ON POLITICAL ECONOMY AND ECONOMETRICS

Essays in honour of

OSKAR LANGE

PERGAMON PRESS

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This volume of essays is the result of the joint effort of many scholars who responded to the appeal of the Professor O. Lange's 60th Birthday Anniversary Committee.

Papers by foreign authors are published in the language of their origin; those by Polish authors have been translated into English. All papers written in a language other than English have been supplemented with an English summary.

It should be understood that the essays in the present volume exclusively express the views of their authors.

The Anniversary Committee and PWN (The Polish Scientific Publishers) kept as strictly as they could to the rule to publish in this volume only those articles which have not appeared in print previously.

The Anniversary Committee would like to extend its sincere thanks to all the authors who contributed to the present volume.

Our thanks are also due to Professor W. Schulz of the University of Chicago and to Professor Stanislaw Strumillin of the U.S.S.R. Academy of Science, whose papers were sent to us but were not included in this volume because they have been published elsewhere in the meantime.

We are also grateful to all those who helped us create this lasting and, we hope, valuable form of honouring Professor Lange's 60th Birthday.

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BIOGRAPHY OF OSKAR LANGE

OSKAR RYSZARD LANGE was born on July 27th, 1904, in Tomaszów Mazowiecki, in the family of a textile manufacturer. Shortly before the first world war he was sent to Austria (near Graz) for a long health cure. Here he spent the first years of the war. After the war he went to a secondary school in his native town.

The crucial moment of his life came in 1918. On the occasion of the hundredth anniversary of the birth of Karl Marx, the fourteen-year-old boy gave, to a small circle, a lecture on Marxism. In the autumn of that year he took part in disarming the Germans, and immediately established contact with the Council of Workers' Delegates which sprung up in Tomaszów (as in the other industrial towns in Poland), and soon organized a circle of the Union of Polish Socialist Youth which recruited members not only among pupils of schools but also among young workers. During his secondary school studies Lange's favourite readings were works of prominent theoreticians of socialist thought, especially of Karl Marx, Frederick Engels and Karl Kautsky, and of famous naturalists such as Charles Darwin and Ernest Haeckel. Very soon he became interested in anthropology, history of religions, sociology (he was especially fascinated by the works of Ludwik Krzywicki). Oskar Lange also became interested in oriental studies (he began to study the Chinese language) and comparative linguistics.

Long before he started his university studies, Oskar Lange devoted a great deal of attention to the problems of how the human species emerged from the animals (he read carefully works of anthropologists and especially of Ludwik Krzywicki) and on the problem of scientific justification of social postulates of conscious direction of social and economic life. He became also interested in applications of mathematics to economics and other social sciences. The first problem he was interested in led him to study biology and the second one aroused his interest in economic and social studies. The dilemma was difficult to solve and he still hesitated while standing in the corridor of the university building in Poznań. Finally, he decided for economics. This choice proved to be lasting.

In those years Poznań was a very conservative town and the young follower of Marx and Darwin felt lonely and surrounded by a hostile atmosphere. For this reason he went for his second year of studies to Kraków, to the ancient Jagiellonian University. There he studied law, economics and social history. In the year 1923 or 1924 Lange, who was a member of the seminar of Professor Adam Krzyżanowski, read a paper, *Essay of a Theory of the Limits of Production*. This paper, which made an independent attempt to apply mathematics to problems of production under capitalism and socialism, was the beginning of the wide stream of Oskar Lange's economic studies in the next decades of his scientific activity.

A year after having finished his studies Lange became an assistant at the chair of economics held by Professor Krzyżanowski. However, from the very beginning Lange's publications and scientific interests went far beyond the field of economics. His first published paper was on the history of medieval law (*Localization of Towns under German Law in Great Poland during the Middle Ages*, 1925). Next, he treats economic problems (his doctoral thesis was on *Business Cycles in Poland 1925–1927*, 1928), sociological problems (*The Sociology and Social Ideas of Edward Abramowski*, 1928) and statistical ones (*Statistical Methods in Investigating Economic Fluctuations*, 1931). On the basis of the last mentioned work he received the post of university lecturer (docent) in statistics. Originally Lange wanted to take up teaching political economy but university authorities alarmed by his political views and activity suggested that he undertake a more socially neutral field, namely that of statistics. However, also in this field his appointment was successful only after overcoming many obstacles and the Ministry of Education was for some time reluctant to approve his appointment.

During most of the inter-war period Oskar Lange had close contacts with the movement of socialist youth. He became a member of the Polish Socialist Party in 1927. In the thirties his party membership was suspended twice because of too left-wing opinions and because of his support for the policy of cooperation between socialists and communists. His main field of political activity during the years of his studies and afterwards was the Union of Independent Socialist Youth, an organization much more radical than the Polish Socialist Party with which it was connected. For some time Lange held the post of secretary and then of chairman of the Cracow section of this organization. He was also the author of the ideological declaration adopted by the national conference of the Union of Independent Socialist Youth in 1928. The declaration was based on revolutionary—as they were called in those times—Marxist principles.

The milieu of Cracow became—largely due to Lange's activities—the strongest centre of socialist thought in the left-wing youth movement in Poland. The main theoretical and ideological document issued from its ranks was the programmatic pamphlet *The Economics, Politics, Tactics, Organization of Socialism* (published in Warsaw in 1934). The list of authors included the names of Stefan Arski, Marek Breit, Wiktor Ehrenpreis, Julian Hochfeld, Oskar Lange, Władysław Malinowski, Jan Topiński. Oskar Lange (in collaboration with Marek Breit) wrote the part called *The Road to Socialist Planned Economy*. One of its chapters "The First Steps of a Revolutionary Workers' and Peasants' Goverment" included many ideas which in 1944 were included in the programme of the Polish Committee of National Liberation (established in Lublin), and which materialized in the first activities of the Provisional Government of the Polish People's Republic.

The further stay of Oskar Lange at the university of Cracow was much handicapped by his social and political activities. A fellowship granted by the Rockefeller Foundation made it possible for him to leave Poland for two years of studies in the USA and in England. While staying in England and in the USA Professor Lange published two essays on the economic theory of socialist economy in the *Review of Economic Studies*. These two articles appeared later in a book publication together with an article of F. W. Taylor[1]. Lange's book was a polemic against the arguments denying the possibilities of creating a rational system of socialist economy. Lange discussed not only the argument of Mises, who completely denied the possibility of existence of economic calculation under socialism, but also the argument of Hayek and Robbins. They pointed out that though rational allocation of production factors is theoretically possible in socialism, it is unrealizable in practice because an economic calculation would require the solution of thousands or hundreds of thousands equations. Starting from the basis of the theory of market equilibrium, Lange proved that under socialism prices are not arbitrary but are based on the quantity of production outlays, and that they are an important instrument in economic calculation. It is possible to fix these prices (so-called accounting prices) using a method similar to the free market, i.e. a method of successive trial and error. In the decentralized model of socialist economy a quasi-market accomplishes this. Lange proved that "a type of socialist economy in which there is no free choice in the consumption sector or in the sphere of choice of a profession and which is directed by a scale of preferences defined by a Central Planning Body" is also a consistent system capable of functioning. Lange's observation was, however, confined to a decentralized model and this part of Lange's findings passed into history under the name "the Lange model" (or sometimes the "Lange-Lerner solution")[2].

