer on the general theoretical plane, though it is of certain interest since, in contrast to many Western authors, he asks some questions concerning the role of major corporations in the contemporary capitalist economy and the way they function for their own enrichment.

It is clear that such an instrumentalist approach to the socio-economic system is very limited and one-sided. It ignores the important fact that this system is an objective product of historical development, and not an invention to satisfy man's consumption requirements, that it produces not only goods and services, but moulds a special social type of people corresponding to the given system. Moreover, it determines the main goal of people's economic behaviour. For this reason, under capitalism, which is

characterised by private capitalist ownership of the means of production, consumption as such is not the goal of economic activity, but is mediated by profit maximisation, which is the direct goal of capitalist production.

This lack of correspondence between the goals of direct consumption and the goals imposed by the "economic system" is evidence that, in addition to the productive forces that create goods and services, the socio-economic system includes socio-production relations that determine the socio-economic essence of society, its class structure and the socio-economic goals of production.

Hence it is clear that contemporary bourgeois political economy is completely wrong in reducing the concept of economic system to nothing more than the productive forces of society, which are a generalised expression of the processes of concrete labour, while ignoring the social production relations between people (which, under capitalism, are a generalised expression of the processes of abstract labour). The equating of these two processes is one of the main manifestations of the universal principle of vulgar political economy, a feature that is also clearly evident in the branch approach to the division of the socio-historical process into periods.

* * *

During the transition from capitalism to socialism Western political economy has found itself in an extremely contradictory position. On the one hand, due to its class nature, it is oriented on defending the capitalist order and virtually proceeds from the assumption that it is eternal, while, on the other hand, it cannot openly support this idea so incompatible with historical development. For this reason, many bourgeois ideologists are compelled to recognise formally the historical character of socio-economic processes, and even the non-capitalist direction of social development, while doing their utmost to conceal the true content of this development and its objective socialist direction.

A typical view in this respect is that of the American sociologist D. Bell, who put forward the concept of the "axial principle". He claims that the most diverse phenomena can be taken arbitrarily as the basis for periodisation of the historical process. These include concentration of administrative functions in the hands of the state, the spread of "democratic tendencies" in society, the rationalisation of various spheres of the life of society, the development of the production of commodities, the progress of machine technology, etc. "Conceptual prisms," he writes, "are logical orders imposed by the analyst on the factual order. But since the factual

order is so multifarious and complex, many different logical orders—each with its own axial principle—can be imposed on the same time or social frame, depending on the questions one has in mind."¹⁰

By declaring complete freedom in the choice of "axial principle" for each age and social system, Bell virtually ignores the fact, a decisive one for science, that a logical system must be a theoretical reproduction of reality and so cannot be arbitrary. Moreover, a logical system must establish as an underlying factor the process that is underlying in reality as well, and this is incompatible with an arbitrary choice of "axial principle".

According to Bell, organisational, political, economic, technical and other phenomena might be declared such a principle. The fact remains, however, that the roles of these processes in social development are far from identical. It is characteristic that Bell himself is inclined to take economic processes as "axial principle". Even so, this takes him further away, rather than bringing him closer to a realistic interpretation of the issue. Thus he claims that "the terms feudalism, capitalism, and socialism are a sequence of conceptual schemes, in the Marxist framework, along the axis of property relations. The terms pre-industrial, industrial, and post-industrial societies are conceptual sequences along the axis of production and the kinds of knowledge that are used."¹¹

By taking "kinds of knowledge produced" as the "axis of reference", Bell proceeds on the basis of the phenomena of productive forces alone in periodising the socio-economic process, while ignoring the qualitative definiteness of the system of production relations dominant in different societies. Meanwhile he interprets the stages of social development as being ones whose characteristics are determined by the branch of production dominant within them: in the "pre-industrial society" this is agriculture, in the "industrial" one it is industry, and in the "post-industrial society", services and science.

Such, then, is the branch approach to periodisation of the socio-economic process, which is, in fact, based on concrete labour, be it agricultural, industrial or in the services sphere. The socio-economic distinctions between socio-economic formations are dissolved in the branch differences in people's direct production activities.

Such an approach is clearly apologetic. Of the two aspects of the mode of production—productive forces and relations of production in whose contradictory unity consist the main motive forces and collisions of social development, as well as the decisive criteria for its periodisation—Bell singles out only individual phenomena in the development of productive forces as such criteria. This allows him to construct a theoretical scheme leaving

no room for conflict between the productive forces and relations of production under capitalism, let alone for a socialist revolution. That is why he does not take property relations as the "axis" of the historical process.

Such a scheme, however, has nothing in common with historical reality, which reflects not only the need for a transition from capitalism to socialism, but also the successful development of socialism over considerable areas of the world. Socialism, which heals the ulcers of a capitalist society—underloading of productive capacity, mass unemployment, low economic growth rates, economic crises, inflation, and so on—shows the tremendous historical advantages of planned economic management, of the system that meets the fundamental interests of the working masses, and the needs of contemporary scientific and technological, social and economic progress. The world socialist economic system is the main factor ensuring peace, which is why the attempts to exclude socialism from the contemporary socio-historical process are not just failures, they are deeply reactionary.

Neither does Bell's scheme help in understanding previous historical stages of social development. In fact, the specifics of the socio-economic social system cannot, of course, be explained by including in the single category of "pre-industrial society" such extremely different social organisms as the primitive commune, slave-owning Rome, feudal France, tsarist Russia and contemporary New Zealand, purely on the basis that their economies were agricultural.

A critical review of the branch approach to periodising the socio-historical process is of all the more interest since this pseudo-historical approach is typical of many representatives of Western political economy today, though they give it the most varied forms. This is W.W. Rostow's point of departure for constructing his concept of the "stages of economic growth". He claims, in particular, that the contemporary stage of economic growth, which he calls the "Age of High Mass Consumption", is characterised by the fact that "the leading sectors shift towards durable consumers' goods and services".¹² Here, as in his later work *Politics and the Stages of Growth*, in which Rostow interprets his prospects for social development as "the search for quality", branch shifts are directly declared the main criterion for periodising the historical process.¹³

It is virtually this criterion that Galbraith uses in his concept of the "industrial society", though his position is not so straightforward as that of Rostow, which was largely based on the apologetic forms of the old German 19th-century historical school. Galbraith proposes that historical development is determined by the role assumed by each "factor of production". "Power goes to the

factor," he writes, "which is hardest to obtain or hardest to replace." In his opinion, this factor was initially land, which predetermined the entire age of the agrarian economy; then came capital, which caused the transition to the "age of capital", and finally, the "technostructure" (the managements of large corporations), bringing about the transition to the "industrial society".¹⁴ Here, too, the specifics of people's purposeful activity (though subject to distortion), including management labour, act as the criterion. J. Fourastier, J. M. Clark and F. Perroux, plus many others, have adopted the branch approach to historical processes.

Major shifts in the development of productive forces, which bring different spheres of the economy to the fore—agriculture, industry, science, etc.—undoubtedly constitute major factors in the socio-historical process. They are, however, only the material basis for changes in the system of socio-production relations, relations of property in the means of production, but are far from identical to these changes. Contemporary bourgeois political economy attempts to interpret the history of human society, too, on the basis of the universal principle of vulgar political economy. By virtually identifying the fundamental shifts in society's productive forces with the changes in the system of socio-production relations, bourgeois political economy conceals the objective need for such changes in antagonistic systems.

* * *

It is typical of contemporary bourgeois political economy to identify the process of concrete labour with that of abstract labour, as is probably most clearly seen in the fact that the categories it uses are fetishist in nature.

Not only the "economic system" mentioned above, but also the question of its nature under contemporary conditions are interpreted by Western authors in a fetishist, apologetic way. This is seen in the methods used by the two main trends within the framework of the general theory of the "transformation of capitalism". The *first* of these, including theories of the "consumer society", the "society of plenty", the "stage of the search for quality", "consumer sovereignty", the "welfare state", the "age of high mass-consumption", and so on, tries to equate the "economic system" with people's consumption activities, and changes in these activities with stages in the development of the "economic system". The *second*, embracing the concepts of the "industrial", "post-industrial", "super-industrial", "programmed", "cybernetic", "technotronic" societies, tries to draw the features of the

contemporary "economic system" directly from the forms of large-scale industrial production.

These trends are united by the decisive circumstance that, as apologies for capitalism, they ignore the qualitatively different character of the system of socio-production relations, of the prevailing forms of ownership in the means of production, the class structure of society under capitalism and socialism today. An attempt to reduce the "economic system" to some form of people's direct economic activity is common to all of them. The "economic system" is depicted either as directly trained on satisfying needs, or is identified with large-scale industrial production as such.

Thus, the common feature of the two given trends is a fetishist interpretation of the nature of the "economic system". In fact, while the theoreticians of the "consumer society" replace the maximisation of capitalist profits as the goal of capitalist production by the goal of production in general, which is direct consumption, the adherents of the "industrial society" virtually identify the system of production relations as a whole with the state of the productive forces and their organisational forms.

The fetishist approach to socio-economic phenomena, being a major expression of the universal principle of vulgar political economy, penetrates into all the categories of contemporary Western political economy. This is the point of departure for interpreting the economic role of the large corporations in Western society, the purpose of which is to conceal the economic essence of imperialism. The monopolies, whose dominion determines the features and aspects of 20th century capitalism, are depicted in non-Marxist literature as large-scale industrial production as such, as a sort of non-capitalist establishments. "Nothing so characterises the industrial system," writes Galbraith, "as the scale of modern corporate enterprise", in which the "eminence of capital is a relatively recent matter".¹⁵

In terms of methodology, to equate the capitalist monopolies with large-scale production as such is to confuse the socio-economic forms of the phenomenon with its material content. Ideologically it reflects the anti-communist nature of the theory of the "industrial society". "Galbraith's main contribution to the debate," writes Lee Preston, "has been his incessant emphasis on the need for the 'emancipation from belief' in the old models and for a new paradigm of modern non-Communist socio-economic systems."¹⁶

Fetishist categories, which are based on an identification of concrete with abstract labour, are also used by Western theoreticians in pursuit of their major goal of concealing the main class antagonism of bourgeois society—that between the workers and the capitalists. For this purpose not only old and new versions of

the "factors-of-production" theory are advertised, but also the concepts of "deproletarianisation" of the working class and its transformation into a sort of "middle class", "human capital", and so on.

In an attempt to justify the untenable argument about a fundamental change in the *socio-economic* essence of the working class under contemporary capitalism, and thus in the class structure of Western society as a whole, those who support the concepts of "deproletarianisation" of the working class try to fall back on certain changes that have actually taken place in its structure and vital activity. They point to the rising general educational level of the working class and the level of its special training, the rise in the share of mental and nervous expenditure by the workers within the structure of their labour expenditure, the growing share of office workers among the working class, the rise in the workers' wages, the change in the structure of their personal consumption, and so on.

It is characteristic, however, that all these changes constitute processes taking place in the work force only as in an element of the *productive forces* of capitalist society and changing nothing directly in the socio-economic nature of the working class within the framework of this society. These reflect only the direct influence of the contemporary scientific and technological revolution on the working class. At the same time, the status quo is maintained of the capitalists' exclusive ownership of all the means of production, which still means the need for the workers to sell their labour power. The monopoly of the political power of capital also remains unchanged.

The theory of "human capital" is an attempt to adapt the old fetishist interpretation of capital to the conditions of the scientific and technological revolution, an interpretation which is still dominant in non-Marxist political economy and based on substitution of the socio-economic description of capital (relations of the exploitation of wage workers by the bourgeoisie) with one of its material, external forms (money, means of production, commodities, labour power). A *Dictionary of the Social Sciences* gives the following typical interpretation of the essence of capital: 1) a definition of "proprietor's capital" as "the net assets of proprietors" and of "total capital" as "the total assets used in business"; 2) an "economic" definition of capital identifying it with "producers' goods produced by man and used in further production"; 3) a "broad" definition of capital including "land and durable goods along with all kinds of producers' goods and services".¹⁷

The basis for identifying productive forces with production relations is the concept of "convergence" of the two socio-economic

systems, which Western scholars use in an attempt to dismiss the main contradiction of our age. This concept is founded on an untenable argument, but one that is typical of contemporary Western political economy: the question of the direction in which the two opposing systems of *production relations* are developing is solved by ignoring the deep qualitative differences between them, relying on the certain common features between the *productive forces* characteristic of socialism and capitalism.

* * *

A study of the modern forms of the universal principle of vulgar political economy, from the standpoint of which Western economists try to solve their most pressing ideological problems, prompts the following conclusion: a typical form of apology for capitalism during the present stage in the world revolutionary process is an attempt by bourgeois ideologists to present the shifts taking place in productive forces under the impact of the scientific and technological revolution directly as fundamental changes in the socio-economic essence of capitalist society towards its "transformation" into some sort of non-capitalist system.

NOTES

- ¹ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy*. 25th Congress of the CPSU, Moscow, 1976, pp. 46, 47.
- ² V. I. Lenin, *Collected Works*, Moscow, Vol. 22, p. 103.
- ³ *The Journal of Economic Literature*, June 1975, p. 434.
- ⁴ *The American Economic Review*, May 1975, p. 189.
- ⁵ Karl Marx, *Capital*, Vol. I, Moscow, 1969, pp. 48-49.
- ⁶ *Ibid.*, pp. 215-216.
- ⁷ H. S. Sloan and A. I. Zurcher, *Dictionary of Economics*, New York, 1970, p. 60.
- ⁸ R. Garaudy, *L'Alternative*, Paris, 1972, p. 183.
- ⁹ J. K. Galbraith, *Economics and the Public Purpose*, Boston, 1973, p. 3.
- ¹⁰ D. Bell, *The Coming of Post-Industrial Society*, New York, 1973, p. 11.
- ¹¹ *Ibidem*.
- ¹² W. W. Rostow, *The Stages of Economic Growth*, Cambridge, 1960, p. 10.
- ¹³ W. W. Rostow, *Politics and the Stages of Growth*, Cambridge, 1971, p. 231.
- ¹⁴ J. K. Galbraith, *The New Industrial State*, London, 1967, pp. 56-59.
- ¹⁵ *Ibid.*, pp. 74, 51.
- ¹⁶ *The Journal of Economic Literature*, June 1975, p. 439.
- ¹⁷ *A Dictionary of the Social Sciences*, Ed. J. Gould and W. L. Kolb, New York, 1965, p. 66.



MAN AND NATURE

Relations with Nature Optimised

EVGENI FYODOROV

At present, man is going through a dramatic period in his relations with the natural environment. The intensification of human activity makes it necessary to start taking into account the extent of all the natural wealth of our planet. The proportion of unrenewable natural resources already used up by man (some mineral resources, for example) can actually begin to be measured against their total existing reserves. The balance of renewable natural resources (lakes, forests, biological products of the ocean, fresh water, etc.) is changing markedly. The effect of man's influence on many natural processes is greater than the normal natural fluctuations in environmental conditions.

This fact has caused anxiety about the present state of natural resources and about possible irreversible changes in the natural environment, with dire effects for mankind.

Some time ago, Forrester,¹ Meadows² and certain others in the West dusted off some well-known Malthusian theses and came to the conclusion that sooner or later man would come into conflict with nature, thus creating an ecological crisis, that this crisis would break out in some 50 or 100 years, unless the growth of the population, and the growth of production and consumption, do not stop. They regard the limited resources and limited size of the planet as an insurmountable natural barrier to the development of mankind in the coming decades.

Over the past several years, however, others in the West (whose views are basically non Marxist) have modified their attitudes to the problem of the man-nature relationship. In their works, Mesarovič, Pestel,³ King⁴ and Leontieff⁵ sought to prove that the natural possibilities of our planet, though limited, nevertheless

have a very large reserve for the allround development of mankind, and that this reserve can be used, provided man conducts his worldwide activities in an organised and well coordinated fashion. They have also come to the conclusion that the character and direction of present-day development of mankind has no future, and that the entire social structure should be modified, so that on the basis of this, the technological aspect of human activity would be changed, too.

Being prevented by their bourgeois ideological blinkers from seeing the essential difference between the development of capitalist society, with its character and tendencies, and socialist society, some researchers (Tinbergen,⁶ Laszlo,⁷ and others) offer different precepts for social re-adjustments, but all of them within the framework of the capitalist system. Soviet scientists, including the author of this article, have on many occasions pointed out the naive and utopian character of those proposals.⁸

Man's relation to nature, which has become a very urgent global problem of our time, can be optimised only under certain social conditions. And such optimisation in turn calls for the solution of a number of problems in the natural sciences, especially earth sciences which is what this article is concerned with.

Every new phase of interaction between society and the natural environment creates a new need for information about nature, and makes new demands on earth sciences.

These sciences are the product of the experience of mankind interacting with nature. At the same time, the earth sciences serve as a tool for further expanding the entire spectrum of such interaction and for making it more effective and beneficial for both man and the environment.

They have always served these aims only: 1) to provide information about the natural environment in order to protect mankind from unfavourable elemental phenomena, and 2) to find and develop natural wealth. These objectives have not lost their significance to this day.

However, at present, new tasks are taking precedence over all others, i. e., the calculation of the effects of man's influence on the natural environment and the development of methods in the purposeful transformation of natural conditions. These are very difficult tasks, and some specialists doubt that it is possible to accomplish them. It is for this reason that many scholars demand that all anthropogenic changes should be discontinued, since they tend to upset the balance of the environment, and since nobody knows exactly what they may eventually lead to. But such men seem to be unable to understand that any halt in anthropogenic changes would be impossible.

Acting together, living beings not only use natural resources and adjust themselves to the environmental conditions, but also change the natural environment. The oxygenous atmosphere, sedimentary rock and many other elements of our planet were created as a by-product of life on earth.

But there is a very substantial difference between the effect produced on the natural environment by man and by all other forms of life. Every species of plant and animal life, except man, interacts with the natural environment in much the same way, throughout its existence, since the forms of interaction change only by way of the slow process of biological evolution to new species.

By contrast, man constantly changes, expands and develops the forms and methods of his interaction with nature.

It is important that despite many of the negative consequences (for man himself) of the anthropogenic effect on nature, his own development shows a rise in efficiency in his utilisation of the natural resources and other properties of the environment.

We believe that the often voiced opinion that technological progress will inevitably lead to the deterioration of the environment is ill-founded. By and of itself, progress is just as much to "blame" for this as it is for creating weapons of mass destruction. The reason lies not in modern technology, but in how it is utilised. At the same time, man's influence on nature, which is assuming global proportions, has made the solution of many new scientific problems imperative.

Let us look at some features of present-day conditions of earth sciences and the prospects for their development, since they are so important when trying to solve the problems at hand.

Information about the phenomena under study is of essential importance as any study clearly needs information, but, unlike scientists who have long since relied on experimentation as a source of information for their work, scientists working in our field have to go through a tremendous amount of information, searching for and selecting the little they actually need for their work.

The more complex their research, the more information they must sift through.

And, because of the very logic of scientific development, the entire system of obtaining and processing information about our planet is being retooled, as it were.

The most important aspect of technological progress is the utilisation of telemetric devices, so-called mobile platforms and various remote control methods.

Until a few decades ago, all measurements used to describe environmental conditions—temperature of the air, density of the

magnetic field, speed of flow in rivers, etc.—were taken directly at the point of observation, just as they were a hundred or even two hundred years ago.

A radio probe launched in the Soviet Union in 1930 was probably the world's first telemetric system. Soon after, the first automatic meteorological stations were set up in different parts of the globe at long distances from one another—on land and on the drifting ice of the Arctic—to transmit data on weather conditions. And finally, in the 1950s, special meteorological rockets came to be used. At present, telemetric systems are used throughout the world and have assumed great significance in space research.

Over the past several decades, so-called mobile platforms (specially equipped ships and aeroplanes for obtaining data on the conditions of the atmosphere, the ocean, the earth's surface over large expanses) have been in wide use. And today, artificial earth satellites are also used as a modified type of platforms like this.

The first problem in our particular field that we succeeded in solving with the help of artificial earth satellites was to obtain data on atmospheric conditions.

The recording of infra-red radiation and high-frequency radiation coming from the surface of the earth, from clouds and from different layers of the atmosphere, as is done on earth satellites, makes it possible to evaluate the state of a large number of elements of the natural environment.

The utilisation of the space exploration systems has enabled scientists to pioneer new methods of probing the lithosphere, hydrosphere and atmosphere by remote control. For a long time, geophysicists have used the passage of seismic waves through the earth, and the spread of acoustic oscillations which are caused by big explosions in the air, to study its inner structure and the structure of the atmosphere. This has led to the utilisation of artificially induced seismic, acoustic and hydro-acoustic waves in the study of the structure of the earth's crust, the atmosphere and the ocean. Research in the radio frequency range has proved helpful in the study of many atmospheric phenomena, such as the ionised spheres in the upper layers of the atmosphere, and precipitation and clouds in its lower regions.

The development of telemetric methods, remote control apparatus and mobile measurements systems has made the analysis and processing of data fully or partially automated. The need for such automation is all the more urgent because of the large volume of information and the speed with which it is received. This is made possible through powerful electronic computers.

New automated methods of observation and data processing are taking over in weather forecasting. At present, whole "automatic lines" of weather data processing cycles, ranging from

land-based stations to surveying devices mounted on artificial earth satellites, and down to the drawing up of charts to be passed on to weathermen for analysis, are being put into operation.

The need for obtaining global information about the state of the natural environment calls for the developing of international cooperation in this field. It is necessary to coordinate methods of observation, to provide rapid collection and dissemination of information of these data in all countries.

Such cooperation has existed since the World Meteorological Organisation was founded more than one hundred years ago. In later times similar international organisations have been set up for exchanging data on earth magnetism, earthquakes, and the condition of the World Ocean, etc.

International cooperation between geologists is developing rapidly, with pooling of results of geological surveys being carried out in different parts of the globe. The decades of cooperation between hydrologists in different countries have produced important data on the circulation of moisture, and on the global water balance.

Today the amount of information about the planetary processes taking place in inanimate nature is growing rapidly. And although the volume of information and the speed of obtaining and analysing data do not fully satisfy the requirements of specialists, we have good reason to be optimistic.

More serious difficulties are entailed in the organisation of a day-to-day service whereby they could obtain information about the condition of the biota—the aggregate of all living organisms on our planet.

At present the possibility is being discussed of setting up a monitoring system for global and local observation of the condition of the biosphere and the biota. There is no doubt that all these questions will be resolved and that the monitoring system will be put into operation in the near future.

Another important feature of the earth sciences today is the growing emphasis on phenomena of global and even cosmic proportions. Communications channels and the flight routes are growing longer and longer, and the resources of oceans are being developed further and further away from the coasts. The effects of pollution and other modifications of the natural environment taking place in one country are spreading over great distances. The perturbations in the atmosphere caused by nuclear explosions are assuming global proportions. And finally, space flights and the activities of man in near outer space affect the whole of our planet.

In this connection the information about the state of the natural environment on the globe and our understanding of the

ecological processes taking place worldwide are assuming great practical significance.

There are also problems directly connected with outer space.

The geochemist who studies the circulation of substances on Earth naturally wants to know more about the laws governing the circulation of substances on the other planets of the solar system. For the meteorologist today, the object of research is not only the atmosphere of the earth, but also the atmosphere of other planets. This aspect of the development of the earth sciences is one of the examples of the "universalisation" of science. At the same time, this aspect of the development of earth science tends to promote our understanding of the mechanics, and our evaluation of the possibilities of sweeping, global changes in man's environment.

Another feature is the inclusion in the scientific research programmes of all aspects of phenomena taking place on the borderline between the spheres (as the main parts of our planet are called), as well as the phenomena which cut across two or more of them. And this leads, as in other areas of knowledge, to a merger of what used to be separate disciplines, and to the emergence of new "marginal" disciplines.

In the first decade of our century, on the basis of a few general disciplines, such as astronomy, geography, geology, botany, zoology and others, there appeared a number of specialised, clearly defined areas of research. These new disciplines are meteorology, hydrology, oceanology, astrophysics, etc. At present (beginning in the 1950s) alongside the further branching out and breaking down of disciplines, there developed a reverse process—the study of various phenomena, using the experience and methods of scientists working in other fields. It is only in this way that the close ties between all the elements of our planet can properly be understood.

Today biologists are making a close study of the ties between the organism, its population and the environment.

The study of the entire complex of links between organisms and their environment is the domain of ecology—a rapidly developing sphere of knowledge ranging over many phenomena and employing many different methods of research.

The great variety of interconnected processes which link the living organism with the animate and inanimate environment greatly complicates the tasks the ecologists have set themselves. At the same time, it is precisely this area of earth science that we believe is called upon to work out—with the help of a comprehensive analysis of various disciplines—an evaluation of the results of both the unintentional influence on the environment by man and his deliberate modification of the environment.

The principal and most difficult elements of such an evaluation is the calculation and prognostication of future events which will owe their existence to natural processes and/or unintentional and deliberate modification of the environment by man.

Let us take a closer look at these important elements.

If we can make use of statistical analysis of information on similar events in the past, our calculation may provide certain quantitative values for considerable periods of time in the future.

Thus, using data resulting from long-term meteorological observations at some particular spot, one can calculate the probable average or minimum temperature, say, for the month of January in subsequent years. Analysing the results of seismic observations makes it possible to create a picture of seismic activity for some particular area, i. e., to establish a degree of probability for earthquakes of certain intensity in decades to come.

Such calculations are taken into consideration in designing hydro-power stations, blocks of flats or any other structures, and for long-range planning of various projects, such as calculating what reserves of fuel are needed in a city for the winter in a given region of the country.

Statistical calculations can be made whether or not there is a theory explaining the mechanics of a given process. However, one must be quite sure that these processes retain their characteristics both in the past, when the information that is being used was accumulated, and in the future period, when the events in question are expected to take place. However, in cases when changes in the character of the processes under scrutiny are possible, such as changes in the climate, such purely statistical calculations are irrelevant. It is well known, incidentally, that the climate has been changing over the past 100-200 years.

And finally, statistical calculation is of practically no use for determining a magnitude of this or that phenomenon at a given moment in the future, because the probability of the magnitude we are looking for deviating from the probable at a *given moment* is very great.

Far more sound is the kind of calculation that is based on a quantitative theory for the process under consideration, on our knowledge of the functional association of the magnitude we are looking for with the initial data, also on sufficiently full initial data and values of the parameters of this association. This is what technical and engineering calculations are based on.

Unfortunately, at their present stage of development, the earth sciences do not enable us to use such calculations for estimates for the future, except in a very few cases. Let us take, by way of example, the calculation of the level of high and low tides at various points of the ocean coast, or a calculation of the highest

possible level of the water in a river in its lower reaches, using data on the rainfall in its upper reaches.

In the great majority of cases, we have at our disposal only qualitative or incomplete quantitative theories of the process, and only a part of the necessary initial data.

However, man's practical activity calls constantly for an estimate of the future condition of the many elements of the biosphere. The form an estimate takes in such a situation is the forecast. Methods of forecasting events taking place in the biosphere—the weather, the condition of the ionosphere, ice-drift on rivers, storms at sea, propagation of agricultural pests, etc., are varied indeed.

In most cases forecasts are based on the analysis of tendencies in the development of processes, mostly a qualitative analysis, with the occasional inclusion of numerical calculations. Moreover, we compare the situation under review with similar situations in the past. This is, in fact, what the ordinary, or what we call synoptical, methods of weather forecasting are like. Similar methods are used to forecast the condition of the ionosphere and magnetosphere, the condition of farm crops and many other phenomena.

As a rule, the forecast gives the truest possible quantitative characteristics of a given phenomenon, in the given conditions in which the process in question takes place at a certain point in the future (such as the temperature of the air tomorrow). However, unlike statistical calculations, or those based on functional relations, a forecast may not always be correct. Each method of prognostication has its margin of probability, but one can never be sure his estimate will be correct at a given time and in a given case.

Deviations from the normal in the atmosphere and the hydrosphere almost never repeat the previous pattern, and these in turn provide a background for various phenomena in the biosphere and in the biota.

Therefore, prognostication of geophysical conditions, and particularly weather forecasting, remains very important for the solution of a still more sweeping problem, that of the prognostication of the condition of all the basic elements of the biosphere.

With all its imperfections, the weather forecasting service works much better than the services that forecast other phenomena taking place in the biosphere. There is nothing surprising about the fact that it is precisely in meteorology that statistics and qualitative methods of prognostication were replaced, earlier than in other fields, by quantitative theories developed on a sound physico-mathematical basis.

Today such a process is characteristic of all the other earth sciences as well. And it is determined not only by the general logic

of scientific progress in all fields but, as we believe, by the exacting practical requirements for the accuracy of data on environmental conditions.

Erroneous or inaccurate values for environmental parameters provided by building engineers always result either in insufficient reliability of construction or in an extravagant reserve of strength (and at extravagant expense). Considering the growing scale of construction work in the USSR, such losses may add up to huge sums of money.

The same applies to the prognostication of the future of the environment in planning various economic projects. The most difficult task for all the earth sciences, namely, working out reliable methods, based on objective data, of calculating future environmental conditions, can be accomplished only with the help of physics and mathematics.

With the growing need for information about the natural environment, new types of prognostication of its condition are being developed and the appropriate services are being set up. A service that forecasts the condition of the ionosphere has already been in existence for about thirty years; both the Soviet Union and the United States have special services which monitor and forecast the radiation situation in outer space. Seismologists have come close to being able to prognosticate the time at which earthquakes may occur. Prognostication is also used in the study of various biological processes. For example, the condition of agricultural crops and the size of the harvest, the time of the appearance of agricultural pests, migration of fish in the ocean, etc., can now be forecasted with a fair degree of accuracy.

All this makes us confident that eventually science will develop reliable methods of forecasting a great variety of phenomena in the natural environment.

But even today scientists have come up against still more difficult tasks, namely, to perform the calculations necessary for the transformation of natural conditions as the result of the unintentional or the deliberate modification of the environment.

The most dangerous kind of unintentional modification of the natural environment is pollution. Let us consider, as an example, some relevant calculations.

It should be pointed out that at present, environmental pollution does not come from just one source, nor can the environment be restored to its normal natural state at just a short distance from the source of pollution by way of its natural biological "self-purification".

Rivers that flow through densely populated and industrial areas (almost all the rivers in the United States, Japan and the European countries, including almost two-thirds of rivers in the

European part of the USSR), have long since departed from their "natural state" and have turned into transport arteries, sources of electric power, sources of drinking water for city mains, and recipients of sewage.

At present, about 20 per cent of the domestic and industrial effluent in the world is dumped into rivers. In the next century almost all rivers in the world will be in this category. The air in large industrial centres is in about the same condition.

The amount of pollutant that is allowed to be discharged into a river or into the atmosphere is at present regulated by the maximum permissible concentration of a given chemical substance. The maximum permissible concentration (MPC) is calculated by evaluating certain concentrations of a given substance considered harmless to man, animals, or plants.

One must not forget, though, that industrial progress is rapidly expanding the existing list of elements that find their way into the effluent, so that doctors and biologists can hardly keep pace and calculate the corresponding MPCs. Furthermore, the calculation of an MPC depends on the estimate of what the direct action of some particular substance on the organism of a human being or an animal might be, while actually scores of substances, discharged from many sources, act simultaneously, entering into chemical reactions with one another and forming new chemical compounds. This is precisely the situation which is taking shape in large industrial areas, and in fact in whole countries with a high industrial and population density.

The calculation of a possible discharge of industrial effluent using MPC data must take account of atmospheric or water conditions, as the case may be, and also the existence of discharge at other industrial establishments operating in the given area.

Meteorological and hydrological processes transfer, disseminate and disperse industrial pollutants. Biological factors help to selectively accumulate and concentrate them. Then they pass through long alimentary and respiratory chains, and some of the elements finally reach the organism of man in concentrations which exceed the initial concentration (on the surface of the earth, in water, or in the air) thousands of times over.

In every individual process of interaction between a given element and the environment and, later, a living organism, a condition of instability may occur, with resulting chain reactions, when the initial effect loses its primary (linear) dependence on the concentration of elements, and begins to change sharply after even the most infinitesimal increase in concentration.

We have been talking about the evaluation of a pollution effect on a given organism or a population. However, in many cases this is only the beginning of a long chain of events in the biosphere.

As a result of sickness, reduction of the population of some animal or plant species or their destruction, there will be intensive propagation of some other species which was food for first species, for example. At the same time, the population of predators who fed on the decimated species will fall off sharply.

Thus, one should be able to calculate the entire complex of changes in the environment, and its possible "responses" to such changes which may occur on a very large, even global scale, as these changes are induced by alteration in the environmental structure, taking into account all the existing forms of modification and those expected in the future.

Will science be able to cope with these problems? It will have to, and is in fact beginning to solve them. Today the first, somewhat oversimplified evaluation of the influence of environmental pollution, caused by some substance, on one or two species of animal or plant world has given way to a more thorough analysis of the entire chain of reactions that occur in the environment as the result of the appearance of this new element. Good examples of such analyses have been cited by Barry Commoner, who told the story of the discovery of the nature of the famous Los Angeles smog.⁹

The fact that many negative effects of the dissemination of some substances throughout the natural environment have come to light so unexpectedly, can be explained, in our opinion, not so much by the complexity of the scientific problems arising from such dissemination as by the scant attention that scientists gave it in the past.

Now let us take a look at the transformation of the weather and climate, which, on the one hand, like environmental pollution, is the result of unpremeditated modification, and, on the other, is becoming the object of purposeful activity of man.

The control of meteorological and other undesirable natural processes is often impossible for the simple reason that there is so much energy involved. In situations like this, the practical thing to do is to find ways and means of regulating these natural processes, adjusting them to our needs. A good example is weather control. We have no way of controlling the dynamics of the atmosphere, as we do in machines or in living organisms. Hence the need to find, through the complex of atmospheric processes, the chains of intermittent phenomena which could be used as channels of control.

The main emphasis here is placed on the stimulation of cloud formation and on man-induced precipitation of rain. The most realistic method of regulation of this natural process is by stimulating the crystallisation of hyper-cooled drops of moisture. The required quantities of solid carbon dioxide which sharply cool nearby drops of water, causing them to crystallise, or the required

quantities of iodide compounds, or some other substances whose crystalline structure is very similar to that of ordinary ice, are really very small. Thus, crystallisation of a cubic kilometre of water in a hyper-cooled cloud needs some 100 or 200 grams of solid carbon dioxide or a few grams of a iodide compound. This means that man can regulate at least some natural phenomena.

Intensification of the crystallisation process is used in three directions: to disperse low clouds, to prevent hailstorms and to cause additional precipitation.

The dispersion of low hyper-cooled clouds and fogs has for years been successfully used in some countries to keep airports open for traffic in winter time. In the dispersion of clouds, the energy which was reflected from their upper surface back into outer space now reaches the earth, warming the atmosphere and altering the natural meteorological process. Experimental dispersion of clouds over a territory of several thousands square kilometres caused some changes in the lower layers of the atmosphere. The additional amount of thermal energy which entered the atmosphere over this area was 10^{14} calories. This energy was quite comparable to the energy of the processes taking place in the atmosphere over a territory of hundreds of thousands of square kilometres. In other words, we can use the trigger effect which, when initiated at the proper time and in the proper place, could induce a process whose power exceeds the above figure by a factor of 10^3 .

In practical terms the utilisation of artificial crystallisation to prevent hailstorms is particularly important. At present a large group of Soviet scientists working on this problem has achieved a major breakthrough. The damage caused by hailstorms in protected zones over an area of about five million hectares has been reduced by some 60 or 75 per cent. This method of hail control is widely used in other countries (Bulgaria, Hungary, Yugoslavia and Switzerland). Meteorologists in the United States recently started working on this problem, too.

Induced rainfall is a subject of the greatest interest all over the world. Crystallisation of hyper-cooled clouds has led to the precipitation of rain, although this method can draw only about 50 or at best 70 per cent of the humidity contained in the clouds. In the natural precipitation of rain, a cloud yields 10-20 times as much humidity as it contained initially. This can be explained by the fact that over a certain period of time, it works as a kind of generator of humidity by transforming water vapour in the air into drops or crystals, which then precipitate onto the earth's surface.

The energy of this "generator" is drawn from the atmosphere by releasing latent heat by condensation or crystallisation of

atmospheric moisture. Consequently, to get considerable additional amounts of humidity it is necessary to make a cloud work as such a generator. At present, scientists are working out different lines towards a solution of this problem.

The experiments by which scientists attempt to alter local weather conditions have led them to undertake the still more difficult job of controlling hurricanes. Such experiments are being conducted in the United States.

Of particular importance here is the problem of calculating unpremeditated changes in the climate and modifying it to suit our needs.

The unpremeditated anthropogenic modification of the climate is inevitable. Today, as in the foreseeable future, scientists will concentrate on the possibility of altering the transparency of the atmosphere. Carbon dioxide discharged into the atmosphere from the utilisation of conventional (non-nuclear) fuel reduces the thermal radiation of the earth and raises its average equilibrium temperature.

Dust and various aerosols discharged into the atmosphere by industry reduce the amount of solar energy received at the earth's surface and, consequently, lower the equilibrium temperature. At present the influence of carbon dioxide is probably dominant. In the future, the operation of these factors will be reduced as the result of the shrinking proportion of energy obtained from conventional fuel and the growing proportion of energy produced by the atom.

However, heat will be produced, whether energy is being generated or utilised in whatever way. At present, anthropogenic heat constitutes about 0.02 per cent of the natural influx of thermal energy from solar radiation. Repeated estimates by different scientists give us reason to believe that the rise in the proportion of anthropogenic heat to as high as 1 or 2 per cent and the concomitant changes in the heat balance of our planet may cause substantial changes in the climate because the present "normal" general circulation in the atmosphere is upset.

Should the geographical distribution of sources and escape of heat (in areas with a marked loss of heat) change, as the result of the emergence of new powerful sources of heat, this general circulation may also be disturbed, even if the general heat balance of the earth remains the same (through widespread utilisation of direct solar radiation, also the energy of ocean tides, etc.). There are powerful anthropogenic sources of heat even now. They are industrial centres and urban agglomerations like the south-east of the United States, all of Belgium, Ruhr, the eastern coast of Japan.

We can surmise that an increase by a factor of 10^1 of heat energy in such centres may upset the established general

circulation of the atmosphere, though it is not at all inevitable that the entry of additional anthropogenic heat into the atmosphere will cause the temperature of the atmosphere to go up and the polar ice caps and glaciers in the mountains to melt and the level of the World Ocean to rise. The end consequences may be quite different. We can say with a fair degree of confidence that the general circulation in the atmosphere and in the ocean will change, but how it will change is still very hard to say.

Major changes in the world water balance (such as the utilisation of the whole, or almost the whole drainage of rivers for irrigation) may also have some effect on the climate as the surface of evaporation on the continents will increase, which will lead to a redistribution of the elements of the energy balance in the atmosphere, since the energy absorbed by water as it passes from one state into another constitutes a considerable share of the total energy balance.

If and when the per capita energy consumption on our planet (with a population of 7-8 thousand million) is as great as it is in the United States today, the share of anthropogenic heat in the world heat balance will increase 100 times over (which could also have a marked effect on the climate).

It has already been mentioned that the climate may become more unstable and very susceptible to even small influence. Consequently, situations that lead to spontaneous reactions, and situations that may prove most dangerous when subjected to unwitting influence, may at the same time help scientists in their search for ways to modify the climate.

The complex of hydrometeorological processes in the atmosphere and in the ocean may well be likened to a heat-operated machine. Any change in the power and distribution of sources or the escape of heat could cause it to begin malfunctioning. In such a case, the most logical thing to do would be to try to eliminate the defects by heat compensation. Of course, the distribution of the basic sources of anthropogenic heat, such as large industrial complexes and large populated centres on the continents, took shape irrespective of possible effects upon the climate. And it is very little likely that in the future their development will be planned with such effects in view. However, if ever sources of heat such as thermo-nuclear power stations are to be placed in the ocean, it may become possible to take account of such requirements.

The heat balance in a particular area could in principle be changed in several ways, such as by regulating the formation of clouds. Considering the fact that clouds reflect about 70 per cent of solar radiation, we could expand or diminish the flow of heat that enters the atmosphere in a given area, and in this way

disperse or form clouds in the daytime. We could also create or, on the contrary, disperse, such a screen in order to regulate heat radiation from the earth's surface at night.

Changing the albedo, reflective power of the earth's surface, is another way of affecting the heat balance in a given region. This can be done by growing vegetation of a certain kind. The albedo can also be altered by irrigation or amelioration of the earth's surface. The first snowfall, as also the melting away of the snow cover, increases its reflection capacity.

Alteration of the global heat balance, in the direction of reducing the amounts of solar radiation reaching the earth's surface, can be achieved by injecting considerable amounts of aerosols into the upper layers of the atmosphere.

According to some Soviet (for instance M. Budyko)¹⁰ and American scientists, marked changes in the climate could be induced by injecting about one million tons of certain substances (for example, sulphur, which would form a screen of tiny drops of sulphuric acid) into the upper regions of the atmosphere every year. The realisation of this operation may be difficult, but quite possible, considering modern technical facilities, provided many countries join efforts for this purpose.

The climate can also be modified by altering the dynamics of the atmosphere or the ocean. As is known, mountain ranges have a great effect on the climate not only of adjacent areas, but also more remote territories. But it is possible that less formidable, specially designed structures could well play this role.

As is known, deviations of ocean currents from normal trajectories have, on many occasions, resulted in marked changes in the weather. There is no doubt that such deviations in the trajectory of powerful ocean currents would lead to lasting climatic changes. This could be achieved by, say, erecting the necessary hydraulic structures that would be thousands, or even tens of thousands of times as big as the high dams erected today. Actually there is no reason, in theory, why such structures could not be built.

Substantial long-term transformations of the heat balance, just like the dynamics of the atmosphere or the ocean in some particular parts of the world, will induce changes in the general circulation of the earth's atmosphere, although it is still impossible to calculate how great such transformations might be, and where exactly they might occur.

One can see, however, that powerful enough short-term alterations, effected only once, in the conditions that exist in the atmosphere or on the surface in certain regions could cause irreversible shifts, changing its balance and also the climate.

For example, some scientists believe that by reducing or

destroying the ice cap in the Arctic Ocean we would cause enormous changes in the atmospheric circulation that would make it impossible for another ice cap ever to form in the future. The ocean would then be relatively warm, just as it was at an earlier stage of our planet's history.

It is extremely difficult to create a mathematical model of the existing climate and to develop ways of calculating its possible changes that result from either unpremeditated or deliberate anthropogenic modification, although the urgency of this problem is becoming more and more evident. Significantly, more and more scientists in many countries are working on this problem which is at the centre of many important international research schemes. We have no doubt that in the coming decades a mathematical model of this type will be created.

It is also difficult to say which of the existing methods would prove practical for stabilising or altering the climate, and when any of them will actually be used. One can confidently say, though, that whatever these methods may be, their implementation will call for the concerted efforts of many countries in different parts of the world.

Another no less important problem is how to calculate the actual transformation of whole ecological systems. Since the effect of man's activity on the natural environment will inevitably grow, the natural ecological systems will inevitably have to be changed—at first on a small local scale, later on a regional, and still later on a global scale. Only a well-organised, well-planned transformation of the ecosystem can give us a measure of guarantee that man will not suffer from harmful ecological effects in the future.

It is important, for example, that in creating any substance, scientists should look ahead to predict what will happen to articles made of this substance after they have served their term of use, for they must enter the natural geochemical cycles, either in the form of fertilisers, or as a kind of secondary material to be recycled in new articles, or used as a building material.

To avoid pollution of the natural environment, some scientists consider it necessary for man to go back to wide-scale utilisation of natural materials. We know, however, that it was precisely one-crop farming in the former colonies (now developing countries) that led to depletion and erosion of soil and to other adverse effects on the natural environment.

Scientists should bear in mind that not only qualitative changes but also considerable quantitative changes of elements in the natural environment or their re-distribution over the earth's surface can upset the "balance of nature".

The only way out is to develop principles and methods of reconstituting ecological chains, to develop new methods of

recycling existing and future substances, to combine natural and man-made chains into one ecological system, or systems.

Difficult as this problem is, scientists are taking the first steps towards its solution. Artificial or integrated ecological systems are necessary for use not only on Earth, but also on spaceships for long interplanetary travel. And the modern spaceship is a good example, small and primitive as it still is, of such an ecological system detached from Earth. It is complete with the necessary non-renewable resources and its own cycles of renewable resources which draw their energy from the Sun. And such a system (the spaceship) already exists, long before there is a pressing need for creating similar systems on a regional or a global scale.

There has not been a single case of science not being able to solve a pressing problem facing mankind, and the present trends in the development of science, including the earth sciences, leave no room for doubt that these tasks will also be accomplished.

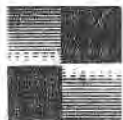
It has already been noted that social factors are in a large degree responsible for present-day methods of utilisation of natural resources and conditions, for the solution and even the formulation of the problems in question, and all the more so for the implementation of measures to transform the natural environment worldwide, for the benefit of man.

True, the very determination of the usefulness or harm to society of this or that remaking of Nature depends on the angle the problem is viewed from. Therefore measures to optimise man's relations with nature in one country can be implemented on a large scale only if its whole population is aware of their necessity and usefulness, and if all of its citizens are united by common interests and goals. A situation like this obtains in the socialist countries, but not in the capitalist.

As for worldwide measures to ward off an ecological crisis, these can be implemented only in the conditions of detente and friendly cooperation between states with different social systems.

NOTES

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Spiritual and Moral Values of Developed Socialism

FELIX KUZNETSOV

Under developed socialism the individual in his dialectical relationship with society and with his growing spiritual and moral requirements has become central in the life of society. This is an objective process of mature socialism which has found embodiment in Art. 20 of the new Constitution of the USSR: "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."

Communism, that is, real humanism as Marx defined it, presupposes "the development of the richness of human nature as an end in itself".¹ It arises in the process of struggle and social transformative activity whose ultimate purpose is "to return man to himself as a social, that is, as a humane being".²

This profound and truly humane meaning of the communist ideal clearly reveals itself in Soviet society. The moral code of the builder of communism is formulated in the Programme of the CPSU which states that as Soviet society advances moral principles play an increasingly important role.

The same objective—enhancement of the role and importance of spiritual and moral values in conditions of mature socialism, greater attention to the individual, to promoting his inner maturity, consciousness and spiritual wealth—is outlined in the documents of the 24th and 25th Congresses of the CPSU. "A great project—the building of communism," said Leonid Brezh-

nev, "cannot be advanced without the harmonious development of man himself".³ This conclusion was further developed and concretised in the decisions of the 25th Congress of the CPSU. It determined the whole complex of problems connected with the spiritual moulding of the individual and developing in him an active attitude to life.

The question of self-perfection of the individual, of enriching his inner world, of irreconcilability to all manifestations of social egoism—self-interest, a proprietor's attitude, money-grubbing—to all that debases everything human in man, and prevents people from being people is posed in a new way in the new society.

Here it is in place to recall Lenin's merciless criticism of the Tolstoyan preaching of moral self-perfection as a means of social salvation, as a panacea for all social ills. But the edge of this criticism was directed not against spiritual principles as such, but against making them absolute and divorcing them from reality, against the denial of politics, against the masses confining themselves only to self-perfection in the illusory hope that the world and people could be changed by moral sermons even in the conditions of bourgeois society and without changing social relations.

Only a revolutionary change of social relations can create the conditions making for mankind's genuine moral development. But as he changes these relations, man himself changes.

One of the most time-worn and widespread accusations brought against Communists is, paradoxically, that Marxism, and consequently real socialism, reject morals and ethics, that materialism kills spiritual values and that the Soviet way of life levels, humiliates and destroys the individual.

This is nothing but juggling with concepts, noted Lenin in his time. He stressed that Communists deny only those morals which are shaped by a proprietary society, and such an understanding of the moral and spiritual values of the individual that is rooted in the idea of divine predestination. While denying morals viewed in isolation from human society, Lenin gave a Marxist materialist substantiation of the spiritual and moral values of socialism, linking them intrinsically with the struggle for communism.

The six decades of the Land of Soviets' great achievement have demonstrated to the world the role and importance Communists attached to the spiritual and moral life of society and to the individual. Socialism not only became the bridge connecting the best humanist heritage of the past with the reality of the present, and preserving for mankind the spiritual link of time; it is enriching this heritage, is creating new traditions in cultural development, is constantly enhancing its internationalist content.

The Fundamental Law of the Soviet Union codifies an obligation which only socialism is able to take upon itself: "The State concerns itself with protecting, augmenting and making extensive use of society's cultural wealth for the moral and aesthetic education of the Soviet people, for raising their cultural level" (Art. 27). The great attention paid by the Party and the government to literature and art, a priceless heritage of the past, to Soviet society's spiritual wealth is determined, in the final analysis, by the fact that the individual and his requirements are the focus of the whole of our social development.

As is generally known, a new historical community of people, a single Soviet people, took shape in our country during the years of socialist and communist construction. This still further extended the intellectual horizons of society. According to UNESCO data, the Soviet readers are the most avid readers in the world. More Soviet people go to cinemas, concerts, theatres and museums than citizens of any other country. In 1976 alone, 133 million people visited 1,323 museums of the country. Over 25 million—every tenth citizen—are involved in artistic activities.

"The working people began to take an active part in cultural life; they become the creators of cultural values," said Leonid Brezhnev in his report "The Great October Revolution and Human Progress". "A new, socialist intelligentsia has emerged from the midst of the people, and has brought fame and glory to their country with outstanding achievements in science, technology, literature and art. A union which the best minds in history had dreamed of, the historical union of labour and culture, has taken place. In the history of our country, in the history of world culture, this marks an event of tremendous significance."⁴

A fundamental feature of the present stage of our social development, spelt out in the decisions of the 25th Congress of the Party and recorded in the new Constitution, is that the enormous opportunities of the new system are ever more fully being used to raise the standard of living, to satisfy both the material and spiritual requirements of Soviet people. The fundamental difference between the developed socialist society built in the USSR and the so-called consumer society lies not only in the fact that the latter concerns itself primarily with the well-being of the select few whereas Soviet society concerns itself with the well-being of everyone, and everyone with the well-being of all. The fundamental difference lies also in the fact that for Soviet people material well-being is not an aim in itself.

This feature, sharp as a razor blade, which separates the citizen from the philistine, socialism from the bourgeois consumer society, should always be borne in mind. If this feature is lost sight of, if the growth of material opportunities will not constantly be

accompanied by a growth in the ideological, moral and cultural level of people this may lead, as was noted at the 25th CPSU Congress, to relapses into the philistine, petty-bourgeois mentality. That very same mentality that is today the main source of the spiritual poverty of the capitalist world.

A social requirement of our life—and in this we see one of the manifestations of the objective laws of mature socialism—is that the more we concern ourselves with the question of our "daily bread", the more should we concern ourselves with the entire complex of problems relating to our "spiritual bread". The course towards sharply improving the material well-being under developed socialism dictates a similar sharply heightened attention to the moral principles of life, for our communist ideal differs qualitatively from the spiritually shallow ideals of the so-called consumer society.

* * *

Man's spiritual world is essentially his world outlook, the way he answers the basic questions of human existence. And his world outlook is shaped by his ideological, political and civic convictions. Hence the importance for the moulding of the contemporary personality and his system of spiritual values of the integrated approach to education, proclaimed by the 25th CPSU Congress, an approach of relative independence and at the same time of dialectical unity of ideological, political, labour and moral education. Such an integrated approach most effectively helps to mould the individual's Marxist-Leninist ideological and moral convictions.

The system of the spiritual values of the individual and developed socialist society is indivisible. It unites at different levels, naturally, and in different forms, both the answers to the cardinal questions of the human spirit and the vast reservoir of human experience from which the individual draws his spiritual wealth. Our main spiritual wealth, determining man's spiritual world in the first place, is scientific communism, the theory and practice of its realisation.