After his return to Poland in 1937 Lange tried to resume university teaching. The Free Polish University (a non-governmental institution which represented progressive trends in Polish culture) tried to have him as a lecturer in political economy at its branch in Łódź, but such projects were impeded by political difficulties. As there was no place for him in Polish universities, Lange accepted an invitation

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[1] O. Lange and F. W. Taylor, *On the Economic Theory of Socialism*, Minneapolis 1938. To date this work has had several editions, and it has been translated into Polish, Arabic and Italian.

[2] Lange's present views on the principles of the functioning of a socialist economy differ substantially from those presented in the above mentioned study. The later experience of socialist economy in various countries and Lange's own theoretical studies had some influence on his change in views. First and foremost this change was brought about by progress in other branches of knowledge, and particularly by the emergence of modern electronic mathematical machines. The difficulty formulated by Hayek and Robbins has by now become to a large extent illusory. Bearing this in mind, Lange declared in a recent lecture in London that if he were to write his essay today, it would be called *The Computer and the Market, An Essay in Economic Cybernetics*. For it is an interesting point that the process determining the accounting price (so-called shadow price) with the help of an electronic computer is also achieved by a process of successive trial and error. Thus, both these mechanisms (the market and control accounting with electronic computers) may supplement each other, putting in a new light the mutual relationship between centralized and decentralized decision models.

from American universities and went to the USA. In 1938 he was lecturing at the University of California and at Stanford University, and in 1939 he was appointed Assistant Professor of Economics and Statistics at the University of Chicago[3]. There he later became Associate Professor and full Professor and stayed until 1945, i.e. during the whole period of the Second World War. For some time he lectured also at Columbia University.

While in the USA professor Lange published a large number of theoretical papers: "The Rate of Interest and the Optimum Propensity to Consume" (*Economica* 1938), "Say's Law—A Criticism and Restatement" (1942), "On the Theory of the Multiplier" (*Econometrica* 1943), "The Foundation of Welfare Economics" (*Econometrica* 1942).

The most important among his publications of that period is the book *Price Flexibility and Employment* (1944). Though *Price Flexibility* had considerably less influence on economic thought than Lange's essay on socialism (among other reasons because it appeared during the war—a period unfavourable to more abstract economic thought, and, also because it was written in a considerably more difficult language), it is worth examining, for it certainly constitutes a no less important stage in Lange's scientific development than his earlier essay.

The genesis of *Price Flexibility* was as follows. There was a conviction current amongst neo-classical economists that flexibility of prices and wages is a basic condition for the maintenance of economic equilibrium. This conviction found frequent expression in attacks on trade unions as an alleged monopoly which freezes wages at an extremely high level and thus causes unemployment. The attitude of the followers of a *laisser faire* economy was frequently confined to attacks on just this one "monopoly". In addition, very inconsistently from the theoretical point of view, though quite consistently from the point of view of their social attitude, "the people who insist upon the necessity of keeping money wages flexible—in times of depression—are the same ones who demand a ceiling on money wages to prevent inflation"[4].

The view of the neo-classical economists summarized in the well-known slogan "rigid wages are a source of unemployment" was subject to criticism from various sides already at the beginning of the nineteen-thirties. Joan Robinson, using as a starting point the theory of imperfect competition, defended the policy of the trade unions of maintaining wages at a fixed level as a factor creating a counterbalance to monopsonist tendencies on the labour market. Michał Kalecki criticized them in terms of the theory of insufficient aggregate demand. J. M. Keynes criticized the policy of reducing wages in periods of crisis and depression, by showing that a reduction of money wages causes a proportional fall in prices and, consequently, does not lead to absorption of surplus of labour force. This opinion was

[3] In May 1939 (after he had been appointed professor in Chicago) O. Lange read two inaugural lectures at the Free Polish University on new currents in political economy and in economic policy.

[4] O. Lange, *Price Flexibility and Employment*, Bloomington 1944, p. 90.

rapidly taken up by the adherents of the reformist labour movement. However, in academic circles, for example in Chicago where traditions were still very strong (they were represented by Frank Knight, J. Viner and Henry Simons), the earlier view lasted longer. And this happened among other reasons because the critics of the neo-classical view (e.g. Keynes and Kalecki) argued in another language (in terms of aggregates) and criticized neo-classicism rather from without the body of neo-classical doctrine.

Oskar Lange decided to meet the neo-classicists on their own ground, using the apparatus of general equilibrium theory; and for this purpose, Lange introduced money into the theory of general equilibrium. "Such restatement leads to the conclusion that substitution between money and goods provides the key for understanding the equilibrating as well as the disequilibrating processes of the economy". Lange regarded this conclusion "as the chief contribution of his study"[5].

When investigating the influence of money on economic equilibrium under condition of the existence of flexibility prices, Lange distinguished three possible cases.

1. A constant quantity of money. The fall in price of a certain factor (e.g. the cotton price or wages) leads at first to a fall in other prices and to a growth in the purchasing power of the existing stock of money. An excess supply of money arises. This, in consequence, causes an increase of the demand for goods, and provides a check to the fall of prices. As other prices fall less than that of the factor under consideration, demand for the factor increases. Connected with it is an increase of loanable funds which causes a fall of the rate of interest. This, in turn, encourages investment and a growth in employment. This is what Lange calls the positive monetary effect.

2. The quantity of money is determined by credit creation and changes according to the change in demand for money (cash balances). Then the mechanism of automatic maintenance (and restoration) of equilibrium does not work. The stock of money contracts proportionately to the fall in demand for cash balances and an excess supply of money develops. The purchasing power of the stock of money remains unchanged. In consequence, the fall in prices is not checked by a rise in the purchasing power of the stock of money and a fall of the rate of interest does not take place. The excess supply of the production factor is not absorbed. The monetary effect is then said to be neutral.

3. The quantity of money contracts more than proportionately to the fall in demand for cash balances. For example the banks react to the fall in prices by demanding repayment of loans. A shortage of money is then felt on the market.

[5] Ibid., Foreword. The earlier study on Say's law was already devoted to the role of money in the market mechanism. For a more detailed consideration of Lange's theory of flexibility cf. Emile James, *Historia myśli ekonomicznej XX wieku* (Histoire de la pensée économique au XX[e] siècle), Warsaw 1958, pp. 346–350 and Edward Taylor, *Historia rozwoju ekonomii* (The History of the Development of Economics), Poznań, 1958, pp. 159–160.

Pessimistic forecasts, growing feeling of uncertainty, etc. foster the appearance of this phenomenon. Then a fall in the price of a production factor (e.g. wages) causes a still more drastic fall in the price of other goods, and this leads to a still larger excess supply of the production factor than was the case originally (e.g. to a still greater unemployment). The monetary effect is then negative.

The processes disturbing the equilibrium and preventing an automatic return to it by the mechanism of flexible prices appear even more powerful in the light of an analysis of such phenomena and processes as the oligopolization of the national economy (a growth in savings, exhaustion of profitable investment opportunities, labour-saving innovations etc.). The number and the force of the destabilizing factors among these phenomena has an expressed tendency towards increase, while stabilizing factors have a reverse tendency.