Of increasing importance for the present stage in the development of our social and literary thought is a circumspect ideological and methodological approach to the question of the spiritual and moral values of the individual and society. Here two dangers, two extremes should be clearly seen. One is an abstract humanistic view of the spiritual and moral sphere of life of modern man and society, which divorces this sphere's values from the great social transforming activity our people are carrying out under the leadership of the Party, and who are themselves

changing in the work of building communism. The other extreme is when in the fight against abstract humanism the concept of humanism itself is almost thrown overboard, when any talk about good and humaneness, about truth and integrity, about the meaning of life and conscience is labelled "abstract humanism".

In reality, the danger and narrowness of abstract humanism lies not in recognising the importance of such universal categories and moral norms as the meaning of life, good and evil, integrity and conscience, but in its idealistic (in the spirit of old metaphysics) interpretation of these norms, in its alienation of spiritual and moral values from the class struggle and revolution, from the work to transform society. Real, that is, socialist humanism does not discard universal spiritual values; it gives these values a concrete historical and, consequently, a class interpretation, fuses morals with the struggle for communism.

To claim that the Marxist principle of determinism, of the class character of morals negates universal humanistic, spiritual and moral values, is to ascribe to Marxism moral relativism which is alien to it, to distort the principle of Communist morality. "The idea of determinism," wrote Lenin, "which postulates that human acts are necessitated and rejects the absurd tale about free will, in no way destroys man's reason or conscience, or appraisal of his actions."⁵ Lenin warned against a metaphysical, idealistic interpretation of what was common to all mankind.

When we speak of spiritual paucity, of immorality which still make themselves felt in our life, we cannot reject the principle of determinism of moral consciousness and fail to understand that in the final analysis this spiritual paucity and immorality are the consequences and expression of the petty-bourgeois and philistine mentality, the tenacity of which and ability for social mimicry make it possible for them to exist in our society. Our society's spiritual and moral health manifests itself in the fact that it wages a merciless struggle against these phenomena.

* * *

New tasks confront Soviet science, literature and art criticism, connected with comprehending and bringing out in full the humanistic potential which developed socialist society possesses, the spiritual and moral wealth which socialism brings the world and people. One of the primary tasks of science and literature is to assess such a cardinal achievement of mature socialism as the transformation of human labour into a moral phenomenon, a creative factor, a spiritual value for an ever larger number of people.

It is along this path that there is being overcome that scourge of mankind, engendered by the system of exploitation and oppression, which Marx called the alienation of man from society and from himself when for him work was merely a means of existence, a means of earning a livelihood.

Under developed socialism, labour for an ever larger number of people is from a source of existence becoming a source of technical, social and, in the final analysis, historical creativity, a source of meaningful, inspired human existence, is becoming part of the life of the individual, an inner requirement. This is being accomplished not only by lightening labour through mechanisation and automation, scientific and technological progress in its most diverse forms. Labour is becoming creative and meaningful thanks primarily to the deep-going social and democratic processes under way in society. The working man to an ever greater extent feels, as Lenin noted, "that he is not only the master in his own factory but that he is also a representative of the country",⁶ regarding the interests of the factory, of the whole state, as his own. The unceasing concern shown by the Party for the development of socialist democracy, which has found such clear expression in the new Constitution of the USSR, and that everyone should be interested in the work that concerns the whole people and shoulder his share of responsibility for it, is yielding rich fruit not only political, but also spiritual and moral.

This is the source of the spiritual wealth of the individual in the Marxist-Leninist understanding. The real spiritual wealth of the individual, Marx pointed out, wholly depends on the wealth of his basic relationships—active, revolutionary transforming labour relations with the world, with society, with people like himself. Relations in which the social, transforming nature of man most fully manifests itself. The Soviet citizen's increased civic social activity was seen during the countrywide discussion of the draft of the new Constitution.

This discussion still more clearly brought out the profound humanistic meaning of the now widely known words of Leonid Brezhnev said at the 25th CPSU Congress: "Nothing adds so much to the stature of the individual as an active attitude to life and a conscious approach to one's duty to society, when matching words and deeds becomes a rule of daily behaviour. It is the *task of moral education* to help people develop such an attitude."⁷ This task is dialectically connected with the improvement of socialist democracy, with greater guarantees for the working man to really feel himself a citizen. One and all—both the individual and society—are interested in the Soviet people acquiring a growing sense of being the masters of their own country, a sense of responsibility for augmenting its material and spiritual wealth.

The individual—because he sees in this the prospect for progress towards a life that is lofty, inspired, meaningful and truly creative. Society—because it sees in such a proprietary and highly moral attitude of the individual to work, to life, prompted by the dictates of conscience, integrity and truth, even purely economic and material reserves for accelerating industrial progress. The Party constantly points out the importance of spiritual and moral factors for socio-economic progress. Such features as increasing responsibility, initiative, conscientiousness and intolerance of shortcomings—“all belong to the moral and cultural sphere of the life of society and cannot be recorded in a plan or statistical report. But we know, and we have become convinced through our own experience, that these features of the communist character and communist consciousness possess an immense material force and are embodied in the increasing strength and wealth of our great Motherland, in the improvement of the well-being of the Soviet people, and in the growing defence potential of our Motherland.”⁸

A conscious, moral attitude to one's work also helps to accomplish the tasks set by the December 1977 Plenary Meeting of the CC CPSU of raising the efficiency of production and quality of work, of making rational use of the economic potential, of raising the productivity of labour and tighten the regime of economy.

One of the main achievements of the six decades of the Soviet state is the Soviet man—a man of the highest moral qualities and communist consciousness, social activity and readiness to fight for the interests of the people and the Party, for the principles of good, truth and justice. This is our main social wealth.

NOTES

¹ K. Marx, *Capital*, Vol. IV, Moscow, 1968, p. 118.

² K. Marx and F. Engels, *Works*, Vol. 42, p. 116 (in Russian).

³ *24th Congress of the CPSU 1971*, Moscow, 1971, p. 100.

⁴ L. I. Brezhnev, *The Great October Revolution and Human Progress*, Moscow, 1977, p. 7 (in Russian).

⁵ V. I. Lenin, *Collected Works*, Moscow, Vol. 1, p. 159.

⁶ *Ibid.*, Vol. 27, p. 403.

⁷ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy. 25th Congress of the CPSU*, Moscow, 1976, p. 137.

⁸ L. I. Brezhnev, *Following Lenin's Course*, Moscow, 1975, p. 415.



SCIENTIFIC LIFE

BIRTHDAY ANNIVERSARIES OF SOVIET SCIENTISTS IN 1978

By a decree of the Presidium of the USSR Supreme Soviet Academician Anatoly Alexandrov, President of the USSR Academy of Sciences, has been awarded the Order of Lenin for his outstanding services in the development and organisation of Soviet science, and in connection with his 75th birthday.

A. Alexandrov is a distinguished scientist in atomic physics and energetics whose works have received wide recognition in the Soviet Union and among the world scientific community. For many years now he has been directing research and development in atomic science and engineering. The range of his scientific interests is extremely broad—nuclear physics, solid-state physics, polymer physics. His researches in the electrical properties of dielectrics, in the theory of electric and mechanical relaxation in high-polymeric materials and the theory of polymer elasticity are widely known.

Alexandrov's work connected with theoretical and technical problems of nuclear energetics is of particular importance. The results achieved in this sphere under his scientific direction have enabled

the Soviet Union to occupy a leading position in a number of divisions of atomic science, engineering and industry.

Since 1960, A. Alexandrov heads the Kurchatov Institute of Atomic Energy, USSR Academy of Sciences. He was elected member of the USSR Academy of Sciences in 1953 and in 1960 became a member of the Presidium of the USSR Academy of Sciences where he coordinated the activities of the USSR Academy of Sciences and the academies of sciences of the Union republics in the sphere of atomic science and engineering. In November 1975, he was elected President of the USSR Academy of Sciences.

A. Alexandrov's services to science have been highly assessed by the Soviet state. He has three times been awarded the title of Hero of Socialist Labour and is a Lenin and State prize laureate.

A. Alexandrov is a foreign member of the Academies of Sciences of Bulgaria, Poland, Czechoslovakia and the GDR, of the Royal Swedish Academy of Engineering Sciences and an honorary member of the Hungarian Academy of Sciences.

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By a decree of the Presidium of the USSR Supreme Soviet Vice-President of the USSR Academy of Sciences, Academician Vladimir Kotelnikov, Hero of Socialist Labour, has been awarded the Order of Lenin and the second "Hammer and Sickle" gold medal for his outstanding services in the development of Soviet science and in the training of scientists, and in connection with his 70th birthday. To commemorate V. Kotelnikov's labour exploits a bronze bust will be erected in his home town.

V. Kotelnikov belongs to the galaxy of eminent Soviet scientists. His scientific activities cover a wide range: radiophysics, radio engineering and electronics. His main works are devoted to problems of perfecting the methods of radio reception, to research in radio-reception disturbance and the elaboration of counteracting methods. His work *The Theory of Potential Noise Stability* brought him wide fame. He is a twice State Prize laureate for his development of new communication systems during the Great Patriotic War. V. Kotelnikov's ideas in the field of the reception of weak signals served as the basis for the emergence of a new scientific trend—planetary radiolocation. For radiolocation investigations of Venus, Mars and Mercury he was awarded a Lenin Prize in 1964. For fundamental researches in the theory of communication and radiolocation of planets he was awarded the Popov Gold Medal by the Presidium of the USSR Academy of Sciences.

V. Kotelnikov devotes much attention to the training of scientific and engineering cadres. For more than thirty years now he has been

heading the Chair of the Fundamentals of Radio Engineering in the Moscow Energetics Institute and for the past ten years also the Chair of Electromagnetic Waves in the Moscow Physico-Technical Institute.

He successfully combines research and teaching activities with scientific and organisational work. Since 1969, a Vice-President of the USSR Academy of Sciences. Since 1967, head of the USSR Academy of Sciences' Council for the Automation of Scientific Investigations. For many years now he has been in charge of the forecasting and long-term planning of scientific and technological progress in the country.

He is Editor-in-Chief of the journals *Vestnik AN SSSR* and *Radiotekhnika i elektronika* and is Chairman of the USSR Academy of Sciences' Scientific Council on Radio Astronomy.

V. Kotelnikov is also active in public life. He is Chairman of the Supreme Soviet of the RSFSR since 1973.

In 1969, he was awarded the title of Hero of Socialist Labour.

V. Kotelnikov is a foreign member of the Polish and Czechoslovak Academies of Sciences and of the Academy of Sciences of the GDR. He is an honorary member of the American Institute of Electrical and Electronics Engineers and Doctor Honoris Causa of the Technical University of Prague.

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By a decree of the Presidium of the USSR Supreme Soviet the title of Hero of Socialist Labour and the Order of Lenin and "Hammer and Sickle" gold medal has been awarded Academician Pyotr

Fedoseyev, Vice-President of the USSR Academy of Sciences, for his outstanding services in the development of the social sciences, and for his public and political activities and in connection with his 70th birthday.

P. Fedoseyev, Chairman of the Editorial Council of the "Social Sciences Today" Editorial Board, is a distinguished Soviet scholar, a specialist in dialectical and historical materialism and in the theory of communist construction. He is the author of profound studies in the methodology of Marxist-Leninist philosophy, in theoretical problems of contemporary social development, sociology, in current problems relating to the building of a communist society and the education of the new man, to the history of philosophy and to scientific atheism.

A full member of the Academy of Sciences since 1960 Fedoseyev carries on extensive scientific and organisational work. He was Director of the Institute of Philosophy of the USSR Academy of Sciences, Academic Secretary of the Department of Economics, Philosophy and Law and subsequently of the Department of Philosophy and Law of the USSR Academy of Sciences. In 1962, P. Fedoseyev was elected for the first time, and in 1971 for the second time, Vice-President of the USSR Academy of Sciences and Chairman of the Social Sciences Section of the Presidium of the USSR Academy of Sciences. He combines research and organisational work with public and political activities. He was Editor-in-Chief of the journals *Bolshevik* and *Partiinaya zhizn*. From 1967 to 1973—Director of the Institute of Marxism-Leninism under the CC CPSU. He is now

Deputy to the USSR Supreme Soviet, Chairman of the Commission for People's Education, Science and Culture of the Soviet of Nationalities of the USSR Supreme Soviet, Chairman of the Board of the Soviet-Hungarian Friendship Society.

Fedoseyev is the author of many works, including the monographs: *The Productive Forces and Production Relations in Socialist Society*, *The Role of the Popular Masses and of the Individual in History, Socialism and Humanism, Marxism and Voluntarism, V. I. Lenin and Questions of the Theory of Art, Communism and Philosophy* (see review in our journal No. 4, 1972), *Marxism in the 20th Century. Marx, Engels, Lenin and Our Age* (see review in No. 4 of our journal for 1973), *The Dialectics of the Contemporary Epoch* (see review in No. 2 of our journal for 1977).

Social Sciences has carried a number of articles by P. Fedoseyev treating of the main trends of research in the social sciences. Many of the author's works have been translated into foreign languages.

P. Fedoseyev has been elected an honorary member of the Hungarian Academy of Sciences, is a foreign member of the Bulgarian, Polish and Czechoslovak Academies of Sciences and of the Academy of Sciences of the GDR. From 1973 to 1977, was Vice-President of the International Social Science Council.

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By a decree of the Presidium of the USSR Supreme Soviet Academician Boris Rybakov has been awarded the title of Hero of Socialist Labour and the Order of Lenin and "Hammer and Sickle"

gold medal for outstanding services in archaeology and historical science, in training scientific cadres and in connection with his 70th birthday.

A prominent Soviet archaeologist, historian and public figure Rybakov is a professor of Moscow State University (since 1942), Director of the Institute of Archaeology of the USSR Academy of Sciences since 1956 and a member of the bureau of the History Department of the USSR Academy of Sciences. He has been engaged in archaeological investigations since 1932. Rybakov's main works are devoted to the socio-economic and political history of the Eastern Slavs and Old Rus, the history of old Russian handicraft and culture, paganism, metrology, epigraphy, chronology, the epos, etc. He is the author of the following works: *The Early Centuries of Russian History, Cosmogony and Mythology of the Cultivators of the Aeneolithic Age, "The Lay of Igor's Campaign" and Its Times* (see review in No. 3 of our journal for 1973), *Russian Chroniclers and the Author of "The Lay of Igor's Campaign"*, *Russian Maps of the 15th-Early 16th Centuries Muscovy* (see review in No. 3 of our journal for 1976), *Herodotus' Scythia. A Historico-Geographical Analysis*.

Many of B. Rybakov's articles dealing with the history of Old Russian handicraft and paganism have appeared in *Social Sciences*.

B. Rybakov is a foreign member of the Bulgarian, Polish and Czechoslovak Academies of Sciences, *Doctor Honoris Causa* of Jagiellonian University in Cracow, a member of the Executive Committee of the International Union of Prehistoric and Protohistoric Sciences and of the International Committee of Slavists. He has been

awarded Lenin and USSR State Prizes and is President of the USSR-Greece Society.

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Academician Pyotr Pospelov has been awarded the Order of Lenin, by a decree of the Presidium of the USSR Supreme Soviet, for his long-standing public and political activities and for his services in the development of historical science and in connection with his 80th birthday.

P. Pospelov is a prominent Soviet historian and public and political figure. He has made a significant contribution to the elaboration of major problems of Marxist-Leninist theory and history, has written extensively on problems of the history of the CPSU, the history of the Great October Socialist Revolution and the building of socialism in the USSR. His works *Problems of History, Leninism—Marxism of the Contemporary Epoch* are widely known. Fundamental researches on the history of the CPSU, on the problems of industrialisation, on the history of the Great Patriotic War and also a scientific biography of Lenin were prepared and published under his direction.

In 1972 the Presidium of the USSR Academy of Sciences awarded its highest decoration in the social sciences, the Karl Marx Gold Medal, to Pospelov for his major contribution to the elaboration of current problems concerning Marxist-Leninist theory, the history of the CPSU and to problems of home history.

A Hero of Socialist Labour and USSR State Prize laureate P. Pospelov combines research with extensive political, public and pedagogical work. He was Editor-

in-Chief of the newspaper *Pravda*, a member of the Editorial Board of the journal *Bolshevik*. For many years headed the Institute of Marxism-Leninism under the CC CPSU. Since 1967, a member of the Presidium of the USSR Academy of Sciences.

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By a decree of the Presidium of the USSR Supreme Soviet the title of Hero of Socialist Labour, and the Order of Lenin and "Hammer and Sickle" gold medal, has been awarded Academician Alexei Okladnikov for his outstanding services in the development of archaeology and historical science and in training specialists, and in connection with his 70th birthday.

Alexei Okladnikov, member of the Editorial Council of the "Social Sciences Today" Editorial Board, is an eminent Soviet archaeologist, historian and ethnographer and a member of the Presidium of the Siberian Division of the USSR Academy of Sciences. Professor and head of a chair at the Novosibirsk University since 1962. Director of the Institute of History, Philology and Philosophy of the Siberian Division of the USSR Academy of Sciences since 1966. Has conducted field work in Siberia, the Soviet Far East, Central Asia, Mongolia and in several other countries. Discovered and studied: the remains of Neanderthal man and his culture in Uzbekistan, Paleolithic in the territory of Mongolia, primitive cliff drawings on the shores of the Lena and Angara rivers, in the Amur area and in Mongolia. In 1974, headed a group of Soviet archaeologists in joint Soviet-American explorations in the Aleutian Islands.

A. Okladnikov is the author of generalising studies in history of primitive society and primitive culture, in Paleolithic and Neolithic art, in the history of Siberia, the Soviet Far East and Far North from ancient times up to the 18th century. Many of his works have been translated into foreign languages.

He is a twice State Prize laureate. Is a foreign member of the Mongolian Academy of Sciences, an honorary member of the Hungarian Academy of Sciences, a Corresponding Member of the British Academy and Doctor Honoris Causa of Poznan University (Poland).

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Academician Anatoli Yefimov, leading Soviet economist, specialist in problems concerning improvement of the organisation and planning of socialist production, is 70. His name is closely associated with the establishment of the Research Institute of Economics under the USSR State Planning Committee whose director he was for over 20 years.

Under his direction a series of investigations were carried out to develop methods of analysis and planning of inter-sectoral ties and the sectoral structure of the national economy, and the drawing up of inter-branch balance sheets. This work was awarded a State Prize in 1968. Many of A. Yefimov's works have been translated into foreign languages. His researches conducted over many years are generalised in his work *The Economics and Planning of Soviet Industry*. He was Editor-in-Chief of the fundamental three-volumed *Economic Encyclopaedia. Industry and Construction*.

At present A. Yefimov combined scientific activity in the Research Institute of Economics with work in the bureau of the Economics Section of the USSR Academy of Sciences, of which he is a member.

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Academician Boris Piotrovsky, distinguished archaeologist and historian of culture, member of the Editorial Council of the "Social Sciences Today" Editorial Board, is 70. His researches laid the beginning of the development of an entirely new division of historical science, that of Urtology. The archaeological investigations carried out under his guidance in the territory of Armenia and later of Egypt and of several other countries have greatly enriched science. His works on the history of the culture of the Ancient East and Transcaucasia—*Kamir-Blur, The History and Culture of Urartu, Scythians in Transcaucasia*—have been translated into many foreign languages.

In his works of recent years (*On the Character of General Laws in the History of Culture, A Comprehensive Study of the History of World Culture, The Significance of the Cultural Heritage for the Development of Culture and the Forms of Its Preservation*) the author makes an attempt to identify and investigate the general laws of the historico-cultural process.

Since 1964, Director of the State Hermitage Museum; since 1966, head of the Chair of the History of the Ancient East, Leningrad State University. Is Chairman of the USSR Academy of Sciences' Scientific Council "The History of World Culture" and a member of the bureau of the History Section

of the USSR Academy of Sciences. Is a State Prize laureate.

B. Piotrovsky is a Corresponding Member of the Bavarian Academy of Sciences, of the British Academy and of the Académie des Inscriptions et Belles-Lettres (France), is Doctor Honoris Causa of the University of Delhi and of Charles University (Prague), and a member of a number of foreign scientific societies and institutions.

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Maxim Kim, Corresponding Member of the USSR Academy of Sciences, noted Soviet historian, is 70. The scope of his scientific interests is very broad as also the subjects of his published works. They treat of methodological and theoretical problems of historical science in general, of the history of Soviet society, Lenin's scientific and theoretical legacy, the history of the Soviet working class, the collective-farm peasantry and the Soviet intelligentsia, of the socialist transformations in the USSR and national-state construction in the USSR, the formation of the Soviet people as a new historical community, the history of the cultural revolution in the USSR, problems of Soviet culture. His fundamental works include: *The Communist Party—Organiser of the Cultural Revolution in the USSR, 40 Years of Soviet Culture, History and Communism, The Soviet People—a New Historical Community of People. Formation and Development*. Many of his works have been translated into foreign languages.

M. Kim is the initiator of the publication and editor-in-chief of numerous collective works and multivolumed publications. He was the first editor of the journal

Istoriya SSSR; is a member of the Editorial Board of the journal *Voprosy istorii*.

M. Kim heads the History of Soviet Society Department and the Sector of Soviet Culture in the Institute of the History of the USSR, USSR Academy of Sciences, is chairman of the USSR Academy's Scientific Council "The History of Socialist and Communist Construction in the USSR", professor of the Academy of Social Sciences under the CC CPSU.

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Dmitri Kukin, Corresponding Member of the USSR Academy of Sciences, is 70. He is the author of a large number of books on the history of the CPSU and the history of the country. In his works he examines the military policy of the CPSU, its organising activities in the years of the Great Patriotic War, in the postwar period. He has written on the historic significance of the Second Congress of the Russian Social-Democratic Labour Party, on the leading role of the Party in the period of the preparation for and the carrying out of the Great October Socialist Revolution. Many of D. Kukin's works, specifically his book *Leninist Plan of Building Socialism in the USSR and Its Realisation*, are devoted to problems of socialist construction. In recent years he has been centering his attention on the elaboration of problems of developed socialism. Many of his books have been translated into foreign languages.

D. Kukin is a member of the editorial boards of many scientific and political journals, of multivolumed publications on the history of the CPSU and the history of the USSR, is Vice-Chairman of

the Central Editorial Board of the multivolumed *History of the CPSU*.

For a long period D. Kukin was Deputy Director of the Institute of Marxism-Leninism under the CC CPSU; for over 30 years now, a professor of the Academy of Social Sciences under the CC CPSU.

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Vladimir Pashuto, Corresponding Member of the USSR Academy of Sciences, is 60. He is specialist in the history of the USSR relating to the period of feudalism, in the history of the foreign policy of Russia in the pre-revolutionary period, in source studies and historiography. To his pen belong many scholarly works, including 13 monographs, of which the most notable are *Essays on the History of Galitsko-Volynskaya Rus, Alexander Nevsky and the Struggle of the Russian People for Independence, The Formation of the Lithuanian State, The Foreign Policy of Old Rus, Revanchists—Pseudo-Historians of Russia*. In these monographs and also in a number of articles Pashuto has elaborated a set of theoretical and specific questions relating to the formation of early feudal societies and states and their evolution in the epoch of developed feudalism, as well as a comparative-typological characteristic of the said processes. His writings have been published in foreign languages.

V. Pashuto is the author and editor of *Essays on the History of the USSR. Period of Feudalism 9th-14th Centuries*, of the multivolumed *History of the USSR, World History* and of textbooks for higher schools.

V. Pashuto heads the Sector of the History of Ancient States in the Territory of the USSR, Institute of the History of the USSR, USSR Academy of Sciences.

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Alexander Samsonov, Corresponding Member of the USSR Academy of Sciences, eminent Soviet historian who has made a significant contribution to research into current problems of home history, is 60. His main area of research is the history of the Great Patriotic War. A veteran of that war Samsonov devoted his first monograph, *From the Volga to the Baltics*, to the army corps in which he served. His fundamental works include *The Great Battle of Moscow and Its Military-Political Significance*; *The Great Battle of Moscow, 1941-1942*; *The Collapse of Fascist Aggression*. His history of the battle of Stalingrad occupies a special place in his creative biography. His fundamental work *The Battle of Stalingrad. From Defence and Retreat to the Great Victory on the Volga* received high appraisal. A. Samsonov's works are translated into many foreign languages.

For nearly ten years the Director of the USSR Academy of Sciences Publishers (now the Nauka Publishers), A. Samsonov was the initiator and scientific editor of the series *The Second World War in Researches, Reminiscences and Documents*, the publication of which (90 books) greatly enriched the historiography of the Second World War.

A. Samsonov is Editor-in-Chief of the journal *Historical Transactions*, and Deputy Chairman of the Editorial Board of the series "Literary Monuments".

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Sergei Tikhvinsky, Corresponding Member of the USSR Academy of Sciences, member of the Editorial Council of the "Social Sciences

Today" Editorial Board, a distinguished Soviet orientalist, a specialist in the history of international relations, and diplomat, is 60. He is widely known for his researches in the history of China, of Russian-Chinese and Soviet-Chinese relations, the foreign policy and international relations of China. Is the author of many scholarly works and publication, and also the editor of monographs on these subjects, including *Modern History of China*.

S. Tikhvinsky is Deputy Academic Secretary of the History Section of the USSR Academy of Science, first Vice-Chairman of the National Committee of Historians of the Soviet Union, Vice-Chairman of the USSR Academy of Sciences' Scientific Council "History of the Foreign Policy of the USSR and International Relations", Editor-in-Chief of the journals *Novaya and noveishaya istoriya* and *Kitayevedeniye*.

He successfully combines scientific work with diplomatic. For many years held important posts in Soviet representations in China, Great Britain and Japan. At present S. Tikhvinsky is Chief of the Historico-Diplomatic Department of the USSR Ministry of Foreign Affairs, member of the Collegium of the USSR Ministry of Foreign Affairs. Holds the rank of Ambassador Extraordinary and Minister Plenipotentiary of the USSR. For six years was a member of the UNESCO Executive Council from the Soviet Union.