Under these conditions the theory of an automatically obtained economic equilibrium is a conception dealing with highly improbable contingencies. Lange sometimes compares this with the case of an ape's typing the text of the *Encyclopedia Britannica.* The calculus of probabilities does not exclude completely that an ape could type the *Encyclopedia Britannica.* But is it worth while to take into account such a highly unlikely contingency?

The conclusion of Lange at that time was not very optimistic for the neoclassical conception of equilibrium. Lange wrote in the conclusion to his book: "We have found that only under very special conditions does price flexibility result in the automatic maintenance or restoration of equilibrium of demand for and supply of factors of production. These conditions require the combination of such a responsiveness of the monetary system and such elasticities of price expectations as produce a positive monetary effect, sensitivity of intertemporal substitution to changes in interest rates (if the positive monetary effect leads to a change in the demand for securities rather than to a direct change in the demand for commodities), absence of highly specialized factors with demand or supply dependent on strongly elastic price expectations, and finally, absence of oligopolistic or oligopsonistic rigidities of output and input. To a certain extent the absence of a positive monetary effect may be replaced by the stabilizing influence of foreign trade in an atomistic international market (among the different countries). There are good reasons to believe that these conditions were approximately realized in the long run during a period which extended from the 1840's until 1914. During this period, price flexibility was a workable norm of long-run economic policy"[6].

Later, however, the situation was radically changed. The process of oligopolization, the deterioration of investment opportunities, the tendency towards technological unemployment in combination with the negative experience of the world wars and the Great Depression which seriously weakened the feeling of stabili-

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[6] *Ibid.*, p. 83.

zation—all these confined the possibility of an automatic attainment of an equilibrium to a minimum. Lange's analysis was destructive to the neo-classical doctrine. It was—so to speak—blown up from the inside. It was annihilated by a display of the dynamics of its own internal mechanism.

Lange's criticism was also anti-Keynesian in substance, though in several basic points (wages, employment and monetary policy) he reached conclusions in agreement with those of Keynes. But in constructing a certain kind of general theory of market and of prices Lange reduced Keynes' theory to the role of a "particular theory of employment, interest and money". Moreover, the different social attitudes of Keynes and Lange became clear. Lange proved that Keynes' proposals for an anti-depression policy met with the barriers of monopoly capital which are difficult to overcome. An oligopolistic price policy may, for example, greatly weaken or simply thwart the stimulating multiplier processes initiated by the State. Therefore, a decidedly anti-monopolistic economic policy proves to be essential. Such a policy has socialist implications. Lange wrote that "in most cases of obnoxious oligopoly and oligopsony, socialization of the respective industries or trades appears to be the only means of securing their operation according to rules compatible with the stability and efficiency of the economy"[7].

Price flexibility is, in principle, the last stage in Lange's interest in the problems of the market mechanism. Later there came a long period of studies on the problem of production and reproduction. In the book *Political Economy* synthesizing both his own scientific achievements and those of world-wide economic literature, there will certainly be place once again for an analysis of market processes. The theory of reproduction and the internal balance of inter-industry flows will, however, be the basis of a theory of value and prices.

Let us turn back, however, to the period of the Second World War. Besides his theoretical research Lange often voiced his opinions in matters of economic policy. Fascism was considered by him the main enemy which was to be fought with all available forces and resources. American monopolies he considered as potential or half-open allies of fascism. From this point of view Lange often advanced in his articles the thesis that the monopolies must be curbed and democratic control over the economy established. Professor Lange's postulates concentrated around the need for introducing a public and democratic control of national economy and adopting measures designed to break the power of great monopolistic corporations and financial groups. This was the subject of many of his articles and public lectures.

The war and the formation of a large anti-fascist front have awakened in the USA a large interest in the USSR and its economic system. The Research Bureau for Post-War Economics published in 1944 a study of Oskar Lange called *The Working Principles of the Soviet Economy*. During the cold-war period in many

[7] *Ibid.*, p. 87

libraries in the USA copies of this study (which had several editions) bore the following stamp: "Please note: Lange is now a leader of the Polish Diet, highly sympathetic to communism".

The major part of Lange's activities became increasingly devoted to problems of future Poland. Together with the well-known Polish-American labour leaders, Leon Krzycki and Bolesław Gebert, he organized the American-Polish Labour Council. He advocated an understanding and cooperation with the USSR and he supported the policy of General Sikorski, then the Prime Minister of the Polish government-in-exile, in London. This led him into conflict with the right-wing Polish politicians in London who held strongly anti-Soviet views. After the relations between the USSR and the Polish government-in-exile in London were broken, Lange published a letter in the *New York Herald-Tribune* on the place of Poland in the post-war world[8]. Condemning as unreasonable and reactionary the policy of the exile government in London, Lange formulated the principles of the new foreign policy of Poland. These principles were to a large extent consistent with the concepts of the Union of Polish Patriots and with the Home National Council which headed the left-wing underground in Poland. His political concepts issued in his cooperation in the creation of the so-called Kościuszko Leagues in the USA which were meant to organize support for the Kościuszko division of the Polish Army then being organized in the USSR.

On the invitation of the Polish Army in the USSR he went in the spring of 1944 to the USSR where he visited units of the Polish Army and had talks with prominent representatives of Polish *émigrés* in the USSR and with representatives of the Home National Council which clandestinely had crossed the front line and arrived in Moscow. He also conferred about the future of Poland with Joseph Stalin[9].

In the summer of 1945 Lange returned to Poland. The Polish government soon appointed him ambassador to the USA and delegate to the Security Council of the United Nations. His activity in the United Nations established his reputation as a prominent international political figure. Lange initiated the debate on Spain demanding that members of the United Nations break diplomatic relations with the government of General Franco. In the United Nations he also supported the policy of peaceful coexistence, of general disarmament, of banning nuclear weapons and of large-scale economic cooperation of all countries irrespective of their social systems. He declared himself against the use of economic pressure as a mean of intervention in internal affairs of countries receiving economic aid.

At the end of 1947 Lange came back to Poland to take part in political life as member of the Polish Socialist Party. He became a supporter of the idea of the

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[8] It was published later, together with other articles of his, in a booklet: *Poland and the United Nations*, New York 1944.

[9] The exchange of letters on Lange's wartime trip to the Soviet Union between Stalin and President Roosevelt is published in the second volume of the *Correspondence between Stalin, Roosevelt, Truman and Churchill in 1941-45*, Moscow 1957, pp. 136-137.

unification of the workers' parties (see his article in *Nowe Drogi* 9/48: "Common Cause—Common Ideology"). At the national congress of the Polish Socialist Party in 1947 he was elected to the Central Executive Committee.

At the unification congress of the two parties Oskar Lange was elected member of the Central Committee of the newly established United Polish Workers' Party. The main field of political activity of Oskar Lange became Parliament and the Council of State. He was elected to the Council of State in 1955 and since 1957 he has been holding the post of its deputy chairman. In Parliament he successively held the posts of chairman of the Parliamentary group of the Polish United Workers' Party, chairman of the foreign affairs committee and, lately, that of chairman of the committee of planning, budget and finances (till 1961).

In the international field he has been one of the most active champions of peaceful coexistence and of international economic cooperation. He was one of the organizers of the International Economic Conference in Moscow in 1952. In the years 1957–1959 he held the post of chairman of the United Nations Economic Commission for Europe. During the years 1961–1962 he was member of the United Nations committee of experts for the study of economic and social consequences of disarmament and participated in drafting the experts' report. He also published a pamphlet on this subject: *Disarmament, Economic Growth and International Cooperation* (1962).

As before the war so also in the after-war period Professor Lange's social and political activity was paralleled by intensive scientific work. Only the years (1946–1947) of his diplomatic service were not marked by scientific publications.

During the difficult—for the social sciences—years 1949–1955 Professor Lange was again mainly occupied with statistics, though from time to time he voiced his opinion on economic matters. As a chairman of the Central Cooperative Union he wrote on the role of the cooperative movement in building socialism (the only item in his bibliography in 1950), then on coexistence, on creative development of Marxist theory. He also took part in the discussion concentrated around the book by Joseph Stalin: *Economic Problems of the USSR*, stressing the importance of taking account of economic laws, and particularly of the law of value in managing a socialist economy. He also made comments about different stages in the growth of Polish economy. An important item in the bibliography of his works of that period is provided by his book[10] *The Theory of Statistics* written after a course of lectures delivered at the Central School of Planning and Statistics in Warsaw. Besides, a mathematical paper *Statistical Estimation of Parameters in Markov Processes* may also be mentioned.

During the years 1950–1957 Lange was also lecturing on the history of economic thought at the Institute of Social Sciences of the Central Committee of the Polish United Workers Party.

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[10] A Japanese translation of this book was published in 1955.

In 1956, after he had returned from a six-months trip to India as economic adviser on India's Second Five Year Plan, Lange was given the chair of political economy at the Faculty of Political Economy of the University of Warsaw[11]. From then the university lectures of Professor Lange became of paramount importance in the Polish scientific world. Almost each year he started a new course of lectures on a different subject. Four published books have already resulted from these lectures. His lectures on econometrics (1956/57) were published as *Introduction to Econometrics*—the first book on econometrics published by a Polish author. There have already been two Polish editions of the book, which has also been translated into several foreign languages (English—two editions, Serbo-Croatian, Italian, Japanese, Russian). This book of Professor Lange provided the first systematic treatment of the use of econometric methods in planned socialist economy. The same applies to the book on programming (*Optimum Decision-Making*) which appeared in 1964. Another course of lectures, whose main topic was the mathematical treatment of the Marxist theory of reproduction and accumulation, resulted in the book *Theory of Reproduction and Accumulation* published in 1961 (Russian translation in 1963).

In recent years Professor Lange has been lecturing on cybernetics and its application to economics. His book (published in Polish and English) *Wholes and Parts—A General Theory of System Behaviour* (1964) gives a general introduction to this science and underlines its importance for the philosophy of dialectical materialism. Another book, *Introduction to Economic Cybernetics*, is due to be published soon and will perhaps be the first book on the subject in the world.

The work on his *Political Economy* began in 1957 and, planned decades earlier, is of a different character. It is supposed to consist of three volumes. The first volume deals with the subject matter of political economy, its relation to historical materialism, the problem of economic laws, the method of political economy, the relations between political economy and praxiology and, finally, the social conditioning and social significance of economic science. Volume II will treat of the general theory of reproduction and accumulation, investment and economic growth, of commodity production and the law of value, the formation, distribution and disposal of the economic surplus in various socio-economic systems. Volume III will be devoted to a detailed analysis of the mechanism of the capitalist and socialist systems, including problems of their mutual interaction in the present phase of history. The first volume appeared in 1959 and immediately drew great attention both in Poland and elsewhere in the world. There are translations into French, English, Italian and Portuguese. Translations into Czech, German, Spanish and Japanese are being prepared. Volume II is well advanced although the many other activities of the author have caused some delay.

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[11] This faculty was created in 1953.

Lange's work is a systematic monograph on the subject. He intended to write such a work quite some time ago and made an attempt to realize this intention immediately after writing *Price Flexibility*. The paper entitled "The Scope and Method of Economics" was to have been published in 1945 in the *Review of Economic Studies*, as the first chapter of a systematic treatise. This paper was devoted to a study of "economic actions" combined with "the influence of social organization and institutions upon the ways and methods of administration of scarce resources". This intention was not realized at that time, largely because of the interruption in Lange's scientific work in the years following the war, caused by his socio-political activities. The problem was taken up again at the beginning of 1957—obviously not as a simple continuation of the book begun earlier, but as a modern synthesis based on a considerably richer groundwork of historical experience and growth of theory. Fragments already published[12] show that this is Lange's most ambitious scientific undertaking and, as the first complete synthesis of economic theory in Marxist literature of the twentieth century, has a chance to become an important scientific event.

Among the problems presented in the first volume, which was the subject of numerous reviews, scientific conferences and seminars, chief interest centred on the following two:

1. The classification of economic laws, and in particular the concept of technical and balance laws of production and the argument that (in agreement with Marxist tradition) they are—together with the laws of human behaviour and the laws of the interplay of human actions—a subject of interest of political economy.

2. The analysis of the relation between political economy and praxiology; the demonstration that the principle of economic rationale (the so-called economic principle) does not have an ahistorical character but that its emergence and contents are determined by social and institutional conditions; and the demonstration that the praxiological aspect of economic activity also belongs to the domain of political economy[13].

Lange's attitude to these two questions at first aroused opposition and even bitter objections in some quarters. By now, however, it is quite generally accepted. The problem at present under discussion is not basically the doubt as to whether praxiological problems of economic rationality and the study of the technical and balance laws of production are a part of political economy or not. The discussion rather concerns the proportion of research which should be devoted to these problems and of research on the problems directly connecting political economy with the theory of historical materialism (the role of classes and social strata, forms of ownership, self-government in industry, the role of the state, etc.). In the first volume of *Political Economy*, the sphere and need for research into these latter problems

[12] Their valuable supplement in Lange's article *Political Economy* is to be found in the third volume of the *Great Universal Encyclopedia*, containing a concise presentation of Lange's views on the subject, the method and main development trends of this science.

were even more strongly and clearly emphasized. It is a quite different question that the forecast of the synthetic presentation of both technicoproduction and praxiological problems has a solid background in many of Lange's previously mentioned works written in recent years, while it is considerably more difficult to point to studies on socio-economic problems which are to be the subject of synthesis. This, by the way, reflects the general state of Polish (and also Soviet and other) theoretical literature devoted to problems of socialist economy.

Thus in the course of a few years Professor Lange has written and published six books treating of quite different subjects.

However, this is not the whole of Professor Lange's scientific output. Besides the books mentioned above he wrote several other publications, among others more than ten important shorter papers and a two-part mimeographed course of lectures on the theory of economic growth; he also gave many public lectures during his visits abroad.

In India he published the book *Essays on Economic Planning* (1959). One should not overlook his lectures (or series of lectures) in London, Oxford, Cambridge, Moscow, Leningrad, Tbilisi, Belgrade, Calcutta, Bagdad, Colombo, Mexico, Rio de Janeiro, Rome and in other Italian cities, Vienna, the Hague, Rotterdam, Paris, New York, Chicago and Boston.