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Zinaida Udaltsova, Corresponding Member of the USSR Academy of Sciences, a specialist in the history of the Middle Ages, in Byzantium and Slav history and in

the history of late antiquity, is 60. Her works include a large number of studies into general theoretical problems of feudalism, the socio-economic and political history of Byzantium and of the countries of South-East Europe, as well as studies into problems of ideology and culture and historiography. She is the author of 13 chapters in the collective work *A History of Byzantium*, of the monographs *Soviet Byzantine Studies During 50 Years*, *Ideological and Political Struggle in Early Byzantium (According to Data of Historians of the 4th-7th Centuries)*. Her works have been translated into foreign languages.

Z. Udaltsova combines her wide-ranging research work with organisational, pedagogical and public activities. She heads the History of Byzantium Sector in the Institute of World History, USSR Academy of Sciences, is Vice-Chairman of the Academy of Sciences' Scientific Council "The Objective Laws of Social Development and of the

Transition from One Socio-Economic Formation to Another", Professor of the Chair of the Middle Ages of the History Department of Moscow State University, Editor-in-Chief of the yearbook *Vizantiisky vremennik* and of the journal *Vestnik drevnei istorii*, Chairman of the Russian Palestine Society.

Z. Udaltsova is Vice-President of the International Association of Byzantine Studies, foreign member of the Scientific Committee of the International Center for Research in the History of Byzantium Culture in Southern Italy (Bari).

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The Editorial Council, Editorial Board and staff of "Social Sciences Today" warmly congratulate the Soviet scientists on the occasion of their birthday anniversaries and wish them good health and new creative achievements in their noble work for the good of science.

THE "LITERARY MONUMENTS" SERIES

The "Literary Monuments" series was founded in 1948 on the initiative of Sergei Vavilov, the then President of the USSR Academy of Sciences. He conceived it as wide-ranging series of "monumental" works meant to meet the growing intellectual interests of the Soviet reader and appearing under the Academy's imprimature. The texts would be carefully checked for authenticity and provided with thoroughly researched commentaries and notes. The volumes would appear at brief intervals.

And Academician Vavilov selected the inaugural volume,

Travels Across Three Seas by Afanasy Nikitin. In 1947, he invited two eminent Russian historians, Academician B. Grekov and V. Adrianova-Perets, Corresponding Member of the USSR Academy of Sciences, to prepare the volume, and they, in turn, enlisted the assistance of orientalists and archaeographers I. Petrushevsky, B. Romanov and N. Chayev. The book came out in 1948, in a remarkably short time, considering the complications of the early post-war period. There thus began a unique venture in publishing and in literary studies.

The *Travels* contained the Old Russian text, a translation into modern Russian and several articles on the author and the book's background. The second volume, likewise published in 1948, was Julius Caesar's *Commentaries*.

They set the pattern for all subsequent volumes. It was decided to give all the explanatory articles and commentaries after the text, and not to treat different questions in a single article but rather in several shorter ones. The uniform structure worked out for the *Commentaries* linked them closer to the text. All this was codified in a set of rules drafted under the supervision of Academician Volgin. They have been faithfully followed over the 30 years of the series.

They added a new dimension to book editing and publishing. The Soviet reader, particularly of the postwar generation, does not only want to know the "story" of the book. He wants much more, he wants to understand its meaning and implications, its history, its author, the situation in which it was written, its literary and cultural background. In short, he wants the authentic scientifically checked text, with detailed and readable commentaries. In this we have a reflection not only of the higher level of our reader, but also the respect shown him by the scholars who are investing so much effort into the "Literary Monuments".

Of course, not every reader is so exacting (exactingness increases with the cultural level), but the fact that there are so many sophisticated readers had to be taken into account by the Academy.

It is in a way significant that the idea of putting out the "Literary Monuments" came after the Great Patriotic War, which had caused

such immense damage to material and cultural values. It was in this situation that the Academy decided to issue a series of books containing the literary values of all the peoples of the world. That is one of the series' most important distinguishing features—it is opposed to all national exclusiveness, treats of the cultural monuments of different peoples and epochs. It was designed to bring home to the reader the unity of mankind's cultural development, its common heritage. The "Literary Monuments" are internationalist and humanistic by their very nature.

The choice of *Travels Across Three Seas* was significant in this respect, for it is a veritable monument to friendly intercourse of countries, to the friendly and respectful attitude of one of the first Europeans to visit India, a country then totally unknown to Russia. All the "Monuments" are, in a way, "travels" to new countries, for they bring the reader into contact with the literature of other nations.

They serve the cause of peace. That cause, the promotion of mutual understanding and closer knowledge of the literature of other nations, is promoted by our own, Russian, "Literary Monuments" provided with articles emphasising and explaining their internationalist essence and implications. (In this context, we attach special importance to articles that help evaluate foreign literary monuments by the Russian reader and testify to the interest displayed in Russian culture abroad.)

The "Literary Monuments" have done much to bring together the culture of diverse nations into a single whole, thereby contributing to internationalism, and not only in its cultural aspects. This facilitates

not only "peaceful assimilation" of world culture, but also the no less important cause of enriching the world's literary experience and broadening intellectual perception.

The Russian classics hold an important place in the series. And that is understandable, for the books are meant primarily for readers in our country and for Russian readers in other countries. But we make a point of selecting Russian classics that provide a salient picture of the national specifics of Russian literature and its respect for other peoples (Botkin's *Letters from Spain*, *The Travels of Russian Ambassadors*, Orlov's *The Surrender of Paris*, Tolstoy's *Cossacks*, A. Turgenev's *Diaries of a Russian, Alexandria*). Future volumes will include Karamzin's *Letters of a Russian Traveller*, Goncharov's *The Frigate "Pallada"*, Bazili's *New Descriptions of Constantinople* and *Letters from the Bosphorus*.

The "Literary Monuments" should not be seen as an anthology, still less as a chrestomathy, but rather as the "material" embodiment of the world literary process, as a means of cultivating in the reader respect for all peoples and all epochs and their literary values, which have retained all their importance for our own and future generations.

Ours is a project that covers more than thirty centuries of human culture. It gives the reader a feeling of appreciation for all that man has created, and not only in one country or by one people, but demonstrates the magnificent advance of the peoples as they carried forward the banners of their culture, their finest works of literature.

Academician Vavilov was at first assisted only by a secreta-

ry, the historian M. Radovsky, Cand.Sc.(Hist.). But as time went on, and as more books were being prepared, it became necessary to appoint an editorial board composed of specialists in various fields. The first scientific secretary, Radovsky, was succeeded by the present holder of the post, D. Oznobishin, D.Sc.(Hist.). Other historians, too, have joined the editorial board.

The time came when the President of the Academy could no longer handle the project alone. The Academy's Vice-President, Academician Volgin, was then placed at the head of the Editorial Board and upon his death was succeeded first by Academician Konrad and then by the present head of the Editorial Board, the author of this article.

Each succeeding Chairman of the Editorial Board, working in close cooperation with his colleagues, extended the project begun by Academician Vavilov. In this respect, a very important contribution was made by Academician Konrad, who, among other things, was the first to theoretically conceptualise the series in an article published in 1967 and in another, written with D. Likhachev, in 1973.

Our aim of giving the reader researched monumental works from all parts of the world in their national and historical aspects, has been consistently pursued but, needless to say, there have been mistakes and miscalculations. Not all the countries are represented in our series and it is hard to say when this will be achieved. For the task is a formidable one, requiring the collaboration of leading specialists on all the literatures of the world. We cannot even say that the series covers all the continents—

there are still too few books from South America and Africa and none from Australia and New Zealand. More serious still are our shortcomings in historical aspect of the project.

It is only logical that the "Literary Monuments" should be addressed primarily to the Soviet reader who wants to gain authentic and comprehensive knowledge of all that is best in the literature of the world. On the other hand, we must reckon with the fact that skilled specialists, translators, historians of literature etc., are not always readily available, and those that are, are not always able to spare the time.

There are no, nor can there be, rigid rules for the publication of the literary works of different countries, periods and genres. In some cases we need only one explanatory article, in others we need several. Some books require not only the literary, but also historical, linguistic and textological interpretation (if the history of the text cannot be combined with literary criticism). In other cases we print the text in the language of the original and in translation. Ancient Russian texts are given in the Old and modern Russian, the latter serving as a commentary to the text (see, for instance, *Povest vremennykh let*—A Tale of Bygone Years—the 12th-century Russian chronicle). Some of the more complex editions require special attention. One example is the *Life of Sofroniy Vrachansky*, a monument of the Bulgarian Renaissance and a landmark in the development of the Bulgarian language. We printed a photostat of the original which is in the Leningrad State Public Library and a self-portrait of the author in colour. The Bulgarian text is printed side by side

with a Russian translation, and these are detailed explanatory notes and a map showing Sofroniy's travels through the country. This way the Bulgarian reader received a photostat copy of the manuscript, and also aids to its reading. The same method was applied to Adam Mickiewicz's *Sonets*, a monument of Polish and Russian literature, first published in Polish in Moscow in 1826. We decided to reproduce the original Moscow edition in full, followed by a number of translations into Russian. This enables the Polish and Russian reader not only to trace and study the different approaches of the translators, but also appreciate the love and attention Mickiewicz's *Sonets* have enjoyed in Russia since their publication 150 years ago.

Some of our books, notably first editions, have made a substantial contribution to science by reproducing all the best known original texts. It can be said that orientation on the exacting reader has stimulated more thoroughly to research and this in some instances led to scientific discoveries and new interpretations. Our books are published for so-called slow reading, the heuristic importance of which was first elaborated in Russian philology by Academician Shcherba on the basis of the ideas enunciated by Potebnya.

However it has not all been smooth sailing. There have been defects and shortcomings, but they are corrected in the new editions. The Editorial Board is greatly indebted to Soviet and world philology for the many critical reviews and summaries that have appeared in various journals. In fact, our "Monuments" have served as a basis for a number of popular and

scientific publications in this and other countries.

What do we understand by the term "literary monument"? There is no one-dimensional answer. First of all, we must reckon with the changing conceptions of literature as a whole. There is a period in the history of every culture in which literature was not yet an independent field of endeavour, a period, in short, when literature had not yet become conscious of itself as literature. That was so, to cite one example, in Russia up to the 17th century. This period—it lasted more than six centuries—literature was part of civil or religious writing, which, however, included elements what we now call literature. Our "Literary Monuments" contain texts that do not, strictly speaking, come within the category of "literature": the reports, for example, of Russian Ambassadors which we published in a separate volume in 1954, were not "literary monuments" in our understanding of the term. But their interesting descriptions of what they had seen in various countries and of the negotiations they conducted, played an outstanding part in the emergence of Russian literature of the 16th and 17th centuries. The term "literature" usually refers to written works, but we have published also folklore—in fact, an entire cycle of folklore and recorded oral verse and prose of various times and regions. Folklore played a prime role in the emergence of literature and has been the companion of literature throughout its development; a relationship from which both have benefited.

That is why we have included the great folklore of the feudal period, such as *The Song of Roland*

(published in 1964), *Poem of the Cid* (1959), *The Gilgamesh Epic* (1961), *The Elder Edda* (1963), *The Younger Edda* (1970), to name a few titles out of a longer list. Russian titles include *The Tales of Ilya Muromets* (1958), *Dobrynya Nikitich and Alyosha Popovich* (1974).

As noted above, we concentrate mainly on the classics. But an understanding of literatures in all their geographical and historical aspects requires going beyond the classics. And we have been doing that by including in our series such Russian almanacs as *The Polar Star*, *The Physiology of Petersburg*, which have become landmarks in the history of Russian literature. In response to requests we have published a cycle of letters that helped reader understand the development of one or another author or literary period. In this category belong such works as the correspondence between Dostoyevsky and his wife, Anna (1976). But we avoid collections or anthologies unless they belong to some noted author (Charles Perrault, Hans Christian Andersen, Afanasyev) and are united by a single theme.

The very word "monument" evokes memories of the past, memories that are relevant to our time. Accordingly, one of the criteria in selecting works for our series was their importance for our time, our cultural development. For it is not our purpose to republish old editions, though most of our books are not "first editions". And so, we are putting out old "monuments", but all of them have something new: either a new, fuller and more scientifically researched and interpreted text, or a new translation (if the old one proved not entirely satisfactory) or new commentaries that comple-

ment the text, etc. We want every new book to be a "cultural event," even if not always a major one.

The question of translations is one of the most complicated. I have already mentioned the fact that in some cases we give the original text (Old Russian, Bulgarian, Polish, sometimes Latin or Greek) accompanied by a Russian translation. But as a rule we give only the Russian translation, or several translations. What is our criterion of selection? There are different views about the principles of translation and there are many schools of translation. We do not give preference to any school or theory. More, we are categorically opposed to selecting translations on the basis of the principles adopted by one or another translator, and we are also against printing only new translations where there are many old ones. It is sometimes best to give several translations, thus illustrating the changing principles and techniques of the translator's art. Then, again, we sometimes publish long poems of the past in prose rather than verse translation, for a good prose translation is preferable to indifferent poetry.

And, lastly, this important question. The "Monuments" are meant for the modern reader, but they do

not include works of modern literature. This has to be stressed because our series must not duplicate the work of other publishing organisations, the Sovetsky pisatel, for instance, or Khudozhestvennaya literatura Publishers. In this context, mention has to be made of our inclusion in the series of Alexander Tvardovsky's narrative poem *Vasily Tyorkin*. We put it out in 1975 for the 30th anniversary of the Victory over fascism. Beyond all doubt, it is a literary monument of our times, of the Great Patriotic War. Written during the war, it was on the lips of every soldier fighting in defence of his Motherland. It is not a poem "about" the soldier, but a poem of the soldier, and, undoubtedly, the most popular piece of wartime writing. That is why we made an exception for *Vasily Tyorkin*, placing him in the ranks of the most famous heroes and heroic monuments of world literature.

Much time will pass before all the written and oral literature of the world finds its place in our books. But we can confidently say that the aim we have set ourselves will be attained.

Academician
D. Likhachev

SOVIET-AFGHAN ARCHAEOLOGICAL EXPEDITION

A joint archaeological expedition was organised in 1969 by the Institute of Archaeology of the USSR Academy of Sciences and the General Directorate for Archaeology and Conservation of Historical Monuments of the Ministry of Information and Culture of Afghanistan. The purpose of this expedition was to compile an archaeological atlas of Northern

Afghanistan. To accomplish this it was necessary to conduct archaeological surveys in presently desert areas that were virgin ground for archaeologists and thereby reconstruct the history of the human settlement of these areas. It was necessary to excavate sites dating to different epochs in order to learn when ancient settlements sprang up and how long

they existed. The Soviet members of the expedition included archaeologists from Moscow, Ashkhabad, Dushanbe and Tashkent.

The expedition has conducted field work annually since 1969, and the following is a brief survey of its results.

Amidst the sands extending along the left bank of the Amu Darya, A. Vinogradov (Moscow), who specialises in Stone Age archaeology, discovered several ancient camping sites with Paleolithic, Mesolithic, and Early Neolithic stone implements. These finds make it certain that man appeared in these areas at least 30,000 years ago.

Between the towns of Andkhoy and Khulm V. Sarianidi (Moscow), who specialises in Bronze Age archaeology, discovered four oases that were densely peopled in ancient times. In the Second Millennium B.C. these were flourishing settlements of land-tillers and potters, with villages surrounded with sunbaked brick walls and large circular towers, and monumental cult structures. The largest excavations were conducted east of the town of Akcha. A square fortified settlement christened Dashli I by archaeologists, was discovered there under a small sandhill. Its defensive walls were three metres thick, and the corner towers had a diameter of six metres. The entire space within the walls was filled with dwellings with interesting clay stones—fire-places the smoke from which passed through pipes in the walls. In the latter half of the Second Millennium B.C. the settlement was abandoned and the ruins of the houses were turned into a graveyard. The graves contained a large number of clay vessels, many

of which still had remains of food. Amidst the human graves there were burials of rams. In one of these burials along with the skeleton of a ram there was a clay pot with the rib of another ram. The pot was evidently used in a rite requiring sacrificial food as in the case of human burials.

Two monumental structures (Dashli III) were dug up near this settlement. One of them, a rectangular structure (84×88 metres) with a large courtyard in the middle, numerous rooms, halls, and corridors, might have been a palace. It has a wall and a moat that held water in antiquity. The moat is up to ten metres wide and three metres deep. The second structure was circular with nine towers linked by a passage. It had many rooms and a wall forming a square and having a total length of over half a kilometre. In front of the wall there was a deep ditch. The central circular building had high clay altars shaped as fire-places. This was possibly a fire temple. These two monumental buildings were the administrative and cult centre of a large agricultural-artisan district of a Bronze Age oasis.

Surveys near the town of Shibarghan produced evidence that new tribes penetrated this area at the close of the Second or the beginning of the First Millennium B.C.; a feature distinguishing them is their use of painted pottery. They covered their clay vessels with diverse geometrical drawings in black and red. Excavations in one of their settlements, Tillya-tepe, brought to light a thick clay wall surrounding a settlement sited on a high artificial clay platform. Settlements with the similar-type painted pottery are known in Turkmenia

and in Iranian Khorasan. But this is the first time that powerful fortifications have been found around settlements of tribes manufacturing this type of painted pottery.

Extremely interesting relics of a later historical period have been found. It is known that Bactria, which was situated in Northern Afghanistan in the mid-First Millennium B.C., was part of the vast Persian dominions of the Achaemenides and paid rich tribute to the Persian king. Darius III, the last of the Achaemenides kings, was defeated in 331 B.C. by Alexander the Great, and Greco-Macedonian troops overran Bactria. The many settlements, fortified towns, temples, and palaces discovered by the expedition between the towns of Akcha and Daulatabad date from Achaemenides times.

Some features of Bactrian architecture and fortification of the Achaemenides epoch have been identified by the expedition. The evidence of excavations in two circular buildings (Kutlug-tepe and Akbar-tepe) situated far from each other and at a distance from the Dashli-III temple is that the ancient Bactrian architectural tradition of erecting circular buildings was long-lived. There was a circular lay-out also in the Achaemenides town of Altin-Diliar (near the village of Farukhabad), and in the later town of Emshi-tepe (near the town of Shibarghan), which existed until the 4th-5th Centuries A.D.

Prior to the work of the Soviet-Afghan expedition no monuments were known of the Achaemenides period in Afghanistan. Today archaeologists have studied extremely interesting structures. Of these two suburban palaces have been exca-

vated in full. The two small elevations in a desert hiding the ruins of these palaces were called Altin-10. One of the palaces, a rectangular building with a colonnade along its walls, was destroyed by fire. It is not to be excluded that it was razed by fire during the Greco-Macedonian invasion of Bactria. The second palace was a square building with a courtyard in the middle, a corridor running round it with 27 rooms symmetrically situated along its perimeter.

Considerable significance is attached to the discovery of the fire temple by the Tashkent archaeologist Z. Khakimov in a desert east of Altin-Diliar in 1977. In the temple, a small rectangular structure, there were several fire altars, one of which, very large with clay walls and standing on a high platform, was found in one of the far rooms. Legend links Zarathustra, founder of Masdaism, who lived in the 7th or 6th Century B.C., with Bactria. However, no fire temple dating from this period had been found in Afghanistan before.

The expedition is giving considerable attention to excavations in a town dating from Greco-Bactrian and Kushan times, i.e., the last few centuries B.C. and the first half of the 1st Century A.D., whose ruins were discovered near the village of Dilberjin 70 kilometres northwest of the town of Balkh (ancient Bactr—the chief town of Bactria). Archaeologists have called this town Dilberjin, after the name of the nearest village. Its monumental walls and large size lead to the assumption that it was a large Greco-Bactrian town, perhaps Eucratidea, which is mentioned by the Greek geographers Strabo and Ptolemy. Further excavations by the Soviet-Afghan expedition have

yielded additional material in support of that assumption. A temple with frescoes portraying the Dioscuri, the Greek divine twins, was discovered in Dilberjin. This temple was rebuilt in the 1st Century A.C. and converted into a dynastic temple of Kushan kings. One more temple, built in the reign of the first Kushan king, was possibly linked with the cult of the goddess Anahit. There was also a Buddhist temple and a complex of cult structures with wall paintings of various deities of the local pantheon and temporal personages. Excavations of the town's main gates and keeper structures brought to light a soldiers' temple with a sculpture of the Greek hero and god Heracles. The defensive walls of the town were more than 8.5 metres high. The defensive walls around the citadel in the centre of the town were even higher. The oldest of these walls were built in Achaemenides times. The first defensive walls of the town itself were built later, under the Greco-Bactrian king Eucratid in the 2nd Century B.C. Their partial destruction made the Kushan rulers, who seized the town after the fall of the Greco-Bactrian kingdom, renew the fortifications repeatedly, build

new towers, and thicken and restructure the walls. The latest repairs on these walls date from the last Kushan kings, while after the town's conquest by the Sassanides in the 3rd Century A.D. the walls and towns slowly fell into disrepair. Life in the town ceased gradually under the Ephthalites in the 5th Century.

In Dilberjin, the most important discoveries of the Soviet-Afghan expedition includes a marble slab with remnants of a monumental inscription dating from the famous Kushan King Kanishka made in the Bactrian language. This unique inscription may be compared with the celebrated inscription in Surkh Kotal, whose discovery gave scholars their first glimpse of the Bactrian written language. The many frescoes that have been discovered indicate that there was a local school of painting. The alternation of subjects in the paintings of different periods is evidence of the change of religious cults brought by new rulers. The small and large sculptures that have been found show that there was a flourishing art culture in the town.

I. Kruglikova

THE 130TH ANNIVERSARY OF THE COMMUNIST MANIFESTO

A scientific session "Current Problems of the Development of the World Communist and Working-Class Movement" was held in February 1978 in Moscow to mark the 130th Anniversary of the *Communist Manifesto* by K. Marx and F. Engels. The Session was sponsored by the USSR Academy of Sciences' Scientific Council on the Integrated Problem "The History of the International Working-Class and National Liberation Movements", the Scientific Council of the Institute of the International Working-Class Movement of the USSR Academy of Sciences jointly with the Moscow State University and a number of other scientific organisations.

In his opening speech the Vice-Chairman of the Scientific Council and Director of the Institute of the International Working-Class Movement, T. Timofeyev, Corresponding Member of the USSR Academy of Sciences, noted that the theory of scientific socialism and the principles of the strategy and tactics of the Communists substantiated by the founders of Marxism in that programmatic document found their practical embodiment in the first victorious socialist revolution

in our country, which ensured the conditions for a new and higher type of civilisation.

The main report "Internationalism of the Working-Class Movement and Correlation of the Class Forces in the World Today" was presented by Professor V. Zagladin. He emphasised that in the *Manifesto*, Marx and Engels formulated the conclusion about mankind's transition in the epoch of capitalism from development on a local scale to development on a worldwide scale, and, thereby, for the first time raised the question of the correlation of the class forces of the bourgeoisie and of the proletariat on an international scale. It was a harmonious concept of the working class' struggle for the unity of all revolutionary and democratic forces in the struggle against the rule of the bourgeoisie, a concept of international solidarity inspired by the ideas and principles of proletarian internationalism.

In this connection, the speaker criticised the attempts by bourgeois and opportunist ideologists to substantiate the necessity of maintaining the status quo in the world today by substituting the concept of the military correlation of forces

for the correlation of social forces concept. Such attempts, he said, reflect the desire to perpetuate the transitional state of human society and, consequently, the capitalist system on a considerable part of the globe.

Marxist-Leninists proceed from the fact that the correlation of social forces is only one of the indicators determining the progressive development of society, the rates and course of social progress. Changes in the correlation of forces depend on many objective factors, on the intensification of the internal contradictions of capitalist society, the manifestation of the advantages of socialism, and the struggle of the popular masses. And to stop the development of these processes is impossible.

The speaker noted that at the present stage of world development the correlation of forces is a global category, a universal one both in the geographical and social sense. It is of a complex nature as it embraces not only the material (military, economic) sphere, but also the ideological sphere, which is a direct result of the continuous internationalisation of social life. At the same time this category is not static but dynamic, for each given correlation of forces is a result of the struggle, the activities of a great number of opposed forces. That is why today the correlation of forces concept includes the policy and the initiative of world socialism, of the forces of the working-class and national liberation movements, which ensure the continuity of the struggle and the further preponderance of forces in favour of the camp of peace, democracy and social progress.

Hence the following conclusion of major importance: the correla-

tion of forces in our time is to a tremendous extent determined by the unity, cohesion and cooperation of all the elements of which it consists on the two opposing sides. Consequently, the internationalist slogans of the *Manifesto* assume today a still greater significance than 130 years ago.

T. Timofeyev devoted his report "The Manifesto of Scientific Communism and the Present-day Revolutionary Working-Class Movement" to some methodological problems and trends in the studies of the international working-class and communist movement, in particular to the growing trend towards an interdisciplinary approach to the study of the working-class movement and the reasons for this. He noted that this was to be observed not only in the USSR but also, in varied specific forms, in other countries as well.

The methodological problems of the study of the international working-class movement were also discussed in a number of other reports: "The Working Class—the Vanguard Fighter for Democracy: Traditions and Our Time" by B. Koval, "The Historic Mission of the Working Class and the Problems of Studying the Political Behaviour of the Proletariat" by A. Galkin, "The *Communist Manifesto* on the Proletariat's Historic Mission and the Working Class of Existing Socialism" by E. Klopov, "Some Methodological Problems of Studying Proletarian Internationalism at the Present Stage" by V. Borzunov. These reports showed once again the heightened interest of Soviet scholars in the methodological problems of the study of the international working-class movement and were a positive

contribution to the solution of many of the problems discussed.

The Session also focused on some socio-economic aspects of the development of the working class in the industrialised capitalist countries. L. Karabanova, Yu. Berezina, A. Salmin and I. Faleyeva dealt with the impact of the scientific and technological revolution and of the further aggravation of the general crisis of capitalism on the international working-class movement, on the changes in the structure of capitalist society, and on the social dynamics and reproduction of the working class. The participants noted that along with a decrease in the number of people engaged in agricultural production, there was an increase in the numerical strength and proportion of the working class in the social structures of the capitalist countries with the middle strata remaining relatively stable (though their inner structure showed considerable changes). In this connection, the Session discussed the problems of an alliance of the working class and the middle strata in the struggle for restructuring capitalist society, and corresponding structural changes in the system of such an alliance.

FORUM OF PSYCHOLOGISTS OF SOCIALIST COUNTRIES

Representatives of Bulgaria, Cuba, Czechoslovakia, the GDR, Hungary, Mongolia, Poland, Rumania, the USSR, and Vietnam attended the first conference of psychologists of socialist countries held in Potsdam in March 1978 on the initiative of the academies of pedagogical sciences and the societies of psychologists of the GDR and the Soviet Union. The

S. Agayev, A. Weber, L. Moskvina, and P. Shaposhnichenko dealt with the ideological and practical aspects of the activities of the working class' political and professional organisations, particularly with some problems of the correlation of reform and revolution in the strategy and tactics of the Communist parties of industrialised capitalist countries, and some aspects of the cooperation between the Communists and other workers' parties at its present stage. The factors making for the growth of the role of the trade unions and the working-class movement in forming the anti-monopoly coalition were discussed as also questions of the anti-war struggle within the working-class and democratic movements in the capitalist countries of Europe.

The Session unanimously came to the conclusion that social development during the 130 years since the publication of the *Communist Manifesto* bears out the vitality and tremendous creative power of the ideas embodied in this programmatic document of the Communists.

The materials of the Session will be published under separate cover.

S. Agayev

purpose of this conference was to discuss basic methodological and theoretical problems of the further development of psychology in socialist countries on the basis of Marxism-Leninism and to critically analyse the standpoints of Western psychologists; to discuss the results and methods of psychological study helping to promote the efficacy of social psychology in the further

building of socialist society as well as the possibilities for further cooperation and coordination among psychologists of socialist countries.

At the plenary sitting, the main, introductory paper—"The Ways and Means of Promoting Psychology"—was delivered by B. Lomov, Corresponding Member of the USSR Academy of Sciences, President of the Society of Psychologists of the USSR, and Director of the Institute of Psychology of the USSR Academy of Sciences. Noting that in combination with specific distinctions in the development of psychological science in each socialist country, the common philosophical and methodological approach provided a good basis for cooperation in the study of pressing problems of psychological science, he characterised the role of psychology in socialist society. Psychology, he said, was developing in parallel with the development of a new type of social relations, with the study of man under new social conditions—the revolutionary, transformative practice of building a society of social equality, genuine democracy, and true humanism. Lomov reviewed the development of psychology today, saying that the application of the results of psychological study in practice was yielding a considerable economic benefit, helping to promote the growth of labour productivity and enhancing efficiency in production and management. It was helping to protect the health and capacity for work and develop the creative potentialities of every person, and improve relations between people. Lomov considered questions of the development of the theory of psychology and noted the significance of the systems approach.

Papers were delivered at the plenary sittings also by G. Pyriov (Bulgaria)—"Psychology, a Fundamental Science of Man"; A. Petrovsky (USSR)—"Socio-Psychological Problems of the Collective"; G. Martinez (Cuba)—"Methodological Study of the Individual"; Pham Mihn Hac (Vietnam)—"The Principle of Activity in Psychology"; J. Linhart (Czechoslovakia)—"Activity of Reflection, Occupation, Teaching"; G. Tomaszewski (Poland)—"Cognitive Processes in the Regulation of Activity"; A. Kossakowski (GDR)—"The Role of Orientative Action for the Development of Independent Actions by the Individual".

There were two round-table sittings. At one of them, devoted to problems of cognitive psychology, the main paper was delivered by F. Klix (GDR). The second, held at the initiative of Soviet psychologists, was devoted to the practical application of psychology.

Most of the work of the conference was conducted at eight symposiums: "Levels and Components of Psychical Regulation of Activity and the Methods of Analysing Them"; "Concepts, Methods, and Results of Analyses of Cognitive Processes"; "Regularities and Conditions of Psychical Ontogenesis"; "Cognitive and Motivative Development of the Individual in the Process of Study"; "Socio-Psychological Foundations of the Development of the Individual and the Collective"; "Structure and Dynamics of the Individual"; "Psychical Health Protection—Diagnostics, Therapy, Prevention"; and "Problems of the Historico-Psychological Study and Criticism of Modern Schools of Bourgeois Psychology".

Let us stop in some detail on the work of symposiums at which problems of social psychology were considered.

At the symposium "Socio-Psychological Foundations of the Development of the Individual and the Collective", V. Kuzmin (USSR) spoke of the methodological principles underlying Soviet social psychology as distinct from Western, the role of the systems approach, and the modelling of the structures and dynamics of the individual, small groups, and collectives. The problems of introducing psychology in the life of society were dealt with by F. Genov (Bulgaria). Interesting theoretical propositions on circles of association, which allow understanding man as a subject of association, were formulated by A. Bodalev (USSR). Some scholars discussed the problem of assessment on the basis of experimental research: in connection with success (G. Vorweg—GDR), specifics of the presentation of the object of a characteristic (K. Loeschner—GDR), specific features of a small group (P. Schulze—GDR). An analysis of theoretical and experimental data on psychological characteristics of integration in a collective was made in interesting papers by F. Pataki (Hungary) and J. Janoušek (Czechoslovakia).

Problems of social psychology were also dealt with in the above-mentioned paper by A. Petrovsky at a plenary sitting and in papers delivered at other symposiums: "Social Experience and the Formation of the Individual" (G. Iolov—Bulgaria), "Formation of Vital Perspectives Among Young People and Their Determination" (M. Tyszkowa—Poland), "Enrichment of Clinical Psychology by Social

Psychology" (H. Böttcher—GDR), and others.

The socially important questions of readiness for labour and professional training were discussed at the symposium "Levels and Components of the Psychic Regulation of Activity and Methods of Analysing Them" by V. Shadrikov (USSR), Z. Ivanova (Bulgaria), K. Timpe (GDR), T. Trifonov (Bulgaria), P. Wendrich (GDR), and others.

At the symposium "Structure and Dynamics of the Individual" E. Shorokhova (USSR) read an interesting paper showing the Marxist understanding of the socialist way of life, characterising types and spheres of the vital activity and structure of the way of life, and highlighting the psychological aspect of that problem. K. Obuchowski (Poland) raised the important questions of the developing structure of the individual and the properties of that structure in time, and characterised its programming system. K. Jaro (Hungary) dealt with the so-called psycho-economic concept of the individual, a concept that distinguishes as a dynamic element of the individual's structure the selection of a method to influence the modification or preservation of the pattern of relations in his social environment, namely his positional self-determination.

An original conception of the individual was proposed by J. Reykowski (Poland), who used experimental data to identify a system of basic social relations that mould the individual. A. Prangishvili (USSR) presented the views of Georgian psychologists on the system-forming role of guidelines in the psychology of the individual and stated his approach to the

problem of individuality. A viewpoint on the psychological foundations of behaviour modifications in the development of the individual was given on the basis of experimental data by M. Vorweg and other GDR psychologists. This symposium discussed the following problems: the life of the individual (T. Pardel—Czechoslovakia), the link between personal and socio-psychological characteristics (J. Strelau—Poland), the role of self-assessment (Pham Hoang Gia—Vietnam), and, the stability of the individual (B. Pyrvanov—Bulgaria).

Various aspects of the theme of this symposium were considered in the above-mentioned papers delivered at plenary sittings by G. Martinez and A. Kossakowski, and also in the papers read at other sym-

posiums by the Soviet psychologists K. Abulkhanova-Slavskaya (the methodological aspect of the link between the individual and activity, and analysis of the aims and modes of including the individual into reality), and by N. Menchinskaya and E. Faraponova (aspects of the individual's cognitive and educational activity).

At the closing sitting of the international leadership of the conference the work of the conference was approved and practical measures outlined to promote cooperation among psychologists of socialist countries, and a recommendation made that the next conference should be held in the Soviet Union.

K. Abulkhanova-Slavskaya,
E. Faraponova

CHRONICLE

* The 3rd Conference of the Vice-Presidents of the Academies of Sciences of the socialist countries on social sciences was held in Budapest. It was attended by delegations from the Bulgarian Academy of Sciences, the Academy of Sciences of Cuba, the Czechoslovak Academy of Sciences, the Academy of Sciences of the GDR, the Hungarian Academy of Sciences, the Academy of Sciences of Mongolia, the Polish Academy of Sciences, the Academy of Social and Political Sciences of Rumania, the Academy of Sciences of the USSR and the Committee on Social Sciences of Vietnam. Representatives of the Central Committees of a number of Com-

munist and Workers' parties also took part in the Conference.

Theoretical problems of the development of research in social sciences in accordance with the requirements of socialist and communist construction were debated on the basis of a report submitted by the Hungarian Academy of Sciences. A report by the Czechoslovak Academy of Sciences on the results of the work conducted by the Problem Commission "Ideological Struggle and the Coexistence of the Two World Systems" was also discussed.

The Conference noted the growing importance of ideological struggle at the present stage and the need for intensifying research in this field.

The report submitted by the Academy of Sciences of the GDR

This review covers the events of February-May 1978. The venue is Moscow, unless stated otherwise.

dealt with the results of joint research conducted within the framework of the long-term programme of multilateral cooperation between scientific institutions of the socialist countries in social sciences. The Conference discussed the report, specified further tasks of such cooperation, and examined a proposal of the Academy of Sciences of the GDR on instituting an International Prize for outstanding achievements in joint research in social sciences. A group for further elaboration of this question was set up. The vice-presidents accepted an invitation by the Czechoslovak Academy of Sciences to hold the next, 4th, Conference in the first half of 1980 in Czechoslovakia.

* A consultative meeting of representatives of the Academies of Sciences of socialist countries on participating in the activity of multilateral international organisations was held at the Presidium of the USSR Academy of Sciences. The meeting was attended by scientists from Bulgaria, Cuba, Czechoslovakia, the GDR, Hungary, Poland, Rumania and the USSR. Views were exchanged about the prospects of developing international scientific ties; a question was discussed, among others, on participating in the activity of the International Council of Scientific Unions (ICSU).

* A session of the Academy of Sciences of the GDR and the USSR Academy of Sciences devoted to twenty years of cooperation between these two institutions took place in Berlin. The session was opened by Academician U. Hofmann (GDR), who highly assessed the results of this cooperation and cited examples of implementation of results

of the joint research. P. Fedoseyev, Vice-President of the USSR Academy of Sciences, leader of the Soviet delegation, noted in his speech that in recent years the bilateral cooperation between the Academies of Sciences of the USSR and the GDR was successfully developing in the field of the humanities. A number of monographs have been jointly prepared on the topical problems of the histories of both nations and world history, elaboration of the fundamental problems of philosophy and sociology, socialist democracy, the state and law, problems of the intensification of and increase in the efficiency of social production, the fundamentals of Marxist-Leninist linguistics, the history and modern development of literatures of the USSR and the GDR. The bilateral commissions of historians, philosophers, economists, as well as the Commission on the Theory and History of the International Working-Class Movement have been working fruitfully. Reports were delivered also by Academician H. Bartel (GDR)—on the activity of the Commission of Historians of the GDR and the USSR—and Academician A. Bayev (USSR)—on cooperation in the field of molecular biology. The session also discussed problems of forecasting the development of fundamental research in social and natural sciences.

* A meeting devoted to the 60th anniversary of Lenin's plan of scientific and technical work was held at the Presidium of the USSR Academy of Sciences. In the "Draft Plan of Scientific and Technical Work" Lenin mapped out a grand programme of the reconstruction of the country's economy on the basis of a

rational distribution of the productive forces and broad introduction of the latest achievements of science and technology, said Academician A. Alexandrov, President of the USSR Academy of Sciences. Following Lenin's instructions, Soviet scientists actively helped realise the GOELRO Plan, the country's industrialisation and the socialist transformation of agriculture. At the present stage of the scientific and technological revolution the research carried on by the Academy contributes to a successful solution of many important economic problems. For one, scientists have made substantial contribution to the elaboration of a comprehensive programme of scientific and technological progress and its socio-economic results. Reports were delivered on "Lenin's Ideas About the Rational Utilisation of the Natural Resources and the Development and Distribution of the Productive Forces in the USSR" by Academician A. Sidorenko, Vice-President of the USSR Academy of Sciences; "Lenin and the Problems of Integration of Natural, Social and Technical Sciences" by Academician P. Fedoseyev, Vice-President of the USSR Academy of Sciences; "On Realisation of Lenin's Ideas in the Development of the Mining Industry of the USSR" by Academician N. Melnikov.

* At a plenary session of the Committee of the Soviet National Association of the History and Philosophy of Natural Science and Technology an introductory speech was delivered by Academician B. Kedrov; reports were made by A. Koltsov, D.Sc.(Hist.), "On the 60th Anniversary of Lenin's Work 'Draft Plan of Scientific and Technical Work'",

and V. Kelle, D.Sc.(Philos.), "Marxist-Leninist Principles of an Analysis of Scientific and Technological Development".

* A joint session of the Section of Social Sciences of the Presidium of the USSR Academy of Sciences and the Section of Social Sciences of the Academy of Sciences of Byelorussia was held in Minsk. Taking part in the session were A. Kuzmin, Secretary of the Central Committee of the Communist Party of Byelorussia, P. Fedoseyev, Vice-President of the USSR Academy of Sciences, N. Borisevich, President of the Academy of Sciences of Byelorussia and Corresponding Member of the USSR Academy of Sciences, vice-presidents of the Academies of Sciences of Moldavia and Estonia, academicians and corresponding members of the Academy of Sciences of Byelorussia, and representatives of Party, government and public organisations. A report on the development of social scientific research conducted by the Academy of Sciences of Byelorussia was made by N. Birillo, acting Academic Secretary of the Section of Social Sciences and Member of the Academy of Sciences of Byelorussia. Academician P. Fedoseyev delivered a report on the urgent problems of society's development and the tasks of social sciences.

* An international conference of heads of institutes and societies studying the labour movement held in Mexico City was attended by more than 70 scholars from Bulgaria, France, the GDR, Ireland, Italy, Mexico, Poland, Spain, USA and USSR. The Soviet delegation included the Director of the Institute of International Working-Class

Movement T. Timofeyev, Corresponding Member, USSR Academy of Sciences (head of the delegation); Deputy Director of the institute B. Koval, D.Sc. (Hist.) and associates of the institute I. Rybalkin and V. Balmashinov. Among the speakers at the Conference were A. Todorov (Bulgaria), M. Launay and M. David (France), T. Timofeyev and B. Koval (USSR), A. Elorza Dominguez (Spain), J. Golembiowski (Poland), J. Swift (Ireland), J. Fernández Anaya and H. Monteon (Mexico) and Ph. Foner (USA).

T. Timofeyev emphasised in his speech the interdisciplinary character of the study of the labour movement problems, pointing out in particular that such an approach had been typical of Marx, Engels and Lenin who had created a definite tradition in investigating this question. He said that Soviet scholars in their works creatively use the method elaborated by the classics of Marxism-Leninism for studying both the history of the labour movement and the present-day situation of the working class. B. Koval spoke about the principal lines of research conducted by Soviet scholars into the labour movement problems of Latin America. Other participants in the Conference dealt mainly with the activities of the scientific centres for studying the labour movement, which they represented. In conclusion a decision was adopted on the organisation of the World Association of Institutes and Societies for Studying History and Social Problems of the Labour Movement. Representatives of Finland and Japan who had been unable to attend the Conference in Mexico, expressed their willingness to participate in the activity of the Associ-

ation and their agreement with its Charter adopted by the Conference. E. Suárez Gaona, Director of the Mexican Centre for the Study of the Labour Movement, was elected President of the Executive Council of the Association.

* An international scientific conference "The Significance of Frederick Engels' work 'Anti-Dühring' for Science and Education of Our Epoch" was sponsored by the Ernst Moritz Arndt University in Greifswald (GDR). Scholars from Finland, France, the GDR, Hungary, Poland, the USSR and Yugoslavia took part in the Conference which was opened by the Rector of the University W. Imig, D.Sc. (Philos.).

The plenary sessions and meetings of six panels heard and discussed more than 70 papers and communications bearing on important problems of interdisciplinary character. The Soviet delegates submitted the following papers: "The Problem of Dialectical Unity of the Objective, Relative and Absolute Truth" (I. Yessin), "The Dialectics of the Word and World Outlook" (N. Komlev), "Frederick Engels and the Concept of Scientific Ideology" (E. Meskauskas), "Language and Personality in the Light of the Ideas of Historical Materialism" (Yu. Rozhdestvensky), "The Problem of Reflection of Space and Time in Language" (G. Sentyabov), and "The Economic Laws in F. Engels' *Anti-Dühring*" (A. Yablonsky).

* A scientific conference "Byzantine Iconoclasm. Social and Economic Prerequisites, Ideological Basis, Historical Consequences" held in Greifswald (GDR) was attended by scholars from Bulgaria, Czechoslovakia, the

GDR, and the USSR. The participants listened to and discussed 17 papers on the following problems: the social and economic reasons of iconoclasm in Byzantium; the ideological platforms of conflicting parties; the Middle-Eastern and Moslem roots of Byzantine iconoclasm; new sources of iconoclasm polemics; architecture and fine art during the iconoclasm period; the influence of iconoclasm on Byzantine-Slav relations; heretic movements and iconoclasm; the influence of iconoclasm on West European artistic culture. V. Bychkov, an associate of the Institute of Philosophy, USSR Academy of Sciences, delivered a paper "Philosophical and Aesthetic Aspects of Byzantine Iconoclasm".

* At the Soviet-French colloquium "Reason and Culture", held in Lille, Soviet participants presented the following papers: "The Logic of Discovery as the Logic of Establishing New Truths" (Academician B. Kedrov), "The Semantics of Relevant Logic and the Problem of the Nature of Logical Laws" (Professor E. Voishvillo), "Science, Technology, Culture (on the Principles of Methodological Analysis)" (A. Zotov), "Systems Categories in the Logic of the Development of Science" (V. Kuznetsov), "On Constituting the Reason. Diversification and Conflict of Rationalism in Ancient Philosophy" (N. Kuznetsov), "Hypothesis and Explanation of Reality" (I. Melvil), "Problem of Art and Morality in Leo Tolstoy's Aesthetics" (M. Ovsyannikov), and "Reason and Culture of the Rationalists and Theoreticians of the Natural Law of the 17th Century and the Historical Significance of These Concepts" (V. Sokolov).

* A scientific conference "Marxism-Leninism—a Uniform International Theory" held at the Institute of Marxism-Leninism under the Central Committee of the CPSU and devoted to the 160th birth anniversary of Karl Marx was attended by scholars, veterans of the CPSU and representatives of Soviet youth. The Conference was opened by Academician A. Yegorov, Director of the Institute. Three main papers were read: "Marxism-Leninism, the Theoretical Foundation of Building Communism" (G. Bagaturiya), "Marxism-Leninism and Proletarian Internationalism" (I. Anoshkin), and "Some Urgent Questions of Agrarian Theory Which Is an Inalienable Part of Marx' Economic Theory" (A. Malysh). Participants in the Conference emphasised that Marxism-Leninism is the consistent scientific outlook of the working class, that has become a great force for mankind's social progress. Loyalty to Marxism-Leninism is an earnest of all successes in the struggle of the working class, all working people for peace, democracy, socialism and communism.

* A jubilee scientific session devoted to the centenary of the liberation of Bulgaria from the Osman yoke, held in Sofia by the Bulgarian Academy of Sciences jointly with a number of scientific, state and public organisations of the country, was attended by 85 guests from 24 countries of Europe, Asia, Africa and America. A delegation of Soviet scientists was headed by Academician Yu. Bromley. The plenary session heard papers by Bulgarian scholars: "On the Character and Significance of the Russo-Turkish War" (Academician

D. Kosev), "Russia, Western Powers and the Liberation of Bulgaria" (Academician Kh. Khristov), "Slav Literature Dealing with the Liberation of Bulgaria from Osman Domination" (Academician E. Georgiyev), "The Russo-Turkish Wars and the Balkan States" (Corresponding Member of the Bulgarian Academy of Sciences N. Todorov), "On Russian Military Art in the War for the Liberation of Bulgaria" (Lieutenant-General A. Mitev). Messages of greetings from the heads of foreign delegations were read at the plenary session. Then work proceeded in the panels of history, literature and art, and military history. Soviet scholars delivered papers and communications at the panel meetings. Academician Yu. Bromley presented Academician A. Bolevsky, President of the Bulgarian Academy of Sciences, with works by Soviet historians devoted to the liberation of Bulgaria.

* Historians from 16 countries, including the GDR, Hungary, Poland, the USSR and Yugoslavia, took part in the 10th Science "Week", "Development and Under-Development in Europe and Outside It from the 13th Century to the Industrial Revolution. It was sponsored by the Francesco Datini International Institute of Economic History in Prato, Italy. Participants heard and discussed more than 30 papers. The Soviet scholars submitted the following papers: "The Concept of Development and Under-Development as a Historical Category" (A. Chistozvonov), "Progressive and Regressive Trends in the Socio-Economic Development of Toscana in the 13th-15th Centuries" (L. Kotelnikova), "The Mongol Invasion and Its Influence

on the Socio-Economic Development of Russia (Foreign Invasion as a Factor Accounting for Subsequent Under-Development)" (I. Grekov), "Second Edition of Serfdom and European Market" (I. Kostushko and V. Zelenin), and "Premises for the Genesis of Capitalism in Lagged Non-European Regions (Largely by the Example of India)" (V. Pavlov).

* More than 40 scholars took part in a colloquium of historians of the USSR and the FRG held in Munich. The Soviet delegation was headed by Academician A. Narochitsky. The West German delegation—by Professor G. Ritter. Scholars from West Berlin also took part. Professor K. Erdmann, President of the International Committee of Historical Sciences, actively participated in the proceedings. Two main subjects were discussed: "Historical Approach and Modern Science of History" and "Europe Between the Revolution and Restoration, 1797-1815". The Soviet side submitted the following papers: "Revolutionary Historiography in Russia and Modern Soviet Historiography" (I. Kovalchenko and O. Sokolov), "Formation of Historical Approach in Russian Historiography in the 18th-First Half of the 19th Century" (A. Sakharov), "Political Attitude of Russia and the German States to the French Policy of Hegemony" (A. Narochitsky), "Soviet Historiography About Historical Significance of the 1813 War of Liberation" (V. Milyukova), "The Economy and Economic Policy of Germany and Russia During the Continental Blockade" (B. Tupolev), and "Progressive Russia and European Reaction after 1815" (O. Orlik). West German scholars presented the papers:

"Emergence of Historical Approach" (K. Faber), "Modern Trends in Historiography in the Federal Republic of Germany" (W. Mommsen), "Political Attitudes of the German States to the French Hegemonistic Policy (Between Adaptation and Resistance)" (E. Weis), "Historical Problem of the Wars of Liberation in 1813-1814" (H. Berding), "New Order in Europe in 1815 Between the Revolution and Restoration" (K. Freiherr von Aretin), and "Constitutional-Political and Socio-Political Reforms and Projects in Germany Under the Influence of Napoleonic France" (E. Fehrenbach). Historians from West Berlin delivered the report "Economy and Economic Policy in Germany and Russia in the Conditions of British Blockade and French Counter-Blockade" (W. Fischer and A. Simsch).

* At a Soviet-Swedish symposium of historians devoted to three subjects: "The Role of Nobility in the Epoch of Feudalism", "Genesis of Capitalist Relations" and "Soviet-Swedish Relations", the Soviet delegation was headed by I. Kovalchenko, Corresponding Member, USSR Academy of Sciences, and the Swedish delegation—by Professor S. Carlsson. Soviet participants delivered the following papers: "Swedish Nobility and Riksdag in the Beginning of the 'Era of Freedoms' (1720-1730)" (G. Nekrasov), "Nobility and the City in Sweden in the 14th-15th Centuries" (A. Svanidze), "Nobility—the Social Pillar of Absolutism in Russia in the 18th Century" (A. Yukht), "The Origin of Nobility as a Class—Section of Feudal Society" (S. Kovalevsky), "The Development of Capitalism in Sweden (before the Industrial

Revolution) and Bourgeois Revolution" (A. Kahn), "Establishment of Capitalism in Russia" (P. Ryndzyunsky), "Some Problems of the Development of Agrarian Capitalism in Latvia (Second Half of the 19th Century)" (M. Kozin), "Swedish Trade Capital and Sweden's Trade with Russia in the 18th Century" (I. Shaskolsky), "The Industrial Revolution in Russia" (A. Solovyova), "Soviet-Swedish Relations in 1933-1939" (V. Sipols), and "Soviet-Swedish Relations in 1921-1923" (R. Karpova). Swedish scholars delivered the following papers: "Swedish Gentry in 1626-1865" (S. Carlsson), "Landlordism Before and After the Reduction in Estonia in 1680-1710" (A. Loit), "Foreign Officials Serving in Russia Collegiums" (C. Peterson), "Emergence of Capitalism in Sweden" (M. Isacson, R. Lundström, L. Magnusson), "Swedish-Soviet Foreign-Policy Relations in 1920-1930" (W. Carlgren), "The Soviet View of Swedish Foreign Policy Between the First and the Second World Wars" (I. Oldberg), and "Swedish Demographic Policy Between the Two World Wars" (A.-S. Källemark).

* A scientific conference "Results and Prospects of Slav and Balkan Studies: Questions of Coordination", sponsored by the Scientific Council on the Integrated Problems of Slav and Balkan studies of the USSR Academy of Sciences and the Institute of Slav and Balkan Studies of the USSR Academy of Sciences was held in Zvenigorod, attended by about 100 scholars from 33 research centres—institutes of the USSR Academy of Sciences and the Academies of Sciences of the Union republics and higher educational establishments. The plenary

session heard the following papers: "For the Development of Comparative Historical and Comprehensive Research in the Field of Slav and Balkan Studies" (D. Markov, Corresponding Member, USSR Academy of Sciences), "The Ethnogeny of the Slavs in Soviet Historiography" (V. Kropotkin), "Comprehensive Research of the Problem 'Laws of the Development of the Peoples of Central and Southeast Europe During the Epoch of Transition from Feudalism to Capitalism'. Results of the Work Done and Future Prospects" (A. Mylnikov), "Results and Prospects of the Study of the Cultures of the Countries of Central and Southeast Europe" (V. Zlydnev), "The Place and Role of Central and Southeast Europe in International Relations at the First Stage of the General Crisis of Capitalism. The Tasks of Research" (V. Volkov), "Soviet Historiography on Socialist Construction and the Emergence and Development of Socialist Community" (A. Nedorezov), and "The Present State and Immediate Tasks of Research into the History of Slav Studies" (V. Dyakov). Then the Conference work proceeded in several panels—"The Ethnogeny of the Slav and Balkan Peoples", "Problems of the Formation of Nations in Central and Southeast Europe", "Problems of the History of the Culture of the Slav and Balkan Peoples", "The Slav and Balkan Peoples in the System of International Relations", and "Historiography and Source Studies". All in all, more than 30 papers and communications were read.