Simultaneously, Professor Lange has been engaged in very intensive public activity. He was strongly engaged in the struggle for the new shape of socialism. His activity on behalf of socialist democratization is closely connected with his other aspiration: to found economic planning and management on scientific grounds. From this point of view it is important to mention the second national conference of Polish economists (June 1956). In the course of this conference Professor Lange presented a lecture on *Current Problems of Economic Sciences in Poland* and gave a very strong closing speech in which he denounced the degeneration of social sciences due to the dogmatic approach to Marxism under Stalin's system of government and economic management. (The lecture was later translated and published in Italian.)

Soon after this Oskar Lange presented (in the weekly review *Życie Gospodarcze*) a detailed programme of current economic reform. The Warsaw Commission of Political Parties and Social Organizations published later his booklet *The Chief Tasks in the Field of Economic Policy.* In the years 1956–1958 he wrote several other publications whose titles show clearly the main problems of that time: *Socialist Democratization, How Do I Conceive the Polish Economic Model?, The Construction of a New Economic Model Must be Based on the Dynamic Activity of the Working Class and of the Socialist Intellectuals* (there is also an Italian translation of this)

[13] The problem of historical materialism aroused the interest of sociologists. Professor J. Hochfeld, *Studies on the Marxist Theory of Society* (Studia o marksowskiej teorii społeczeństwa), Warsaw 1963.

Some Problems of the Polish Road to Socialism (English, French, Spanish and German translations), *The Role of the Cooperative Movement in the Building of Socialism.*

During the years 1957–1962 Lange held the post of chairman of the Economic Council. He was co-author of the well-known *Theses of the Economic Council Referring to Some Proposed Directions of Changes in the Economic Model* (1957). Meantime he was also actively working in the field of the theory of political economy. He wrote the essays *Political Economy of Socialism* 1958 (there are translations into English, Spanish, Italian, Serbo-Croatian, Japanese) and the *Basic Problems of the Period of Construction of Socialism*, 1958 (there are translations into English, Italian, Japanese and Spanish).

Quite an important place in Lange's scientific production is occupied by problems of the countries of the so-called Third World. On the invitation of the governments of India and Ceylon he participated in the work on drafting the economic plans of these countries. With the same purpose he was invited by the planning commissions of the United Arab Republic and of Iraq[14]. Besides his practical advisory activity Professor Lange was interested also in theoretical generalizations of the problem of economic underdevelopment. It is especially worthwhile to mention his publication *Why Capitalism Cannot Solve the Problems of Underdeveloped Countries*, 1957. A broader exposition of his ideas on this subject can be found in his lectures delivered in Cairo at the invitation of the Central Bank of Egypt (*Economic Development, Planning and International Cooperation*, Cairo 1961, New York 1963, Greek translation 1962, Spanish translation (in Argentina) 1964).

A large part of his scientific production is included in the book *Economic and Social Writings 1930–1960* published in 1961 (an Italian and an English translation are being prepared). A selection of his publications *Entwicklungstendenzen der modernen Wirtschaft und Gesellschaft* has been published in Vienna in 1964.

Professor Oskar Lange is member of the Polish Academy of Sciences (since 1952); he is also Fellow of the Econometric Society (since 1939), Fellow of the Institute of Social Studies in The Hague (since 1962), honorary member of the Royal Statistical Society (since 1964), member of the International Statistical Institute (since 1955) and doctor *honoris causa* of the university of Dijon, France (1962).

written by
TADEUSZ KOWALIK

[14] Professor Lange was invited to Iraq twice but just before he was to go there for the second time the government of General Kassem was overthrown.

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ECONOMICS OF TWO WORLDS

THE upsurge of interest in mathematical economics and econometrics, and the considerable effort lately devoted to their furtherance in the socialist countries, have evoked strong reactions from both Marxist and bourgeois economists. Perhaps the most remarkable thing about the two sets of reactions is that they both tend to interpret this development in substantially the same way: the socialist camp's "conversion" to the mathematical method in economic theory and research is looked upon as a major concession or even as a surrender of Marxian economics to its bourgeois adversary. This appraisal seems to us to be mistaken. It undialectically treats economics as a discipline apart from the rest of social science and somehow concerned with an undifferentiated and unhistorical reality. And yet, as Engels correctly observed, "political economy is... essentially a *historical* science [and] cannot be the same for all countries and for all historical epochs"[1].

I

One of the principal results of Marx's scientific labors was the demonstration that capitalism, after constituting a tremendous advance in the growth of the forces of production and in the evolution of a more rational society, turns into its own opposite and becomes an irrational and retrograde system. This transformation is a protracted and complex process. There is no one date at which the changeover can be thought of as having occurred, nor is there any particular aspect of capitalist development that can be looked upon as its unambiguous indicator. Whether the historical phase has been reached in which the system begins its qualitative change can only be established by considering it as a whole, in its manifold manifestations and in its global impact. Concentration on one brief time period, or on one country or geographical region, or on one set of quantitative measurements or qualitative observations, is likely to produce misleading conclusions and distorted judgments. Such, for example, were the breakdown theories of writers like Rosa Luxemburg and Henryk Grossman which depicted the end of capitalism not as a lengthy process involving a world-wide socio-economic order but rather as a single catastrophic event like an earthquake. And at the opposite extreme, but stemming from the same root, are the theories of capitalist stabilization recurrently put forward

[1] *Anti-Dühring*, Part II, Chapter 1.

by Social Democratic writers who are as ready to generalize from the recent past of their own countries as they are to ignore the fact that capitalism is a global system.

It is one of the greatest strengths of Leninism that it has consistently avoided both of these errors. But this is not all. There is another fundamental tenet of Leninism which sharply differentiates it from other contemporary semi-Marxian or pseudo-Marxian currents of thought—that we, here and now, are actually living in the age of transition, the period in which capitalism is going through the process of decomposition, retreat, and displacement by a new, more rational economic and social order. The validity of this view is in no way refuted by the undoubted fact that there exist at the present time a number of capitalist countries in which the forces of production are expanding at a fairly rapid rate—for example, Germany, Italy, France, and Japan. For this expansion proves nothing in itself; it must be considered in conjunction with much else: with the factors that have brought it about (the vast destruction caused by, and the exceptional circumstances following, the Second World War); with the stagnation in the most advanced capitalist countries (the United States and Great Britain); with the condition of the vast majority of the people in the capitalist world who, far from moving forward on the road to economic and social development, are sliding back, either in relation to advanced countries, as is the case nearly everywhere in the underdeveloped areas, or absolutely as in most; and, last but not least, with the crucially important fact that a large number of societies are engaged in the construction of socialism. What is decisive for the validity of the Leninist thesis is that, as a world order, capitalism has ceased to be an instrumentality of advancement and has turned instead into the principal obstacle to the development of a more rationally integrated, more productive, less misery- and disease-ridden international society.

Likewise, if we seek to determine the role played in our time by the capitalist system within any particular country, it is futile to use as a yardstick the state of individual units of production or even of entire branches of the economy. There are many components of a capitalist economy—even a very undeveloped one—which become progressively more rational, more efficient, and more productive. Many a giant corporation has grown into a scientifically organized, superbly managed, and efficiently operated center of production; and many of the technical. functions of the capitalist economy, be they in the field of finance and insurance or of retail distribution and transportation, have come to be discharged effectively and efficiently.

But just as it would be a fatal mistake to judge the state of an underdeveloped country by the quality and efficiency of its tourist hotels, gambling casinos, or sometimes even railroads, so it is impossible to infer anything about the total rationality of a system from whatever level of rationality may have been reached in its individual parts. For it is an outstanding characteristic of capitalism, indeed one of its distinguishing features, that the rationalization of its parts which it undoubtedly promotes is not accompanied by an increase in the rationality of the economic and social order as a whole. As Marx noted in a different connection, "the capitalist order of production is generally, despite all its niggardliness, thoroughly wasteful as far as the human material is concerned, just as, conversely, owing to its method of distribution of products through commerce and its manner of competition, it is very wasteful with regard to its material means, and loses for society what it gains for the individual capitalist"[2].

It might be objected that the very fact that Marx observed (rather than predicted) this phenomenon more than a hundred years ago shows that there is nothing new about it and that it can therefore hardly be regarded as specific to the current epoch of the general crisis of capitalism. Actually, what this fact illustrates is merely the continuity of the process which transforms capitalism and turns it from a promoter into an inhibitor of progress. This continuity exists and is important, but it should not be allowed to obscure the qualitative change which has set in during the century since Marx wrote *Capital.* When the level of development was so low that universal scarcity was still inevitable, and capitalism was, however wastefully and anarchically, creating the conditions for a mighty upsurge in the forces of production, the contrast between the partial rationality of the enterprise and the total irrationality of the system could still be treated as one of the necessary costs of progress. Compare this with the situation today when science and technology have advanced to the point that scarcity and the human suffering resulting from it could easily be done away within the lifetime of one generation—if only the roadblocks put in the way of the rational utilization of available resources and knowledge by a retrograde capitalist system could be removed. In the earlier period, when scarcity was still inevitable, the critical reaction to the discrepancy between the mode of functioning of the system as a whole and that of its parts was, and indeed could only be, a feeling of outrage at the *injustice* of capitalism. It is only in relatively recent times when plenty is within easy reach and its attainment is obviously prevented by the continued dominance of capitalism that the *irrationality* of the system moves into the forefront of critical thought.

Nor is this all. The widening gap between the rationality of the parts and the irrationality of the whole, between the senselessness or even destructiveness of the purpose to which human activity is devoted and the efficiency of that activity itself, results of necessity in a distorted development of the forces of production and in particular of the most important force of production of all: man himself. To quote Marx again: "More than any other mode of production, [capitalism] squanders human lives, or living labor, and not only blood and flesh, but also nerve and brain. Indeed it is only through the most enormous waste of the individual development that the development of mankind is at all preserved and maintained in the epoch of history immediately preceding the conscious reorganization of society"[3]. The

[2] *Capital*, Vol. III, Chapter 5.

[3] *Ibid.*

tremendous expansion and refinement of resources devoted to the augmentation of killing power; the direction of the highest available skills to such fields as law, advertising, salesmanship, and financial manipulation; the shunting of vast amounts of energy and talent from socially vital tasks to what happens to be profitable in a shifting market—all this bears eloquent testimony to the far-reaching smothering of partial rationality under the deadweight of total irrationality.

II

It is against this background of ever-growing tensions—within the separate parts of the system and between them and the whole—that it is necessary to consider the development of bourgeois economics in the current epoch. Reflecting these tensions, current work in bourgeois economics can be divided into two parts. The first, often referred to nowadays as microeconomics, deals with the parts; the second, or macroeconomics, deals with the whole. In both, we can see clearly how developing contradictions in the economy itself call forth corresponding contradictions in the realm of theory.

It seems safe to say that most current work in microeconomics aims at exploring the conditions for raising the efficiency and improving the performance of the capitalist enterprise. Its specific content is therefore determined by the needs of the capitalist enterprise and by the standards of efficiency and performance under which it operates. These in turn depend on the nature of the enterprise itself, which is today the giant monopolistic (or oligopolistic) corporation. These economic units have evolved everywhere in the capitalist world during the past seven or eight decades and now occupy a dominant position in all of the more advanced capitalist countries. The problems engendered by this kind of enterprise differ markedly from those associated with its predecessor in the era of competitive capitalism.

At the risk of oversimplification, these differences can be described as follows. The competitive firm was small relative to the size of the industry of which it was a member. It bought its factors of production and sold its standardized product at prices over which it had no control. In these circumstances, it could strive for maximum profits only by improving its techniques or its organization—in other words, by actions which were necessarily confined to its own production process. Maximum profits and optimum methods of production thus went together[4]. The

[4] Needless to say, there is no implication that the attainment of a production optimum by the individual firm means a socially optimal utilization of society's productive resources. For one thing, the firm's optimum depends on the relative prices of the various inputs, including labor. But there is no reason to suppose that wages under capitalism bear any relation to what is socially desirable—quite the contrary, especially in the earlier stages of capitalist development when forced migration from the countryside, dire poverty, and abysmal ignorance conspired to depress wages often below even a bare subsistence minimum. And for another thing, the kinds and quantities of commodities produced depend, even under ideal competitive conditions, on the distribution of income which is affected not only by the factors just noted but also by the pattern of ownership of the means of production.

ideal competitive capitalist has therefore been traditionally conceived of as an inventor and organizer, always interested in making a better product at lower costs. Insofar as he studied at all, the subjects which attracted him were technological and managerial in nature—engineering and what the Germans call *Betriebswirtschaftslehre.* He could expect little benefit from studying the outside world, except for such knowledge (very limited at the time) which it might provide him about general business fluctuations and the ups and downs in the market for his own product. Within the limitations imposed upon him by the relatively narrow scope of his operations and by the anarchy of social production as a whole, the competitive capitalist was induced to promote partial rationality both by the hope of profit and by the threat of extinction if he should fall too far behind his rivals.

When it comes to the monopolistic corporation of today, the situation is very different. The firm is large not only in terms of the industry to which it may be considered to belong[5], but also in terms of the nation's or even the world's economy; what it produces is often strongly identified with its name so that, in the eyes of buyers, there may be no close substitutes available. Commanding a significant degree of monopoly power, the giant corporation confronts the prices at which it sells its output and buys its inputs not as objective market data but as magnitudes which depend on its own operations and on those of a small number of other similarly situated concerns. As a vast enterprise not necessarily identified with any particular group of individuals but rather thought of by its owners and managers as an everlasting entity, it seeks to maximize the flow of profits over a much longer planning horizon that the small competitive capitalist can afford to take account of. Its drive for maximum attainable profits under such circumstances no longer involves merely finding the best ways to reduce the costs of production of a given commodity or group of commodities. It has to keep under continuous review the problem of what commodities to produce—their physical attributes, their outward appearance, brand names, etc. Durability and quality have to be determined in the light of the firm's other lines of production and traditional practices, as well as of the behavior of other suppliers of related or possibly related products. In arriving at decisions, it is necessary to weigh advertising and other marketing costs; and in fixing the quantities of the various commodities to be produced as well as the prices to be charged, the shape of all relevant demand and marginal revenue curves has to be explored and taken into account. The outside world which the competitive capitalist has to take for granted not only directly influences the monopolistic corporation's production process but is subject to deliberate manipulation on its part.