* An all-Union conference of scholars of Slav history took place in Donetsk (the Ukraine). It was

sponsored by the Ministries of higher and specialised secondary education of the USSR and the Ukraine, the Institute of Slav and Balkan Studies of the USSR Academy of Sciences, the Institute of the History and Economics of Industry of the Academy of Sciences of the Ukraine and the Donetsk State University. The Conference was also attended by scholars from Bulgaria and Poland. At the plenary sessions papers were read by G. Yerkhov—"Sixty Years of the Great October Socialist Revolution and Socio-Economic Transformations in the Donetsk Region"; A. Manusevich—"The Great October Revolution and Its Role in the Historical Destinies of the Peoples of Central and Southeast Europe"; N. Chumachenko—"Economic Integration—the Basis of Cooperation of the Socialist Countries"; V. Vinogradov—"The Russo-Turkish War of 1877-1878 and the Liberation of the Balkan Peoples from the Osman Yoke"; I. Melnikova—"Development of Research into the History of the European Socialist Countries in the Academy of Sciences and Higher Educational Institutions of the Ukraine"; V. Karaseva—"A Course of the History of Southern and Western Slavs in University Education System". Then the Conference work proceeded in eight panels: "The Great October Revolution and the Slav Peoples' Problems in the Period Between the Two World Wars", "Construction of Socialism in Foreign Slav Countries", "Cooperation Between Socialist Countries in the Construction of Socialism", "Victory over Fascism and the Establishment of a People's Democratic System in Foreign Slav Countries", "The Working-Class, Socialist and Demo-

cratic Movements in the Late 19th-early 20th Centuries", "The National Liberation Movement of the Slav Peoples", "Development Problems of the Slav Peoples in the Epoch of Feudalism", and "Problems of the Development of Slav Studies". More than 230 papers and communications were heard and discussed at the panel sessions.

* Participants in the "Barthold Readings" of 1978 devoted to commodity-money relations in the mediaeval Orient heard and discussed 43 papers. The regular all-Union scientific conference of scholars of the Orient sponsored annually by the Section of Written Monuments of the Peoples of the East at the Institute of Oriental Studies of the USSR Academy of Sciences has been given the name "Barthold Readings", in honour of the outstanding Russian scholar of the Orient, Academician W. Barthold (1869-1930). The Conference annually discusses, according to a programme elaborated beforehand, pressing and least examined problems of the socio-economic history of the Middle East. In the centre of attention of this Conference were division into periods of the economic development of individual cities and regions; intra-urban, interregional and transit trade; marketability of agriculture and urban-rural trade; marketability of women's handicrafts; money circulation; trade and usurious capital; taxes on handicrafts and trade; the social structure of the urban population; the organisation and form of government in cities. The speakers drew upon the most varied sources: written, numismatic, epigraphic, and archaeological.

* The First Soviet-Indian seminar of economists on "Management of State Enterprises in India and the USSR" held in New Delhi was opened by K. Rehsh, a representative of India's Planning Commission. The Soviet delegation was headed by V. Cherkovets, Deputy Director of the Institute of Economics of the USSR Academy of Sciences, and the Indian delegation was headed by G. Bhalla. Soviet scientists submitted the following papers: "State Enterprises in Social System of Public Production" (V. Cherkovets); "System of Indicators and Standard Norms Used in Planning and Stimulating of Production Associations (Enterprises)" (V. Ivanchenko); "The Role of Price Formation in the Work of Socialist Enterprises and Corporations" (A. Gusarov); "Enterprises' Material Supply and Output Realisation" (A. Deryabin); "Cost Accounting and Management" (V. Starodubrovsky); "Finance and Credit Interrelations Between Associations and Enterprises and the State" (V. Rybin); "Workingmen's Role in the Management of Socialist Enterprises in the USSR" (V. Zhamin). Indian economists presented the papers: "The Role of Public Sector in the Indian Economy" (H. Paramjapae); "Management of State Enterprises in India" (D. Narula); "Public Enterprise in the Indian Economy" (L. Narain); "Price Policy of State Enterprises in India" (G. Bhalla); "Performance of Public Enterprises in India" (S. Bhattacharyya); "Planning in Project Appraisal in India" (N. Desai); "Employee Participation in Management" (N. De). In conclusion Professor S. Chandra, Chairman, University Commission of India, winding up the Seminar's proceedings, highly appraised Indo-Soviet cooperation in various

spheres of science and technology.

* A meeting of the Scientific Council on Problems of Africa of the USSR Academy of Sciences, under the chairmanship of the Director of the Institute of African Studies of the USSR Academy of Sciences, An. Gromyko, D.Sc.(Hist.) heard a paper "Soviet-African Economic Relations" delivered by S. Skachkov, Chairman of the State Committee of the USSR Council of Ministers on Foreign Economic Ties. Papers and communications were read by E. Tarabrin—on interconnections between political and economic relations; Yu. Dmitriyevsky—on territorial differentiation and economic-geographical factors in foreign economic relations; G. Klimko—on problems of training Soviet specialists for work in the developing countries; V. Lopatov—on research in the field of Soviet-African economic relations; D. Ursul—on Soviet-African cooperation in training personnel; G. Rubinstein—on the USSR trade with African countries; D. Degtyar—on raising the efficiency of economic and technical relations with African countries. About 100 leading Soviet scholars of Africa took part in the meeting.

* Nearly 100 economists, economists-mathematicians and mathematicians took part in a seminar "Problems of Planning and Management of Economic Goal-Directed Systems" held in Novosibirsk. The participants heard and discussed some 20 papers which examined the following questions: coordination of decisions in the systems of models of planning the national economy; game models of interaction and incentives in managerial systems; simula-

tion modelling of economic processes; methods of optimisation of many-equation and hierarchic systems and their utilisation in decision-making in planning. The Seminar was sponsored by the Institute of Economics and Organisation of Industrial Production of the Siberian Division of the USSR Academy of Sciences, the Central Economics and Mathematics Institute of the USSR Academy of Sciences, the Institute of Economics of the USSR Academy of Sciences, and the Scientific Council of the USSR Academy of Sciences on the Integrated Problem "Optimal Planning and Management of the National Economy".

* A scientific session "Methodic Principles of Working out Planned Differentiated Balance of the Incomes and Consumption of the Population and the Tasks of Designing an Automated System of Planned Calculations 'Living Standards'" was organised in Yerevan by the Scientific Council of the USSR Academy of Sciences on the Integrated Problem "Optimal Planning and Management of the National Economy", the Central Economics and Mathematics Institute of the USSR Academy of Sciences, the State Planning Committee of Armenia and its Computing Centre. Participants in the Session heard and discussed 11 papers on problems pertaining to the study of the standards of living, with account of the distinctions in the level of material well-being and social affiliation of individual groups of families. The main subject under discussion was a draft of a method to be used for drawing up a planned differentiated balance as an instrument of planning the standard of living and its connection with other balance units in

the overall system of planning calculations of the national economic development.

* An international scientific symposium on problems of disarmament held in Kishinev by the Vienna International Institute for Peace, with the collaboration of the Soviet Peace Committee, was attended by prominent scientists and scholars from 19 countries of Europe (including Bulgaria, Czechoslovakia, the GDR, Hungary, Poland, Rumania and the USSR), America and Australia. The main papers were read by Professor R. Weiler of Vienna University, and Professor O. Bykov, Deputy Director of the Institute of the World Economy and International Relations of the USSR Academy of Sciences. During the discussion that followed participants in the Symposium emphasised the importance of Soviet initiatives aimed at solving the problem of disarmament and urged a ban on the production of the neutron bomb and other means of mass annihilation. Advocating the continuation of the policy of detente, participants noted that it created the necessary requisites for halting the arms race and solving international problems by peaceful means.

* A scientific conference "Latin America: Foreign Policy Doctrines and Concepts" was attended by representatives of the Institute of Latin American Studies, the Institute of the State and Law, and the Institute of World History of the USSR Academy of Sciences, the Lvov State University, and other institutions. The main paper "The Basic Stages and Features of the Formation of Foreign Policy Concepts and Doctrines in Latin

America" was read by the Deputy Director of the Institute of Latin American Studies, A. Glinkin, D.Sc.(Hist.). Other participants in the Conference touched on the following questions: dependent capitalism—the economic basis of the foreign policy of Latin American countries; specific features of the foreign policies of countries of dependent capitalism; the concept of a new world economic order and the foreign policies of Latin American countries; the struggle of the Latin American peoples for the right to be masters of their own natural resources; concepts of international maritime law and Latin America; concepts of Latin American integration. Along with these global and regional problems, concepts and doctrines advanced by individual Latin American countries were discussed.

* The Institute of African Studies of the USSR Academy of Sciences sponsored a scientific seminar on the theme "The 25th Congress of the CPSU and the Present Stage of the Anti-Imperialist Revolution in Africa". About 200 people took part in the Seminar, among them leading Soviet scholars of Africa, young scholars and postgraduate students from a number of African countries. The plenary session was addressed by the Director of the Institute, Professor An. Gromyko—"The Pressing Problems of the Study of Africa"; G. Starushenko—"The Growing Role of the Liberated Countries in World Development"; D. Olderogge, Corresponding Member, USSR Academy of Sciences—"Main Directions of the Ethnolinguistic Study of Africa"; S. Bessonov—"The Place and Role of the State in the Economic Development of

Africa"; E. Tarabrin—"International Relations of African Countries at the Present Stage"; N. Kosukhin—"Achievements of Soviet Science in Studying African Society, Policies and Ideologies"; I. Vitukhin—"The Struggle of the South African Peoples for Their Liberation"; G. Mirsky—"The Problems of Choosing the Path of Development". At the panel meetings some 50 papers and communications were heard and discussed on the subjects: "Struggle for Economic Independence", "Ethnolinguistic Problems of Africa", "International Relations", "Social Policy and Ideology", "Problems of the South of Africa".

* A colloquium on "The Protection of Human Rights in Criminal Proceedings" held in Vienna by the International Association for Penal Law, was attended by about 60 legal scholars from 24 countries, including the GDR, Hungary, Poland and the Soviet Union. The general report based on the 24 national reports submitted was made by Professor S. Trechsel (Switzerland). The attention of the participants in the Colloquium was centred on implementation of the humane and democratic principle of the presumption of innocence. A department head of the Institute of the State and Law of the USSR Academy of Sciences, V. Savitsky, D.Sc.(Law), delivered a paper on the principle of the presumption of innocence in Soviet theory, legislation and legal practice emphasising that this principle is now legally reflected in Article 160 of the new Constitution of the USSR.

* In Liblice, near Prague scientific conference on Czech and Slovak literatures in 1948-1978 was held,

which was also attended by guests—literary scholars from Bulgaria, the GDR, Poland and the Soviet Union. The Conference heard more than 50 papers and communications about Czech and Slovak prose, poetry, drama and literary studies over a period of 30 years. The main papers were delivered by H. Hrzalová and V. Pětko (both from Czechoslovakia). Soviet participants in the Conference spoke about the division into periods of postwar Czech literature (Yu. Bogdanov), Czech literature in the context of the literatures of the European socialist countries (S. Sherlaimova), Czech and Slovak short stories (S. Belza), publication of Czech and Slovak books in the USSR (S. Nikolsky).

* The Institute of Linguistics of the USSR Academy of Sciences and the Scientific Council on the Theory of Soviet Linguistics of the USSR Academy of Sciences organised a symposium on the subject "Problems and Methods of Semantic Investigations", in which philologists from the GDR, Hungary and Vietnam took part. At the plenary sessions Soviet scholars read the following papers: "Ontology and Gnosiology of Meaning" (A. Leontiev); "The Place of Vocabulary in a General Description of Language" (A. Ufimtseva); "Semantics of the Act of Word Formation" (E. Kubryakova); "On a Psycholinguistic Approach to Linguistic Tasks in Semantics" (V. Pavlov); "Semantics and Communication" (E. Tarasov); "Development of Semantic Structures in Ontogenesis" (A. Shakhnorovich), and "Psycholinguistics and a Study of the Meaning of Words" (A. Suprun). Scholars from the GDR delivered the papers: "Semantics and

Pragmatics" (D. Viehweger); "Psycholinguistic Aspects of Meaning" (M. Bierwisch); "What Is the Logical Form of a Sentence?" (E. Lang); "On Theoretical Principles of Generative Semantics" (J. Zimmermann); "Semantic Aspects of Word-Formation" (W. Motsch). There was a working group "Aspects and Directions of Modern Semantic Research" and panels on psycholinguistics "Semantics and Communication", "Word, Sentence and the Semantics of Text" and "Experimental Methods of Studying Semantics". In toto, Symposium participants heard and discussed more than 120 papers and communications.

* A scientific-theoretical conference devoted to the birth centenary of Sadriddin Aini, the outstanding Tajik Soviet writer, founder of Tajik Soviet literature and one of the founders of Uzbek Soviet literature, scholar and public figure was sponsored by the Gorky Institute of World Literature of the USSR Academy of Sciences, the Institute of Oriental Studies of the USSR Academy of Sciences and the Union of Writers of the USSR and the Tajik Republic. The Conference was opened by Corresponding Member of the USSR Academy of Sciences G. Lomidze. Papers were read by the President of the Tajik Academy of Sciences, Corresponding Member of the USSR Academy of Sciences M. Asimov—"The Significance of Sadriddin Aini's Scientific Heritage", Z. Kedrina, D.Sc.(Philol.)—"The Historicalness of S. Aini's Novels"; M. Shukurov, D.Sc.(Philol.)—"The Evolution of the Concept of 'Hero' in Aini's Works"; Director of the Pushkin Institute of Linguistics of the Uzbek SSR M. Koshchanov,

D.Sc.(Philol.)—"Aini and Uzbek Literature"; I. Braginsky, Corresponding Member of the Tajik Academy of Sciences—"On the Results and Tasks of the Studies of Aini's Works". Writers also spoke in the discussion.

* The Institute of Oriental Studies of the USSR Academy of Sciences organised a scientific conference devoted to the birth centenary of the great poet of the Orient, Muhammad Iqbal. It was opened by the Director of the Institute, Corresponding Member of the USSR Academy of Sciences E. Primakov. The papers were presented by the President of the Tajik Academy of Sciences, Corresponding Member of the USSR Academy of Sciences, M. Asimov—"Muhammad Iqbal and the Soviet Union"; E. Chelyshev, D.Sc.(Philol.)—"Results and Prospects of Studying Muhammad Iqbal's Work in the Soviet Union"; A. Sukhachev—"On Participation of Soviet Scholars in the Celebrations of Muhammad Iqbal's Birth Centenary Held in India and Pakistan". The Conference was addressed by the Ambassador of India to the USSR, I. K. Gudjral and the Ambassador of Pakistan to the USSR, S. Hyder.

* Seventy scholars took part in a general meeting of the European Association of Experimental Social Psychology (EAESP) in Weimar (GDR), on the subject "Modern Development of Social Psychology". They represented about 20 countries, including Bulgaria, Czechoslovakia, the GDR, Hungary, Poland, Rumania, the Soviet Union and Yugoslavia. Professors G. Andreyeva, I. Kon and V. Yadov represented the Soviet Union. There were seven symposiums dur-

ing the Meeting: "General Problems of Social Psychology", "Socialisation", "Integration of Social Information", "Language and Communication", "Structure of Social Interaction", "Intra- and Inter-group Relations", "Specific Problems of Social Psychology". The participants in the Meeting heard and discussed about sixty papers.

* More than 100 Finnish scholars, as well as guests from the GDR, Sweden and the USSR took part in the 4th Congress of Psychologists of Finland held in Tampere. Four symposiums were organised within the framework of the Congress: "Cooperation Between Finland and the USSR in the Field of Psychology", "Philosophical and Methodological Foundations of Psychology", "Psychology and the Environment", and "Psychological Consequences of the Change in the Professional Structure of Society". There were also two panel meetings at which young Finnish psychologists reported about their research. The Soviet psychologist O. Zotova delivered a lecture on the subject: "The Influence of the Production Collective on the Moulding of the Individual".

* A Soviet-American symposium of psychologists on the subject: "Neurophysiological Mechanisms of Goal-Directed Behaviour and Learning" was held in Irvine, California. The Soviet delegation headed by the Director of the Institute of Psychology of the USSR Academy of Sciences, Corresponding Member of the Academy, B. Lomov, submitted nine papers.

At the symposium "Psychology and Medicine" the following subjects were widely discussed: "On

Methodological Problems of Psychology's Relation to Medicine", "Medical Psychology, Pathopsychology, Neuropsychology", and "Social Psychology and Medicine".

* More than 200 scientists took part in an *all-Union session devoted to the results of field ethnographic and anthropological research in 1976-1977* held in Yerevan and sponsored by the Department of History of the USSR Academy of Sciences, the N. Miklukho-Maclai Institute of Ethnography of the USSR Academy of Sciences, the Department of Historical and Economic Sciences of the Armenian Academy of Sciences and the Institute of Archaeology and Ethnography of the Armenian Academy of Sciences.

At the plenary meetings the participants heard the papers: "The Constitution of Developed Socialism and the Tasks of Soviet Ethnography" (I. Gurvich, R. Its, Zh. Logashova), "The Development of Armenian Ethnography (in Connection with the 150th Anniversary of Eastern Armenia's Joining Russia)" (K. Melik-Pashayan), "Ethnosociological Studies of the Mode of Life" (Yu. Arutyunyan), "Theoretical-Information Aspect of the Studies of Modern Spiritual Culture" (K. Chistov), "Upbringing of Children as an Ethnographic Problem" (I. Kon), "Hierarchy of Cultural Communities and Civilisations" (Academician Yu. Bromley), "Modern Folklorism as a Subject of Field Investigations" (V. Gusev), "The Problem of Typological Classification of Economic and Cultural Components (on the Materials of the Armenian Nutritional System)" (S. Arutyunov, Yu. Mkrtumyan), "On Inscriptions of the Ancient Maya" (Yu. Knorozov), "Basic

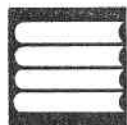
Problems of Ethnographic-Archaeological Studies of the Peoples of Central Asia (on the 40th Anniversary of the Chorasnia Expedition)" (M. Itina), and "Investigations of Soviet Ethnographers in Oceania in 1977" (V. Basilov, D. Tumarkin). Then the work of the Session proceeded in the panels: "Ethnogeny and Ethnic History", "Modern Ethnic and Cultural and Everyday Life Processes Among the Peoples of the USSR", "Family and Everyday Social Life", "Problems of Ethnographic Typology of Culture. Interrelationships of the Cultures of the Peoples of the USSR", "Religious Beliefs of the Past and Their Overcoming in Present-Day Life", "Folklore. Folk Music and Dances. Applied Arts", where some 170 papers and communications were heard and discussed.

* A regular international conference for discussing a research project "Directions and Tendencies of Cultural Development in Modern Society, Interaction of National Cultures", held within the framework of the European Coordination Centre for Research and Documentation in Social Sciences (Vienna Centre), took place in Tallinn. It was attended by representatives of Finland, France, Great Britain, Greece, Hungary, Italy, Poland, Rumania, Sweden, the USSR and Yugoslavia.

At the symposium "Cultural Parameters of the Social Structures and Its Dynamics in the Conditions of the Scientific and Technological Revolution" the Soviet scholars S. Arutyunov and L. Kubbel presented a paper "Typological and Conceptual Aspects of Culture in Soviet Science". Representatives of France (P. Bessaiget), Italy (G. Ser-

torio), Hungary (G. Dienes, I. Vitanyi) presented three papers devoted to the theme "Culture and Social Structure". Then a pilot study "Cultural Activity in the Framework of the Family and Transmission of Culture" was discussed.

* The Geographical Congress of the GDR devoted to the 25th anniversary of the Geographical Society of the GDR, held in Dresden on the subject "Geography of Foreign Countries", was attended by more than 1,000 delegates, including representatives from Bulgaria, Czechoslovakia, Hungary, Mongolia, Poland and the Soviet Union. Nine papers read at the plenary sessions dealt with theoretical, methodological and general problems of geographic investigations of foreign countries. The head of the Soviet delegation, Director of the Institute of Geography of the USSR Academy of Sciences, Academician I. Gerasimov, read a paper "The UN Conference on Desertification and Its Significance for Geographers". More than 40 papers were delivered at the meeting of three panels on the geography of the socialist, developing and industrialised capitalist countries. At the panel on the developing countries, a collectively compiled paper of the Institute of Geography of the USSR Academy of Sciences on "Soviet Geography and Problems of the Developing Countries" was presented by G. Utkin. A conference of representatives of geographic institutions of socialist countries on the problem of foreign regional studies was held within the framework of the Congress.



BOOK REVIEWS

Владимир Ильич Ленин. Биографическая хроника. 1870-1924. т. 7. Март-ноябрь 1919. М., Политиздат, 1976, 700 стр. с ил.

Vladimir Ilyich Lenin. Biographical Chronicle. 1870-1924, Vol. 7, March-November 1919, Moscow, Politizdat Publishers, 1976, 700 pp. with illustrations.

The year 1919 was a period of a severe trials for the young Soviet state. The Whiteguard armies, bolstered by the support and direct military aid of world imperialism, had encircled the republic in a ring of fire. At this critical period Lenin's outstanding role as the architect of the country's defence, as wise strategist and tactician and unsurpassed leader of the masses manifested itself most forcefully. Volume 7 of his biographical chronicle, drawing on numerous documents, often discovered for the first time, gives a detailed picture of Lenin's activities in those difficult days for the country.

The chronological framework of the volume spans the period from March 18 to November 6, 1919 and includes more than three thousand facts. As in the previous volumes of the Soviet period their sources are, besides known publica-

tions, the minutes of the meetings of the CC RCP(B), the All-Russia Central Executive Committee, Council of People's Commissars, Council of Defence, memoirs, periodicals and numerous archive materials. The wide use of these sources enabled the compilers of the volume to publish for the first time 790 new documents on Lenin in full or in part (letters, notes, telegrams, resolutions, etc.) and to specify many facts.

A major role in the history of the Communist Party of the Soviet Union was played by the Eighth Congress of the RCP(B) held in March 18-23, 1919. The opening pages of the volume reflect Lenin's role in the work of this historic congress. Lenin made the opening and closing speeches, delivered the report of the Central Committee, the report on the Party Programme and closing speech on this question, the report on work in the countryside and speech on the military question, and addressed the congress more than twenty times as chairman. He was a member of the Congress's Programme Commission and Agrarian Section, as often as possible met and talked with the delegates.

The volume under review gives a fuller picture than do the previous publications of Lenin's work in the central organs of the Party, of his

participation in the meetings of the Political Bureau and Organising Bureau of the CC RCP(B), and in the work of the plenary meetings of the Central Committee.

Highly significant for understanding the notable role played by the Party is the fact that the major documents on the organisation of the country's defence, written by Lenin, were published as documents of the Central Committee.

The materials in the volume under review also show Lenin's irreconcilability towards those who attempted to disobey Central Committee decisions and directives. Thus, on June 17, he sends a letter to the CC RCP(B) in which he sharply criticises Trotsky for opposing the CC decision of June 15 to reinforce General Headquarters, and points to the inadmissibility of ignoring the will of the majority of the CC. On September 6, he condemns a proposal made by Trotsky, Serebryakov and Lashevich to revise the Central Committee's strategic plan for the defeat of Denikin. Other cases of violation by officials of Party directives and decisions likewise did not escape Lenin's attention.

Lenin was always in close touch with the local Party organisations, guiding their activities, corresponding with them, meeting with their representatives. The volume contains extensive material on this aspect of his work.

During the period under review Lenin chaired 56 meetings of the Council of People's Commissars and 54 meetings of the Council of Defence, at which more than 1,800 questions concerning many important aspects of the country's life were considered. Acquaintance with all these materials not only deepens one's knowledge of the

history of the USSR, not only supplements it with hitherto unknown details; it also enables one to again and again come in touch with Lenin's style of work which was always distinguished by a businesslike approach, promptitude, exactingness, adherence to Party principle.

The materials in the volume give the reader a vivid idea of Lenin's role in the organisation of the defeat of Kolchak, Denikin, Yudenich and the interventionist troops, in the suppression of the counter-revolutionary uprisings and in the organisation of the partisan movement in the enemy's rear.

Lenin's appearances (more than forty) at various congresses, conferences and meetings of workers and Red Army men vividly characterise his activities in the spring, summer and autumn of 1919. In his speeches Lenin explained the policy of the Party and the Government, frankly spoke about the gravity of the situation on the fighting fronts and on the home front, called on the masses to display selflessness, fortitude and discipline.

While directing the defence of the country, the drawing up and implementation of strategic and tactical plans for defeating the enemy armies, Lenin gave his every attention to the solution of the food question, the provision of supplies for the army and the workers, especially with bread.

Under the guidance of Lenin, the Bolshevik Party successfully tackled the very difficult problem of industrial production. In conditions of ruin, of the major economic areas overrun by the enemy, of a shortage of raw materials, manpower and specialists the

Party found the forces and means for organising a war industry capable of supplying the Red Army with the necessary arms, munitions and equipment. Along with attending to daily, current questions of organising the production of munitions factories, for example, the Tula plants, Lenin closely followed the development of entire branches of the national economy and individual economic regions.