It can be readily seen that the identification of the firm's path to maximum profits when all these factors—plus many others relating to taxes, tariffs, foreign

[5] Many, if not most, giant corporations form parts of different industries which are not even necessarily related.

exchange rates, etc.[6]—are duly considered calls for a calculatory effort that is vastly more complex than that required by a small competitive business. The commonsense prescriptions of the intuitive entrepreneur of old, the time-tested devices made familiar in *Betriebswirtschaftslehre* are no longer capable of coping with the task in hand. Recourse must be had to a more powerful apparatus of what has come to be called "decision making"; a new "management science" using mathematical techniques able to encompass a large number of variables (and constraints) has to be developed. It is therefore by no means accidental or due solely to the immanent evolution of pure thought that advanced mathematical studies of behavior patterns, the exploration of the properties of more complex constellations of uncertainty, the development of mathematical techniques of programming, and the perfection of techniques of statistical measurement have moved to the center of bourgeois microeconomic thought.

It must not be thought, however, that the development of all these sophisticated and often genuinely scientific methods for guiding the behavior of a monopolistic or oligopolistic corporation has anything in common with a search for the optimal allocation and utilization of society's productive resources, or for that matter even with the partial rationality standards which were relevant to the process of commodity production under a regime of competitive enterprise. The nature and volume of output, the technology employed, the investment undertaken, the raw materials used, the prices charged—none of these, no matter how rational the methods by which they were arrived at, can be thought of as corresponding to the needs of society as a whole or even as reflecting the growth of the forces of production in one of its component parts. It is as if a superbly skillful typist operating a perfectly faultless electric typewriter were set to work, enjoined to avoid a single typographical error because one hundred typewritten pages proofread and free of mistakes have to be ready for delivery promptly at 4 p.m.—to the janitor for removal to the dump.

III

What applies to the parts of the system applies with equal if not greater force to the whole. There the prevailing irrationality is even more drastic and obvious than that obtaining within the confines of the individual enterprise.

At a sufficiently high level of abstraction, the conditions for a rational economic organization are almost self-evident. Given a certain input of social labor and an output of goods and services corresponding to the degree of development of the forces of production and the productivity of labor, society can either consume or accumulate what it produces. If we assume a closed system, these two categories—consumption and accumulation—obviously exhaust society's total current output.

[6] It should be noted in this connection that the most important capitalist corporations today typically operate on a world-wide scale. See the essay by the present authors, *Notes on the Theory of Imperialism*, in *Problems of Economic Dynamics and Planning. Essays in honour of Michal Kalecki.*

And if we abstract from the possibility of consuming what was produced in an earlier period, it is clear that society must consume and accumulate exactly what it produces, neither more nor less. Should aggregate output exceed society's combined desire to consume and accumulate, labor input must be curtailed and the amount of leisure correspondingly increased. If aggregate output falls short of society's desire to consume and to accumulate, labor input has to be increased (if this is possible), or the productivity of labor has to be raised (if this is feasible). If neither alternative is open, a diversion of resources from consumption to investment with a view to augmenting society's future productivity is the only other possible course.

Just as it is necessary to allocate productive resources (human labor, living and congealed) to the satisfaction of current consumption and accumulation needs, so it is indispensable to decide on the specific apportionment of total effort to the production of different items entering into consumption and investment respectively. Marx put the matter concisely: "Given social production, the allocation of time naturally remains of the essence. The less time society requires to produce wheat, cattle, etc., the more time it gains for other production, material or intellectual. Just as in the case of a single individual, the all-sidedness of society's development, of its enjoyment, and of its activity depends on the saving of time. The economy of time, this is what all economy dissolves itself into—in the last analysis. Society must purposefully apportion its time to realize an output corresponding to its total needs, just as an individual must properly apportion his time to acquire knowledge in appropriate proportions or to satisfy different demands on his energy. Economy of time as well as planned allocation of working time to different branches of production thus constitutes the first economic law under conditions of social production"[7].

To be sure, this statement of the "first economic law" leaves open a number of important questions which need to be answered if the rationality of society's economic organization is to be assured. To mention only two: First, how are the needs and preferences of society's members for various possible combinations of goods and services (including leisure) to be ascertained? The age-old problem of the relation of the individual to society is obviously not automatically solved by the overall rationality of the social organization. The second question concerns the distribution of social income: equal shares for all? To each according to his contribution to social output? Or to each according to his needs? Although the problem will lose much of its present urgency when the development and organization of the forces of production have advanced to the point where scarcity has been overcome, and when the new society has succeeded in radically restructuring human wants, nevertheless for a considerable time to come it is bound to remain an important part of the task of rationally planning social existence. From our

[7] *Grundrisse der Kritik der Politischen Oekonomie* (Rohentwurf) 1857–1858 Berlin 1953, p. 89.

present point of view, the thing that needs to be stressed is that it is only when the "first economic law" has been consciously made the organizational principle of society that the rational solution of other problems moves into the realm of the feasible. It is only at this stage that many of the now known technical devices will be able to serve their proper purposes: referenda and opinion polls, democratic elections, and genuine free choice by individuals.

Comparing the elementary principles of rational economic organization with the *modus operandi* of the capitalist system puts into sharp relief the irrationality of the latter. Under capitalism neither the total amount of labor performed nor the output produced is determined by the existing level of productivity and by society's wants and needs, nor are these variables influenced by any social scale of preferences (however arrived at) with regard to labor and leisure. It is one of the most striking aspects of the irrationality of the capitalist process that all these things, which ought to be so closely intermeshed, are in fact governed by the separate, disconnected, and often conflicting forces which generate both the aggregate and the composition of effective demand. Thus the distribution of income, largely determined by the pattern of ownership of means of production, accounts in the main for both aggregate demand for consumer goods and aggregate individual saving. The profit-maximization policies of monopolistic corporations decide the share of social income going into surplus. The same profit objectives call forth investment outlays the magnitude of which is unrelated to the size of the extracted surplus, the amount of individual saving, or society's need for investment. Accordingly, fluctuations in the amount of work performed (regular employment, part-time employment, over-time work) are in no way governed by changes in society's desire or need for more or less output and do not take place according to any rational scheme intended to serve the best interests of society as a whole (such as, e.g., an across-the-board lengthening or shortening of the work week, advancement or postponement of the retirement age, shortening or lengthening of the time devoted to education, and so forth). The adjustment of the aggregate amount of social labor to changes in market demand takes place rather through changes in the volume of unemployment, which affects the members of the capitalist class and other privileged strata in society hardly at all but imposes untold suffering, insecurity, and degradation on the underlying population which depends for its livelihood solely on the sale of its labor power[8].

The irrationality of the process which determines the level of employment

[8] In at least one half of the seventeen years of unprecedented prosperity following the Second World War in the United States, government-reported unemployment was in the neighborhood of 5 million, and according to trade-union sources at least 6 million. The corresponding loss of aggregate output during the postwar period has been estimated at a minimum of $500 billion; for the years 1958 to 1962 alone, the cumulative excess of potential over actual output has been calculated by the President's Council of Economic Advisers at $170 billion. (*The Economic Report of the President*, January 1963, p. 28.)

and the volume of output is matched by the irrationality of that which determines the composition and distribution of what is produced. This is not the place to present the amply available evidence[9]; suffice it to point out that while poverty and severe privation affect more than one third of the population of the United States, "in 1960, the highest five percent of all consumer units received about 20 percent of total disposable income, or very much more than the $15^1/_2$ percent of income received by the lowest 40 percent of all consumer units"[10]. At the same time, the resources at the disposal of the country's entire educational establishment (public and private) are smaller than what is spent on the sales effort (advertising, direct selling, automobile model changes, etc., etc.).