Naturally, not only the current needs of the national economy were in the centre of Lenin's attention. He carefully analysed the social processes under way, the changed attitude of workers and peasants to labour, to social property, to the state, was quick to respond to all that was new, progressive and perspective. Lenin's brilliant insight as a Marxist and theoretician enabled him to see in the first *subbotnik* held by the workers of the Moscow-Kazan Railway on April 12, and in the other *subbotniks* that followed, an event of enormous historical significance. In the pamphlet "A Great Beginning", completed on June 28, Lenin described the *subbotnik* as "the actual beginning of communism" for it was "a victory over our own conservatism, indiscipline, petty-bourgeois egoism" (*Collected Works*, Vol. 29, pp. 427, 411). He showed that the enormous significance of *subbotniks* lies in the fact that they teach workers a communist attitude to labour, a conscious discipline and lead to a higher productivity of labour which Lenin regarded as the most important thing for the victory of the new social system.

Lenin's theoretical activity in the period under review was, as always, very fruitful. On July 11 and August 29, he delivered two lectures

on the state at the Sverdlov Communist University (unfortunately the record of the second lecture has not been found), published the pamphlet "The Achievements and Difficulties of the Soviet Government", wrote the plan and synopsis for a pamphlet on the dictatorship of the proletariat, and the article (not completed) "Economics and Politics in the Era of the Dictatorship of the Proletariat".

In all these writings Lenin summarised the nearly two-year experience of the post-October period, worked out in detail many major problems of the transition period from capitalism to socialism, further developed the Marxist doctrine of the dictatorship of the proletariat, showed its creative role in the building and consolidation of the new society, in the establishment and development of socialist democracy as a higher and more perfect democracy than bourgeois democracy.

In all his theoretical works, written in 1919, Lenin invariably stressed the international character of the experience of the Soviet Government and the need to make this experience more widely known to the working people of capitalist countries. At the same time he closely followed the course of revolutionary events that were developing in the West under the direct impact of the Great October Socialist Revolution in Russia, the process of the establishment of Communist parties which grew noticeably stronger after the formation of the Third, Communist International. He took a lively interest in the course of revolutionary events in Bavaria and Hungary, hailed the news about the formation of the Hungarian Soviet Republic.

Many pages in the volume tell of Lenin's meetings with representatives of the Communist parties and other foreign progressive organisations, of how well informed he was about the state of affairs in the fraternal parties, of his concern for their unity on a principled basis.

In the very difficult conditions of 1919, the Soviet Government continued to pursue an active peaceful foreign policy, a policy of peaceful coexistence of states with different social systems. The materials in the volume show also this aspect of Lenin's work. Despite the openly hostile attitude of the imperialist powers to the Soviet Republic Lenin worked unrelentingly for a policy of peace based on recognition of the independence and sovereignty of states. The diplomatic activity of the Soviet state, its policy of equality of all countries and nations, big and small, won the Republic of Soviets the increasing sympathy of the working people and progressive forces, intensified their protest against the participation of capitalist powers in the anti-Soviet intervention.

М. М. МАКСИМОВА. СССР и международное экономическое сотрудничество. М., изд-во «Мысль», 1977, 197 стр.

М. М. MAXIMOVA, *The USSR and International Economic Cooperation*, Moscow, Mysl Publishers, 1977, 197 pp.

This book is devoted to the problems of expanding and deepening international economic ties, of promoting diversified and mutually advantageous cooperation among all states within the framework of the world economy.

Very interesting are the numerous facts assembled in the volume, reflecting the constant attention Lenin gave to the development of a socialist culture, and especially to education, science, literature, art, book publishing and libraries, his considerate attitude to prominent representatives of the intelligentsia, including Maxim Gorky, the constant concern he showed for the working people, especially for their children, for his relatives and friends. There is information about the occasional days-off often used for continuing state affairs, scientific work, for meetings and talks with workers and peasants.

All the materials, documents and facts that have gone into Volume 7 of the biographical chronicle are a new, important contribution to the study of the life and work of Lenin, of the foreign and domestic policies of the Communist Party and the Soviet state, of their efforts to safeguard and consolidate the gains of the Great October Revolution.

V. Fomichev

The coexistence of two socio-economic systems, Maximova notes, does not rule out such an objective reality as the world economy. While it helps to maintain ties among states through international division of labour, the world economy is of a transitional nature; its main substance is competition and cooperation, and its main tendency of development and most important distinguishing feature is the growing might of the world socialist system.

The book presents a well-argued thesis on the growing importance of foreign economic

ties to every country, and emphasises that the world economic process involves a struggle of progressive forces for the democratisation of the very system of world economic ties, for the establishment in that system of the principles of equality of states, mutual benefit and renunciation of discriminatory measures.

The author makes a detailed study of such forms of international economic cooperation as large-scale investment programmes, industrial projects, cooperation in production, and joint enterprises. These forms are characterised by extensive character, completeness and the exchange of advanced know-how. Many of these programmes are carried out with the help of foreign credits to be repaid with part of the products of the enterprises concerned. The very fact that the business world in the West readily undertakes such cooperation with the USSR points to its profitability and commercial advantages.

The monograph makes a comprehensive analysis of the Soviet Union's positions in the world economy, and describes the specific features of its economic relations with each of the three groups of states—the socialist, the developing, and the industrialised capitalist states.

The scales, forms and methods of cooperation of the socialist countries among themselves manifest relations of a fundamentally new type. The main characteristic of these relations is that they represent an interrelated and regulated process of international socialist division of labour, the integration of national economies and evening of economic development levels, and the formation of

deep and stable economic ties in the interests of the socialist nations. Using the example of the realisation of the Comprehensive Programme for socialist economic integration and of long-term goal-oriented programmes, the author outlines methods of solving problems of energy and raw materials and coping with questions pertaining to multilateral development of mechanical engineering, intensification of agriculture, re-equipment of the material-technical base of the light industry, and rational development of transport systems.

An important place is dedicated to the USSR's economic relations with the developing countries, whose role in the world economy and international politics has grown considerably in these past years. The author shows the essential difference between the assistance given to these countries by the Soviet Union and the "aid" of the imperialist powers, and presents abundant factual material on the quantitative and qualitative parameters of the USSR's economic, scientific and technological cooperation with the young states. The socialist countries' expanding ties with the developing states facilitate the restructuring of the latter's economy and social life along progressive lines, promote the strengthening of their national economies, especially the state sector, and help to carry out the general task of democratising international relations as a whole.

The book also deals with the determination of the Soviet Union and other socialist countries to help reshape international economic relations through the abolition of all types of inequality and the establishment of a new economic order.

The success of the policy of peace and security of nations and the implementation of the principles of peaceful coexistence of states with different social systems have served as the key prerequisite for intensive expansion of economic ties between the USSR and the capitalist countries. As Maximova notes, the building of a treaty-based legal groundwork for political relations on the principles of peaceful coexistence was paralleled by the creation of an appropriate international legal system for economic cooperation.

The book examines the main components of that system: the complex of bilateral agreements on economic, industrial, scientific and technological cooperation; long-term programmes for the development of cooperation; specialised bilateral agreements; inter-governmental joint commissions and other bodies set up on a parity basis; non-governmental organisations for the promotion of trade and economic cooperation; representation of foreign companies and banks in the Soviet Union and

representation of Soviet economic associations and organisations abroad.

The author describes in detail the structure and mechanism of economic ties between the USSR and the capitalist states, cites extensive data on their trade and other forms of cooperation, and stresses that the further development of this cooperation will depend largely on whether the recommendations of the Helsinki Conference on Security and Cooperation in Europe are carried out. The book contains a noteworthy analysis of the objective difficulties which inevitably arise due to differences in socio-economic systems and which should be resolved through joint efforts and with due regard for the peculiarities of each system.

Maximova's study is marked by a rational approach to the problems concerned and by an explicit and logical presentation of the material. It is of interest to the specialist as well as to the general reader in the USSR and other countries.

E. Obminsky

Проблемы окружающей среды в мировой экономике и международных отношениях. Отв. ред. Р. А. Новиков. М., изд-во «Мысль», 1976, 359 стр.

Problems of Environment in the World Economy and International Relations, Ed. by R. A. Novikov, Moscow, Mysl Publishers, 1976, 359 pp.

A study of a wide range of international aspects of environmental protection and of the approaches assumed by various states

to the utilisation of natural resources has been carried out by the authors of the book under review, who are associates of the Institute of the World Economy and International Relations of the USSR Academy of Sciences.

The acute world ecological situation calls for the objective need of including the solution of this problem in the system of national priorities of a number of countries, the actual success of the implementation of the tasks set on both national and international levels, however, to a considerable degree

depends on the social structures of those countries and their policies in the international arena. All that justifies the basic principles adopted by the authors for analysing the specifics of the global ecological situation and the political approaches to the protection of environment in the industrialised capitalist, the developing, and the socialist countries.

No less important today is another element of the methodology used by the authors, that is, their attempt to reveal the dialectical interconnection between the problem of environmental protection on a global scale and such cardinal processes of our times as detente. The success of the measures to preserve the biosphere is directly linked with the progress in disarmament, which is stressed, in particular, in recent UN resolutions and documents.

The first section of the monograph reveals the content and global scope of the problems of environment and natural resources, discusses a number of possible approaches to their analysis: according to their content, the functional norms and geographical levels of their manifestation, and the socio-economic preconditions for ecological contradictions. The authors concentrate on the socio-economic and political aspects of the international measures to protect the environment, which, in their view, are realised on four levels: global, regional, subregional, and bilateral.

A special section is devoted to the structure and orientation of such measures on all the four levels. It opens with an analysis of the most effective forms and methods of cooperation in environmental protection, that are at the

disposal of the socialist states. The most important feature of such a cooperation, the authors stress, is that it is subordinate to the promotion of the growth of the national economy and well-being of working people in each socialist country, to the increase of the might of the world socialist system, to the effective and rational use of resources as an important source of economic growth.

The same section shows the limited opportunities of the cooperation in the field of environmental protection, which is artificially confined to the frameworks of NATO and OECD. The authors pay much attention to European cooperation in this field and quite justifiably connect its success with the implementation of the Final Act of the Conference on Security and Cooperation in Europe. European congresses and inter-state conferences on the protection of environment and the development of transport and energetics might be important landmarks along this road.

Of interest is the section dealing with some non-Marxist theories whose authors are trying to find the reasons for the aggravation of the ecological crisis in the industrialised capitalist countries and suggesting ways of overcoming it. The analysis contained in the book of these ecological theories, both economic and foreign-political, convincingly proves their class narrowness and their authors' incapability of finding cardinal methods of resolving the wide range of socio-economic and political problems linked with environmental protection.

G. Khozin

А. Ф. ДАШДАМИРОВ. *Нация и личность*. Баку, изд-во «ЭЛМ», 1976, 226 стр.

A. F. DASHDAMIROV. *The Nation and the Individual*, Baku, Elm Publishers, 1976, 226 pp.

Among the many books on the national question there is a few dealing with the problem of the nation and the individual. For a long time it was taken for granted that the features of a national community also belong to the individuals it consists of, and the problem was not treated whatsoever.

The problem, however, is real, many-faceted and complex. A. Dashdamirov emphasises that he deals only with its socio-philosophical aspect in order to elaborate and specify the theoretical and methodological problems that arise here.

The individual's attitude towards the nation is a particular case of his attitude towards society, and, therefore, if one is to define the role, place and content of national links in the system of the individual's social links as well as the role of national relations in the system of social factors influencing the individual, one has to clarify the place of historical communities in the totality of social relations. The author brings the reader to this answer gradually, proceeding from general categories of historical materialism: social being, socio-economic formation, mode of production.

In the structure of a socio-economic formation as a social organism one can distinguish two intersecting planes: the spheres of social life (economic, political, etc.), and various objective communities, i.e., large social groups united by

common interests or features, forms of intercourse, etc. Man's affiliation with such a community is an objective characteristic of the individual. "Historical community" is a variety of a real community. According to the author, it includes not only nations, but also classes and peoples. Historical communities are stable groups of people with an intricate inner organisation. They are subjects of social development and social organisation of society. The individual's attitude towards the nation is man's attitude towards such a historical community of people which comes out as a form of his social being and determines some aspects of his consciousness and behaviour.

Thus, the nation presents real social conditions for the individual's activities, and at the same time, in the author's opinion, it can be regarded as a form of the "individual's social being", the term being a real boon.

The nation, however, is also such a formation which includes all other structures of society and specifically repeats, reflects and reproduces the structure of the entire social formation. And the individual's attitude towards the nation is mediated by its belonging to other structures of society and above all by its class characteristic, while the individual's attitude towards all other structures and towards society as a whole is mediated by its national affiliation. It is the dialectic of these interrelations that the author is trying to reveal.

The nation's integrity is determined by the presence of integrative "nation-forming" features, i.e., by its economic, territorial, linguistic and cultural integrity. The author not only refers these features

to the individual, as is often the case, but regards them as various aspects of the individual's links with the national community and, in this light, gives its detailed analysis.

The individual's "national affiliation" and "national definitiveness" are key notions used by the author in giving a generalising characteristic of the links between the individual and the nation. National affiliation reflects the objective fact of the individual's belonging to a certain community with its system of links and relations and, at the same time, his personal attitude towards the fact. In other words, it has its objective and subjective aspects. The individual realises his national affiliation and identifies himself with a certain national community, as he himself is the vehicle of the specific national features which distinguish one nation from another.

National affiliation determines the individual's inclusion (mediated by his class affiliation) in the system of economic relations of the given nation, whose specifics are a major factor in moulding the personality. The economy, of course, should be considered not in isolation but in unity with the socio-political and cultural development of the nation.

The nation's territorial integrity has a great role to play in its life. For the individual, it is the habitat, the motherland with which he is bound by a whole set of national sentiments. The author emphasises that the specific national features are formed also by the social milieu with its own traditions, norms, values, etc. A man joins the national life and culture by means of national language, an inalienable sign of national affiliation.

National affiliation, however, does not solve all the problems of the links between the individual and the nation. The question arises of the "degree of intensity" of the links, their stability, etc. To characterise the intensity and stability of the links between the individual and the nation, the author uses the category of the "individual's national definitiveness". It characterises the peculiarity of the individual's spiritual world to the extent to which this peculiarity is determined by his adoption of national culture.

The preservation and development of national culture is possible only if and when it becomes the property of the people who form the given community and if and when it is manifested in their activities, attitude towards reality, social intercourse, etc. On the other hand, the nation becomes a form of the individual's social being when he masters its culture. Therefore, the author concludes that it is "under the influence of national culture that the individual's national definitiveness is taking shape".

In a short review it is difficult to give a detailed comment concerning all the notions used by the author in his comprehensive theoretical analysis of the problems discussed. Dashdamirov, however, does not confine himself to this analysis; he is interested in the practical significance of this or that theoretical solution, in its connection with current problems of the national liberation movement and national development.

The last section of the book is devoted to the relationship of the nation and the individual under socialism. The elimination in the USSR of social and national antagonisms, the emergence of social-

ist national culture, the achievement of actual equality of nations, their comprehensive development and drawing together on an international basis, the formation of a new historical community—the Soviet people characterise the basically new relations between the individual and the nation under socialism. Carrying on profound transformations of human social relations, socialism frees man from all types of social, national and spiritual oppression, creates ever more favourable conditions and premises for his free and comprehensive development. The author pays special attention to that.

Under socialism, the individual's social and national affiliation gradually loses its meaning of a barrier on the road of his social and cultural development, taking into account the elimination of social and national antagonisms and an ever broader drawing of the nations in the process of international cooperation and development. Internationalism obliges both

the individual and the nation to widely use the international experience. Under socialism, internationalism serves as the basis for the enrichment of national cultures, for the individual's mastering the cultural achievements of his own and other peoples. The new society moulds a man of a new socialist type, a patriot-internationalist, to whom all manifestations of nationalism, national egoism and arrogance are alien and the feeling of internationalist duty is a distinctive feature. The author notes justifiably: "Ideology and social practice of internationalism are, therefore, a most important factor of the allround development of the individual."

The author is confident when he deals with the questions which he believes have been solved and, at the same time, he spotlights the problems that are still awaiting solution, which adds to the favourable impression of the book.

V. Kelle

В.И. ВЕРНАДСКИЙ. *Размышления натуралиста. Пространство и время в живой и неживой природе*. М., изд-во «Наука», 1975, 173 стр.; В.И. ВЕРНАДСКИЙ. *Размышления натуралиста. Научная мысль как планетарное явление*. М., изд-во «Наука», 1977, 191 стр.

V. I. VERNADSKY, *Reflections of a Naturalist. Space and Time in Living and Non-Living Nature*, Moscow, Nauka Publishers, 1975, 173 pp.; V. I. VERNADSKY, *Reflections of a Naturalist. Scientific Thought as a Planetary Phenomenon*, Moscow, Nauka Publishers, 1977, 191 pp.

The works of the noted Soviet scientist V. Vernadsky, which contain investigations of specific scientific problems as well as fundamental methodological generalisations, are winning an increasingly important place in the arsenal of contemporary scientific knowledge and arousing a lively interest. The books under review present materials from Vernadsky's archive, most of which were not published before. For the first time we are able to familiarise ourselves with the whole system of thoughts of the scientist. This is particularly important due to the encyclopaedic nature of his activity—his investiga-

tion of problems of natural science and social methodological problems in a single context.

Throughout the course of his scientific activity Vernadsky paid significant attention to the heritage of the past, the object of his study being not only the works of natural scientists but of philosophers as well. His generalisation of historical-philosophical or natural-scientific problems is combined with a purely scientific approach. For example, in examining the concept of symmetry he turns to the works of natural scientists (L. Pasteur, etc.) as well as to those of Kant. It is his analysis of material on natural science and philosophy, including data of a historical nature, that brought Vernadsky to the conclusion that the principle of symmetry is one of the fundamental principles of the scientific outlook. His rational combination of the natural-scientific and philosophical aspects of the problem enabled him to grasp the scientific category of "space-time" and its development with reference to biological objects.

One of the characteristics of Vernadsky's scientific outlook is his urge not only to develop new ideas and concepts referring to concrete areas of natural science, but also to unify them in a conceptual context. In other words, the scientist has been systematically searching for ways of synthesising contemporary knowledge in natural science, engineering and sociology. He is fully aware that the division of scientific knowledge as a whole into the traditional disciplines is inadequate as regards the state of contemporary science. In his opinion, the problem of the biosphere and the noosphere is an integral problem

that embraces contemporary scientific knowledge in the aggregate and in all its completeness.

Vernadsky has not managed to create a methodologically perfect theory on the noosphere: his published works and archive materials contain only rough drafts. However, the publication of the new texts no doubt makes for a deeper understanding of his views on the noosphere. On the other hand, the genesis and development of the concept of the noosphere become, in our view, more logical when we come to the essence of another concept of Vernadsky—the concept of "the autotrophic nature of mankind". This concept presents one of several possible ways of removing the contradiction between the relative limitedness of the natural resources of the biosphere, the growing requirements of social production, and the degenerative changes in nature.

Analysing the prospects of development of mankind from the viewpoint of the evolution of his attitude towards nature, Vernadsky comes to the conclusion that there is quite a real possibility of man being transformed from a socially heterotrophic creature (i.e., dependent on nature for his material and energy supply) into a socially autotrophic one (relatively not dependent on nature for his viability). If in the process of evolution autotrophic plants adapted themselves to direct utilisation of inorganic elements of the biosphere, then autotrophic man must, for the same purpose, place between himself and his environment the appropriate implements of production.

In other words, to elaborate on Vernadsky's proposition, we should

put the emphasis not on the tendency towards autotrophisation of man (for, owing to certain requisites for the functioning of his organism, man is essentially heterotrophic), but on the autotrophisation of production, or on the autotrophic nature of the productive activity of society.

In the early 1920s, Vernadsky was quite aware of the intensification of the contradictions between man and his environment. The way out of the situation, he believed, lay, in addition to the solution of the problems to be achieved by socialism, in changing the forms of nourishment and sources of energy. He had no doubt that scientific achievements would facilitate the practical implementation of his idea. His assessment of the possibility of synthetic production of foodstuffs was quite optimistic. Recent investigations carried out under the guidance of, among others, Academician A. Nesmeyanov showed that the problem of artificial synthetic nourishment is not so unreal as it seemed a few decades ago. Another prognosis of Vernadsky has been fully justified: the use of atomic energy (the possibility of which was noted by him at the beginning of the 20th century) appears as the dominant factor for the long-term supply of man with energy. Practically speaking, contemporary notions of the autotrophic nature of mankind are no more than a conceptual affirmation of the thesis about the need for a fundamental transformation of society's technological activity for the purpose of preventing technogenic pollution of human habitat.

Vernadsky's conceptual theories on the autotrophic nature of mankind livened up the idea of the

possibility that human society may exist for an infinite period of time as far as the necessary material and energy supplies and the preservation of the historically established habitat are concerned. They also brought out the prospects for the infinite spatial spread of mankind and the objective conditions for the harmonising the man-nature relationship in the process of transforming the biosphere into the noosphere.

In Vernadsky's reflections the concept of the noosphere of E. Le Roy and Teilhard de Chardin is given a significant materialistic interpretation. Vernadsky emphasises the fact that in the evolutionary process man becomes a factor of geological and global magnitude. He attributes man's exclusive role in nature to his reason—a most powerful lever for transforming the domain of the living. This phenomenon is interpreted by Vernadsky on the basis of dialectical notions where man's reason is directly linked with work.

The scientist is aware of the difficulties obstructing the rational formation of the noosphere. Yet he looks at the future development of civilisation with the optimism characteristic of him. He notes that the 20th century is witnessing a kind of scientific explosion which justifies mankind's onward march towards the noosphere. This march may be delayed but not halted, for the process of "rationalising" the biosphere is regarded by Vernadsky as a natural stage in the transformation of human habitat. The prospects of science and technology are considered by him for the most part in the social context. He stresses time and again that the concept of the noosphere which stems from biogeochemical notions

is in full harmony with the basic ideas of scientific socialism.

Vernadsky was one of those natural scientists who were acutely aware of their responsibility for the outcome of their scientific activity.

Analysis of his scientific heritage points to the contradictory nature of his world outlook. This circumstance is well explained by I. Kuznetsov and B. Kedrov in their concluding remarks to the second book. For example, Vernadsky interpreted in a peculiar way the interconnection between science and philosophy, and the status of philosophy in the structure of contemporary scientific knowledge. A scientist of humanist orientation, he believed that mankind was on the threshold of creating an international scientific brain centre, and he sometimes looked at the unity of mankind in the biological and cosmic aspects, without taking into account its social components.

Vernadsky's scientific legacy as a whole, and the ideas presented in the books under review, are extremely useful in coping with one of the most urgent problems of our time—environmental protection. Its elaboration requires a synthesis of different facets of scientific knowledge, and the role of

methodology in successfully achieving that synthesis is particularly great.

The two books contain concrete data which are still meaningful today. What is most important, however, is that in these books the intellect of the remarkable scientist bears new truths. He was working, to use his own words, on the upper limit of the knowledge so far achieved, and the wealth of experience of work in various fields enabled him to put forward a proposition on the inadequacy of the methodological apparatus prevailing in his day. Not only did he formulate in a convincing way a problem which was far from being obvious in those days, but succeeded in mapping out the ways of solving it. The new approaches Vernadsky tied up with the principle of organisation of the biosphere and the noosphere are accepted today as bases for systems analysis, cybernetics, the science of information and the science of sciences. Such anticipation of many future trends in the development of science is a notable example of scientific foresight.

A. Bykhovsky,
V. Los

THE CULTURE OF DEVELOPED SOCIALIST SOCIETY (A Review)

During the past few years, the central, republican and other publishing houses of the Soviet Union have brought out a number of works by Soviet scholars containing a thorough Marxist-Leninist analysis of the spiritual culture of mature socialism. In these works their authors pose in a new way some urgent questions relating to

the dialectical and materialist study of culture, consider some of the new problems of socialist society's spiritual culture arising from the tasks of scientific development, from the practice of communist construction and from the requirements of the struggle against bourgeois ideology and against Right and "Left" revisionism.

The books under review define the concept and subject of the Marxist-Leninist theory of culture, outline the general laws and main stages of the development of socialist culture, disclose the specific forms in which these laws manifest themselves in the conditions of mature socialism. Their authors show the structure and functions of spiritual culture in the life of Soviet society, the dialectics of the international and the national, of the flourishing, drawing together and mutual enrichment of the cultures of the socialist nations, nationalities and ethnic groups of the USSR and of the other countries of the socialist community. Basing themselves on well-reasoned arguments, the Soviet scholars refute the anti-communist fabrications about the spiritual life of Soviet people, expose the untenability of the bourgeois and revisionist concepts of culture.

Of course not all the works approach the problems touched upon with equal depth and thoroughness. Some of the problems are formulated for the first time and are still debatable.

In this review we shall dwell on the following works: *Problems of Communist Education and Socialist Culture. Materials of the All-Union Theoretical Conference "25th Congress of the CPSU and the Development of Marxist-Leninist Theory"* (Moscow, Politizdat Publishers, 1977); *The Interaction of the Literatures, and Artistic Culture of Developed Socialism* (Moscow, Nauka Publishers, 1977); Yu. Lukin, *Many-Faceted Socialist Culture* (Moscow, Mysl Publishers, 1977); M. Kulichenko, *Strengthening of the Internationalist Unity of Soviet Society* (Kiev, Politizdat Publishers of the Ukraine, 1976).

The listed publications show on concrete historical material how the humane essence of the Great October Socialist Revolution manifested itself in the sphere of spiritual culture.

As is generally known, the liquidation of that grim legacy of the past, mass illiteracy, and raising the cultural level of the nations, nationalities and ethnic groups inhabiting the Republic of Soviets confronted it with tasks of unprecedented difficulty and scale.

These tasks were successfully fulfilled, leading to a society of universal literacy, to a society where more than three-fourths of those employed in the national economy have a higher or secondary education (complete or incomplete).

The reality of the cultural evolution of the Soviet Union, the wealth of relevant historical and cultural material and the conclusiveness of this material, provided the foundation for the theoretical analysis of the processes of cultural development in the USSR undertaken by the Soviet researchers in their books. They based themselves on the general historical and materialist theory of culture as a social phenomenon in their interpretation of the essence of developed socialism's culture, of its general features and basic laws, its structure and social function, its content and forms and the laws of its emergence, development and growth into a universal culture of communist society.

Karl Marx, characterising the method of the socio-historical sciences as "being scientifically correct" stressed that when making a theoretical study of various social forms the real "subject—society", that concrete and living whole of which they are a part, "must al-

ways be kept in mind as the prerequisite" (K. Marx and F. Engels, *Works*, Vol. 46, Part 1, p. 38, in Russian). Neither the internal structure of culture can be understood nor the development trends of any of its aspects assessed without an understanding of culture's real place and role in the historically changing dynamics of social life and without its constant "presence" in the form of a system of concepts in the researcher's mind.

Creatively developing the Marxist theory of culture and outlining the concrete tasks of the cultural revolution in the USSR, Lenin expressed a number of innovative ideas about the economic and political "culture" of the epoch of the dictatorship of the proletariat, about the standards of scientific organisation and production management, about moral and aesthetic culture, about the "culture" of everyday life, the family, upbringing, and so on.

In the books under review their authors set out to explore the phenomena and categories of culture in complex. As Yu. Lukin rightly notes, an analysis of the concept of culture will be complete only when this concept embraces both the entire relationship between spiritual and material culture and the process of cultural development itself, as well as the process of the transmission of spiritual and aesthetic values and their perception and functioning in society.

Alongside defining the structural elements of culture the books list its various functions: social transformative, cognitive, semiotic, axiological, communicative. Their authors note that culture expresses both the degree of the humanisation of nature and social relations

and the degree of the development of forces essential to human society. At the same time they also note the class nature of culture in a class society.

The authors discuss the basic Marxist thesis about the class nature of spiritual culture in a class society in concrete terms when writing about socialist culture and its class opposite, bourgeois culture, and further when discussing the cultural revolution in the USSR. Democratic and socialist culture, which reflects the class interests of the working people and of the working class, first of all, begins to develop still under capitalism in the struggle against the culture of the ruling exploiter classes. The culture of socialist nations and nationalities continues and further develops the socialist elements in national cultures. At the same time, present-day socialist culture is a qualitatively new phenomenon that springs from the socialist mode of social life.

A socialist culture is shaped through a socialist cultural revolution which is an integral part of the revolutionary restructuring of society as a whole. The social content of a cultural revolution lies not only in redistributing the spiritual wealth accumulated by the previous development of mankind, but also in changing the mode of spiritual production and the subject of culture, the physical or mental workers. The essence of a cultural revolution lies not only in bringing within the reach of the working masses the boons of culture inaccessible to them in an exploiter society, but in stimulating their creative initiative and abilities which display themselves in the creation of new cultural values. Fulfilment of this task calls for the

radical restructuring of culture in its entirety.

The books under review set forth the main points of Lenin's programme of a cultural revolution in the USSR. The authors pinpoint attention on the leading role played by the CPSU and the Soviet state in putting into effect the complex of measures aimed at transforming the moral climate of Soviet society, at raising the general educational and cultural level of the working masses and drawing them into political activity, at fostering in them the communist ideology and convictions, Soviet patriotism and proletarian internationalism, at strengthening the norms of the socialist way of life and overcoming the survivals of the past in the minds and behaviour of people.

The listed studies show the scientific foundations and practical methods of the Party's guidance of cultural development and of the scientific management of its processes, show the systematic character of the Party's policy in the sphere of culture, based on exact social prevision.

According to Yu. Lukin, the level and state of the spiritual culture of mature socialism are characterised by new qualitative aspects determining the distinctive features of its various spheres: political, ideological, moral, aesthetic, including the spheres of science, education and enlightenment. Politically, culture of developed socialist society is characterised by respect for law and order, Soviet patriotism and a strong sense of internationalism among the broadest masses. The ideological culture of mature socialism is distinguished by the predominance of a scientific materialist outlook; an active at-

titude to life, a responsible attitude to public duty are intrinsic in moral culture. Implicit in aesthetic culture is the harmonious development of the socialist personality who has cultivated a high aesthetic taste and the ability to conduct himself "by the laws of beauty" in work, in his relations with people, in social activity.

The essential characteristics of the culture of developed socialism were discussed at the All-Union Theoretical Conference "25th Congress of the CPSU and the Development of Marxist-Leninist Theory". Of importance to a correct understanding of the general system and historical place of this culture is the thesis in the report by M. Iovchuk that the culture of socialism (especially in the period of developed socialism) and the culture of communism are not two different cultures; that they are the internationalist culture of communism, common in character and in spirit, differing from one another only in the degree of their development.

An important place in the collection of reports *Problems of Communist Education and Socialist Culture* is occupied by questions concerning the Party guidance in the sphere of creative work, and showing the role of Soviet artistic culture in the Party's ideological and educational work. The report by L. Yakimenko analyses the current problems of the literature of developed socialism. Yu. Barabash in his report shows the reciprocal relationship of the phenomena of artistic culture, and first of all literature, with the revolutionary changes of our time. The place and role of the cinema in the life of society, in the ideological struggle, the ideological and theoretical foundations of the mod-

ern cinema, the contradictory evolution of the bourgeois cinema are discussed in the report by A. Karaganov.

A central task of the allround study of culture is indisputably the elaboration of the relationship between the international and the national in the socialist spiritual culture of the Soviet people, of the dialectics of the flourishing, drawing together and mutual influence of the culture of the socialist nations and nationalities. This scientific problem too attracted the interest of the authors of the works discussed.

M. Kulichenko in his book *Strengthening of the Internationalist Unity of Soviet Society* explores the problem of the economic, political, ideological and cultural foundations of the internationalist unity of society, of the steady strengthening of this unity in the process of the gradual drawing together of nations and nationalities on the basis of socialist internationalism and mutual efforts in building communism.

The author examines the spiritual foundations of the drawing together of nations and nationalities whose spiritual community is characterised by the traits in the consciousness and culture of the working people of all the nationalities which have taken shape on one class basis, on the basis of internationalism.

In his elaboration of the criteria concerning the correlation of the international and the national in the sphere of spiritual culture the author proceeds from the following fundamental propositions of Marxism-Leninism: the really free development of nations, of everything national does not in the least run counter to the international;

on the contrary, it enriches it; international culture is not without national ties, even more, it rests on the allround development of national cultures.

Soviet artistic culture vividly reflects the dialectics of the international and the national in developed socialist society. In the collective work *Interaction of Literatures and Artistic Culture of Developed Socialism* the authors focus attention on the general problems of socialism's spiritual culture at its present stage and the functions of artistic culture in the future and their mutual enrichment, the theory of socialist realism as a creative method of multinational Soviet literature.

The wealth of developed socialism's spiritual culture and the diffusion of artistic experience, the interaction and mutual enrichment of literatures, the mutual exchange of creative achievements on the basis of the method of socialist realism, the diversity of the aesthetic contacts between the various literatures are the subject of research by G. Lomidze, Z. Kedrina, Z. Osmanova and Ya. Elsberg. In their articles B. Byalik, A. Kuteinikova, N. Nadyarnykh and A. Khailov show contemporary Soviet literature's response to the development of the Soviet man, to the changes in the forms, methods and aesthetic canons of his portrayal in literature and also to the changes in his spiritual makeup.

The books reviewed explore a large complex of problems connected in one way or another with the problem of national forms of culture: the different kinds of historical communities of people and culture; the socialist cultural revolution; the Soviet people—a new historical community; inter-

nationalist unity of socialist culture. The authors subject to criticism the idealistic and reactionary theories of "a national form".

Soviet scholars consistently come out against turning the national form of culture into something self-contained. Soviet culture, socialist in content, varied in its national forms and internationalist in spirit, is a concrete expression of the historical community of the

Soviet people. The interaction and mutual enrichment of national cultures is an integral part of the process of the formation and consolidation of the new historical community, one of the main regularities of the emergence and development of a single universal culture of the future communist society.

V. Kairyan

В. М. ПОЛЕВОЙ. *Искусство Греции*. т. 1. *Древний мир*. М., изд-во «Искусство», 1970, 327 стр. т. 2. *Средние века*. М., изд-во «Искусство», 1973, 350 стр. т. 3. *Новое время*. М., изд-во «Советский художник», 1975, 445 стр.

V. M. POLEVOY, *The Art of Greece*, Vol. 1. *The Ancient World*, Moscow, Iskusstvo Publishers, 1970, 327 pp. Vol. 2, *The Middle Ages*, Moscow, Iskusstvo Publishers, 1973, 350 pp. Vol. 3, *Modern Times*, Moscow, Sovetsky khudozhnik Publishers, 1975, 445 pp.

This fundamental research by V. Polevoy, D.Sc.(Art), is divided into three volumes the first of which is devoted to the ancient world, the second to the Middle Ages, and the third to modern times. The pivotal theme in all three is the destiny of one country and one people, and its culture. Here it is pertinent to note the author's innovation: he is the first to have written a general history of Greek art from its inception to our times. Before that, there had been a voluminous literature devoted to antiquity solely; books on the Middle Ages examined the art of

Greece as a particular phenomenon in the orbit of Byzantine art, while the modern and contemporary art of Greece had never been the subject of a special study. In the volumes under review the author traces the process of how the country preserved and multiplied its artistic traditions.

In the opening chapters the researcher, relating the history of the imitative arts to archaeology, speaks of the origin of art: from simple signs to symbols, to decorative designs and images. The author, is not afraid to say frankly what the masters of older or more recent times could do or could not do. He finds the right tone, the exact words for characterising the aesthetic quality of monuments. Polevoy's work is, in our opinion, a fine example of profound knowledge of the subject being combined with a concise and often elegant form of exposition.

The sections "From Primitive Culture to the Culture of the Classics" and "Classical Antiquity", which occupy the bulk of the first volume, are not only rich in information, but also in the issues they pose, issues not customarily met with in literature. Polevoy gives an all-embracing definition of the entire inspired Greek "Golden Age":

"All the laws of the world are in the image of man."

The high estimation given by the classics of Marxism-Leninism to the significance of ancient art for the development of human culture, and their analysis of the historical and cultural processes serve the author as a constant guide in his research.

In the second volume Polevoy objectively, thoughtfully and with tact scrutinises such challenging problems as "iconoclasm", actually an "anti-art movement"; the place of Greek mediaeval art in the framework of Byzantine art and the interconnection of the art of mediaeval Greece and Ancient Rus.

The author also writes at length about architecture. This sizable part of his work merits the highest appraisal. Cogently, and with every attention to the ideological aspect, Polevoy, displaying a thorough knowledge of the subject, speaks of urban, palace and church architecture.

The third volume is prefaced with an interesting "Introduction" where the scholar touches on the oft-debated question of East-West relations. Special chapters are devoted to the folk and decorative-applied art of later Greece. Of indisputable interest is the chapter

"Russian Art in Greece", which contains new materials from the history of Russian-Greek cultural relations. It gives the reader a sufficiently clear idea of the building and imitative arts in the 19th and 20th centuries, right down to the 1970s. The volume also tells of the period that was exceptionally unfavourable for artistic development; how even then Greek art preserved its faithfulness to humaneness, truth and beauty. The author explores the impact of modernism on the contemporary art of Greece.

The concluding paragraph of the three-volume study is worth quoting: "Its path (Greek art) has been a glorious and difficult one. In the great epochs it represented the path of progress of world culture, and mankind is grateful to Greece for all that it has given to the development of human thought and sensibilities... The history of the art of Greece is not over. It continues, oriented towards the future".

Polevoy's fundamental study, reviewed here only in brief, naturally, is a landmark achievement of Soviet scholarship. It was deservedly awarded a State Prize of the USSR in 1977.

A. Sidorov

Политика США в Азии. М., изд-во «Наука», 1977, 272 стр.

US Policy in Asia, Moscow, Nauka Publishers, 1977, 272 pp.

The monograph under review is written by a group of associates of the Institute of US and Canadian Studies of the USSR Academy of Sciences. They analyse the US policy

in Asia and trace its evolution between the end of the Second World War and the mid-1970s.

In 1945-1949, when the positions of old colonial powers in Asia (Britain, France, Holland) sharply weakened, the United States assumed an active role in the struggle against the national liberation movement in that part of the globe and applied to it the doctrine of

restraining communism adopted in 1949 for Europe. The Korean War (1950-1953) and a system of aggressive military and political blocs were its main manifestations. That policy resulted in the arbitrary inclusion of Indochina in the SEATO sphere of action in 1955 and in the open US military interference in Vietnam in 1965.

The failure of that aggression was one of the main reasons for the revision of the US Asian policy. While R. Nixon's Guam Doctrine (July 1969) substantiated the "Vietnamisation" of the war as a means of strengthening US allies in Asia, G. Ford's Pacific Doctrine (December 1975) was designed to reduce negative impact of the US defeat in Indochina and to emphasise that in future Washington will rely mostly on the US military might and US presence in the Far East, the Pacific, and the Indian Ocean zone, as well as on the alliance with Japan, and an intensified use of the "Chinese factor".

During the election campaign of 1976, President Carter made it clear more than once that he would remain faithful to the Asian policy pursued by previous administrations and, at the same time, would try to find more flexible ways to "stabilise" the situation in that part of the world.

US economic penetration in Asia was especially intensive after the Second World War. The export of state capital in the form of economic aid between 1962 and 1974 reached a total of 35,300 mln dollars or about 70 per cent of all the money that the United States spent to aid the developing countries. Between 1960 and 1974, direct American private investments in Asia grew from 2,300 mln to 9,900 mln dollars.

The book has two distinct sections. The first one is of a problematic character devoted to some important aspects of the US Asian policy. The authors discuss in detail the evolution of this line of Washington's international strategy, the discord among the US ruling circles on Asian policy, the specifics of American economic interests in Asia, the evolution of the policy of blocs in that part of the globe, the significance of the Pacific and Indian oceans in US military strategy. The second section analyses the US policy in relation to major states and subregions in Asia. Separate chapters deal with the current state of the US-Japanese and US-Chinese relations, Washington's policy in the Middle East, South and Southeast Asia, and Indochina.

Of key significance is the last chapter of the monograph entitled "The USA and Some Current Problems of Peace and Cooperation in Asia", because the multilateral efforts of the recent years have resulted in the spread of international detente over Asia.

As Asia's share in the US global policy is constantly growing, the authors devote much space to characterising Washington's policy in the "post-Vietnam" period. They note that the growing might of the world socialist system and the US failure in Vietnam have forced the most far-sighted scholars and politicians in the United States to consider seriously the need for changes in the traditional American approach to Asia.

The Soviet idea of ensuring peace and security in Asia through the efforts by Asians themselves has aroused great interest among those searching for a sound alternative to the deficient US policy

in Asia. R. Scalapino, R. Clough, E. Reischauer, G. Ball and other eminent American politologists recognise possibilities of a constructive dialogue on these issues with the Soviet Union and other Asian countries. Unfortunately, besides the positive trends, there are opposite forces in the USA that are looking for modernised means of achieving the US traditional expansionist goals, for new allies in the Maoist Chinese leadership and among the reactionary military in a number of

Asian countries. In Asia itself, there are also circles hostile to detente.

An analysis of all that, nevertheless, gives the authors grounds for a conclusion that though the situation in Asia differs from that in Europe, the experience of the Conference on Security and Cooperation in Europe can be successfully used in Asia.

S. Tikhvinsky,
Corresponding Member,
USSR Academy of Sciences



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NEW BOOKS ON AFRICA

Below we publish annotations of books dealing with economic, socio-political, historical and international problems of the continent, prepared by the Institute of Africa, USSR Academy of Sciences, in 1975-1977.

Africa in Modern and Contemporary Times. Collection of Articles, Ed. by G. Nersesov and V. Subbotin, Moscow, Nauka Publishers, 1976, 212 pp.

The collection treats of the social and political history of Tropical Africa, focusing particularly on the national liberation movement.

Africa: Problems of Socialist Orientation, Ed. by G. Starushenko, Moscow, Nauka Publishers, 1976, 477 pp.

The monograph examines the ways in which the Marxist-Leninist theory of non-capitalist development is realised in the African continent in the most diverse spheres of life—political, economic, ideological, etc., and analyses both the positive and negative experience of the countries concerned.

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The author offers an analysis of the practice and theory of national planning in the African countries that have liberated themselves, its place and role in their economic progress, surveys the system of state planning that evolved at the beginning of the 1970s, its organ-

isation and main types of programmes.

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The articles in this collection are concerned with the problems of the national liberation struggle in Angola, Mozambique and Guinea Bissau. They have been contributed by the African liberation leaders A. Cabral, S. Mashela, A. Neto, General Secretary of the Portuguese Communist Party A. Cunhal, and also Soviet authors.

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The author investigates the essence, forms, methods and consequences of the export of capital in

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The State Sector in Countries of Africa, Ed. by L. Alexandrovskaya, Moscow, Nauka Publishers, 1976, 296 pp.

This problem, a crucial one for the development of the Third World is the topic of the book. It elaborates, actually for the first time in Marxist literature of Africa, problems as generalisation of the experience of nationalisation in the countries of this continent, the role of the state sector in the national strategy of their development, as an analysis of its structure, of the methods of its planning and financing and of interstate economic organisations.

The Study of Africa in Russia (Pre-Revolutionary Period). Collection of Articles, Ed. by A. Davidson and G. Nersesov, Moscow, Nauka Publishers, 1977, 177 pp.

The collection includes seven essays written by prominent Soviet scholars on the basis of archive materials and recently discovered documentary sources. The authors show the wide range of problems researched by Russian orientalists, the work carried out by individual explorers, scholars and art critics who made a major contribution to the study of the peoples of the African continent.

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The book is written by associates of the Institutes of Africa, Oriental Studies and World History, USSR Academy of Sciences, jointly with scholars of the German Democratic Republic and Polish People's Republic. For the first time in Soviet literature facts are collected on the struggle of the Africans against European expansion in the 17th-early 20th century, showing the early stages of political protest, the emergence of the working class and its first actions, the activities of the press.

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The author explores the problem of the emergence of an African intelligentsia, the awakening of its social consciousness and its role in the national liberation movement of Nigeria.

V. Ya. Katsman, *Present-Day Tanzania. Some Problems of the Political and Social Development of an African State of Socialist Orientation*, Moscow, Nauka Publishers, 1977, 286 pp.

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The author traces the history of the evolution of social thought in the British colonies of West Africa—Nigeria, the Gold Coast, Sierra Leone, Gambia.

"Problems of the Contemporary World" Series

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The Editors

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OUR GLOSSARY

LOGIC AND METHODOLOGY OF SCIENCE—the sphere of the philosophy of knowledge whose task is to elaborate and study the methods and logical means of constructing and substantiating scientific knowledge. From antiquity and right up to modern times (16-17th centuries) the problems involving the logic and methods of study were regarded in epistemology and formal logic as a traditional part of any philosophical system. With the emergence of experimental natural science in the 17th century and especially as a result of the rapid development of all the natural sciences in the 19th century, the logic and methodology of science gradually isolated themselves from epistemology and traditional formal logic and worked out their own specific set of tasks and problems, while in the 20th century they began to widely utilise the means of study, characteristic of mathematical logic (the construction of formal systems, analysis of the language of science, etc).

The Marxist concept of the logic and methodology of science whose fundamental principles were elaborated by Marx, Engels and Lenin, uses materialist dialectics as the main method and theoretically and coherently reproduces the entire totality of concrete methods and logical means of modern scientific cognition.

In the logic and methodology of science we see a relatively isolated groups of problems, some of which are related more to the study of the logical structure of science, while others are associated with an analysis of the methodological nature of scientific knowledge. The first group of problems includes the elaboration of the logical forms that express scientific statements (special and general; statements describing the laws of nature, etc.), the study of the technique of proof in science (deductive logic, inductive or probabilistic methods of reasoning), the logical substantiation of the forms of constructing scientific theories (axiomatic, hypothetico-deductive, constructive and other methods of constructing theories, analysis of the logical rules of verification and disproof (falsification) of scientific theories, etc. The problems of the methodological nature of scientific knowledge deal first and foremost with the definition of the general structure of scientific knowledge, the identification of its basic functions (description, explanation and prevision); the classification of different types of scientific knowledge (basic and applied); the ascertainment of mutual relations of science with other forms of human activity (chiefly with technology and production); the study of specific

methodological problems arising in particular fields of science (mathematics, physics, biology, chemistry, and the social sciences).

The modern logic and methodology of science reject the idea of a possible construction of some universal mechanism of making scientific discoveries (the aim of many philosophers and natural scientists of the new times) and emphasise the indissoluble connection between the logico-methodological and historico-scientific methods of research. The logic and methodology of science consequently centre now on the problems of the methods of constructing theories about the complex developing objects (above all the method of ascending from the abstract to the concrete, the method analysed by Marx), on the questions of the character and mechanisms of revolutions in science, the determination of conditions and criteria of rational scientific activity and the progressive development of science.

SYSTEMS PRINCIPLE, SYSTEMS APPROACH AND THE GENERAL THEORY OF SYSTEMS are the forms of the theoretical awareness of the specific features, logical and methodological means of conducting systems investigations on a wide scale in modern science, technology and in the solution of current practical (industrial, organisational, administrative) tasks. Typical examples of systems research are the investigations of the global problems of the latter half of the 20th century that face various countries, regions and the world as a whole: provision of the world's population with the sufficient amount of food, control of environmental pollution, rational use of power and other natural resources, the creation of automated systems of the collection and processing of information, global computer complexes, etc.

The systems investigations in science include the task of building a general theory of elementary particles, an integral theory of the human brain's activity, a theory of functioning and developing scientific knowledge, etc. In all these cases research (as well as projecting and designing) has as its object the systems (as a rule, super-complex systems)—large totalities of elements, interconnected in a definite way and making up an integral whole that enters into definite relationships with the environment and possesses its own laws of conduct and change. The broad introduction of systems research in science, technology and practical activities expresses a major feature of the contemporary scientific and technological revolution. If this research is to register success we have to elaborate its theoretical (philosophical and methodological) principles.

The basic content of the philosophical principle of systems analysis consists in the fixation of the integrity of the world's

objects and the cognition's objects; in the affirmation of a relative priority of the whole over its parts; in the demand that all the main interrelationships should be disclosed both in the object under study and in its relations with the environment; in the ascertainment of the structure of any object, etc. This principle is deeply rooted in the history of philosophy and finds its supreme expression in the philosophy of dialectical materialism. Marx's *Capital* is a vivid example of its application to the concrete scientific investigation of capitalist society's economic structure.

Whereas the systems principle provides the philosophical basis for systems research, its concrete methodological and logical principles are elaborated by the systems approach. By its nature the systems approach is an inter-disciplinary, general scientific sphere of research and its basic tasks cover: 1) the elaboration of conceptual—meaningful and formal—means of presentation of objects as systems; 2) the construction of generalised models of systems and the models of different classes of systems (the models of the dynamics of systems, the models of biological, psychological, economic and other systems); 3) the study of the methodological means of constructing various systems theories. In line with these tasks we formulate within the framework of the systems approach the methodological knowledge about systems investigations. By its level of community this knowledge, though of a general scientific nature, does not claim to have a philosophical significance in terms of a world outlook.

In the course of systems investigations conducted in the 20th century some authors have advanced programmes of building up a general theory of systems, a special scientific conception which is called upon to describe the structure, the laws of the behaviour and development of systems as a whole and the systems of different types. The realisation of such programmes encounters certain theoretical and methodological difficulties, as a result of which in most cases the suggested variants of constructing a general theory of systems represent in fact only special theories of particular classes of systems. There is another treatment of the tasks of the general theory of systems—the creation of a systems meta-theory, that is, the theory of building systems theories. In this case the problems involved in the general theory of systems are closely linked to the problems of a systems approach.

SECTORAL AND TERRITORIAL PLANNING are the most important (alongside departmental and programmatic) types of state economic planning.

The overall national production of such major products as metals, electric power, coal, oil and gas, timber and building materials, fabrics, etc., is the object of sectoral planning, which

covers all enterprises and organisations of a particular sector of the national economy irrespective of their departmental (ministerial) affiliation and subordination. The elaboration of plans according to sectors as a whole enables the state to tap all the available productive resources for the manufacture of commodities and to determine the degree of satisfying the society's requirements in this field.

Territorial planning covers planned assignments for the specialisation and comprehensive development of the productive forces of the Union republics and big economic areas of the country as a whole, territories and regions, industrial or agrarian-cum-industrial complexes, and also the scientifically substantiated distribution of individual enterprises.

Two trends in the development of the social division of labour—sectoral and geographical—form the objective basis of sectoral and territorial planning. As Lenin put it, "directly connected with division of labour in general is ... territorial division of labour—the specialisation of certain districts in the production of some one product, of one sort of product, and even of a certain part of a product" (*Collected Works*, Moscow, Vol. 3, p. 431).

All state plans, both current and long-term ones, are correlated with the requirements and possibilities of industries and regions (republics), which is conditioned by the operation of socialism's economic laws and above all by the law of balanced, proportional economic development. A rational combination of the sectoral and territorial principles of planning makes it possible to put to fuller use the advantages of the territorial division of labour, creates conditions for more effective application of labour, fuel, power, water and other resources, for the comprehensive development of areas, optimisation of inter-sectoral ties, distribution of new projects in accordance with state interests, and for further levelling up the economic development of republics and areas.

COUNTER-PLANS are elaborated and put forward in the course of the discussion of state planned assignments by the work collectives themselves. The counter-plans are aimed at improving the quantitative and qualitative characteristics of these assignments and are based on the possibility of making fuller use of the internal resources and reserves available at enterprises.

Our Mailbag

Here are some excerpts from our readers' letters, in the original or translated into English.

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Peter M. Landoch,
Swansea, USA

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It is a very difficult thing to develop these ideas for the general public... However, when a very learned scholar has devoted his or her lifetime to studying and developing ideas in a particular field, tries to write for the public which includes mostly laymen, he or she has problems. He or she has ideas and concepts with which his or her colleagues are extremely familiar within that discipline, but the general public who would be reading these articles have to grapple with these ideas and these concepts."

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Harold L. Dean,
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