This situation is necessarily reflected in bourgeois economics. As long as the productivity of human labor was so low as to render inevitable a general state of scarcity, it was possible to treat poverty and privation on one hand and wealth and luxury on the other as Hegel's "cunning of reason". Necessitating hard work on the part of the poor and providing the rich with the wherewithal and incentives to invest, the existing economic and social order could be regarded as history's devious but highly successful stratagem for the attainment of general progress. The apparent irrationality of the capitalist system could be depicted as merely a *façade* hiding the profound rationality of the process as a whole. Under these circumstances, it was seen as the task of economics to teach the uninstructed man in the street to believe in the beneficial design of the structure hidden behind the uninviting appearance of the scaffolding.

After the First World War, and in particular in the years of and following the Great Depression, this traditional justification of the increasingly manifest irrationality of the capitalist order became less and less plausible. Most of those who continue to defend the system no longer do so on grounds of rationality but instead rely on appeals to tradition, "human nature", religion, "true" versus "false" reason, and so on[11]. Others rest their case on the assertion that only capitalism guarantees individual freedom—defining the latter so as to make it synonymous with the preservation of existing inequality and privileges, which, in turn, are "explained" as emanations of the God-given order of nature[12].

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[9] Some of it is assembled in our forthcoming book on American capitalism and appeared partly in *Monthly Review* (July–August, 1962). Much pertinent material can be found in Michael Harrington, *The Other America: Poverty in the United States*, New York 1962; Gabriel Kolko, *Wealth and Power in America*, New York 1962; and numerous other monographs.

[10] Conference on Economic Progress, *Poverty and Deprivation in the United States: The Plight of Two-Fifths of a Nation*, Washington, D. C. 1962, p. 4.

[11] Cf., e.g., Friedrich A. Hayek, *Individualism and Economic Order*, London 1949, in particular the first essay, *Individualism: True and False*.

[12] Thus Professor Milton Friedman attributes the existing distribution of wealth and income to a rule of chance such as governs a lottery, and by appeal to highly questionable eugenics supposedly responsible for differences in individual endowments. See his *Capitalism and Freedom*, Chicago 1962, pp. 163 ff.

Dominant economic thought, however, has taken a different course. It has accepted, however grudgingly and reluctantly, the principal tenet of the Marxian critique of the capitalist order: its anarchy and deeply rooted irrationality. At the same time, bourgeois economics refuses to draw the logical conclusions from that irrefutable finding[13]. The strategy adopted has been rather to try to steal the Marxian thunder by devising schemes to make the system work without interfering with the basic features of capitalism: private enterprise and production for maximum profits. It is this strategy that has inspired the bulk of thought and research in the area of macroeconomics, and it is in the requirements of this strategy that one finds much of the reason for the emergence and development of advanced mathematical techniques of theoretical reasoning and statistical work.

The characteristic focus of this intellectual effort is the elaboration and refinement of one of Marx's favorite analytic devices: the bisectoral model of simple and expanded reproduction[14]. In Marx's work, to be sure, this model had no independent standing. Its purpose was rather to illustrate the anarchy and irrationality of the capitalist mode of production. By the specification of the conditions necessary for the harmonious expansion of the economy he sought to demonstrate the stringency of the requirements that would have to be fulfilled[15], and tried to show how small was the likelihood of such a harmony being achieved under capitalism. This, it cannot be overemphasized, is the very opposite of the use to which Marx's model has been put by bourgeois writers who, following in the footsteps of Tugan-Baranovsky, see in it a proof of the capacity of the capitalist system to expand harmoniously *ad infinitum.*

For such harmony to prevail and for the economy to expand on the basis of a full utilization of available human and material resources, the strategic variables determining the mode of functioning of the system as a whole would have to be controlled. Since the classical and neo-classical view—that the necessary controls are efficiently, albeit indirectly, exercised by the price mechanism and the rate of interest—has been exploded, the question of the nature and availability of alterna-

[13] The following two statements by Keynes are highly characteristic of this attitude: "When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done." And "a somewhat comprehensive socialization of investment will prove the only means of securing an approximation to full employment; *though this need not exclude all manner of compromises and of devices by which public authority will co-operate with private initiative.*" *The General Theory of Employment Interest and Money,* New York 1936, pp. 159, 378 (italics added).

[14] It is amusing that the parentage of contemporary model building in bourgeois economics is generally treated as strictly "classified information," with Walras (whose entire system has very little to do with the aggregative method employed) being substituted for Marx as a more respectable ancestor.

[15] In fact, as has emerged from subsequent research, the requirements formulated by Marx were not even sufficient and need to be supplemented both by disaggregation of the two sectors which underlay his model as well as by a specification of technological relations.

tive controls within the framework of the advanced capitalist system has become the central issue facing bourgeois economics. So far, however, it has carefully avoided facing up to this issue and instead has sought to deal with the problem by assuming it away. Either the relevant magnitudes and relations (volume of investment, proportion of income consumed, rate of technological advance, etc.) are assumed to turn out correctly as a result of the working of the competitive mechanism—although the incapacity of the mechanism to produce such a result has been amply proven; or else these variables are treated as though they were determined by a social plan—although the absence, and, as we believe, the impossibility, of such a plan under capitalism is one of the system's outstanding characteristics[16]. Much ingenuity has been devoted to elaborating these growth models, but in view of their failure to provide any concrete indications of the processes which determine the relevant magnitudes and functional relations, the significance of the results achieved is, to say the least, somewhat dubious.

This is not to deny that to the extent to which they contribute to the clarification of the requirements for the maintenance of correct proportions and balanced growth in *any* economy based upon division of labor and involving technological change, models of this kind are essential to the furtherance of the theory of economic planning. By leading to improved knowledge of the variables and relations that need to be controlled to assure a rational utilization of resources, they not only can help to indicate the nature of the informational material which is essential to the planning authority but also to identify the strategic leverages that can be successfully employed for the attainment of the plan's goals. Where functional relations are concerned, they may direct attention to the need to study behavior patterns which were previously neglected. In these ways, they can enrich the toolbox needed for the rational, socialist administration of society's resources.

But the situation appears in quite a different light when these constructs are viewed as elements of a theory of capitalist reality. We have then to ask which aspects of that reality are taken into account and which are abstracted from. If, as we believe to be the case, what is abstracted from includes essential characteristics of capitalism, the models involved not only fail to advance our understanding of the working principles of the system but actually help to obscure them. For by postulating the existence of adequate direct or indirect controls over the behavior of key variables when in fact none exist; by assuming the absence of monopoly when in fact it is ubiquitous and far-reaching in its effects; by supposing full employment in the long run when in fact it is rather an exception than a rule—in all these ways, the currently fashionable models abstract not from secondary features of the process that they seek to explain but from its most essential characteristics. Thus they substitute for the capitalist economy an imaginary rational system which

[16] The settlement of all the basic problems stemming from the irrationality of the capitalist process by means of suitable assumptions is well illustrated in Nicholas Kaldor and James A. Mirrlees, "A New Model of Economic Growth", *The Review of Economic Studies*, Vol. XXIX, No. 3.