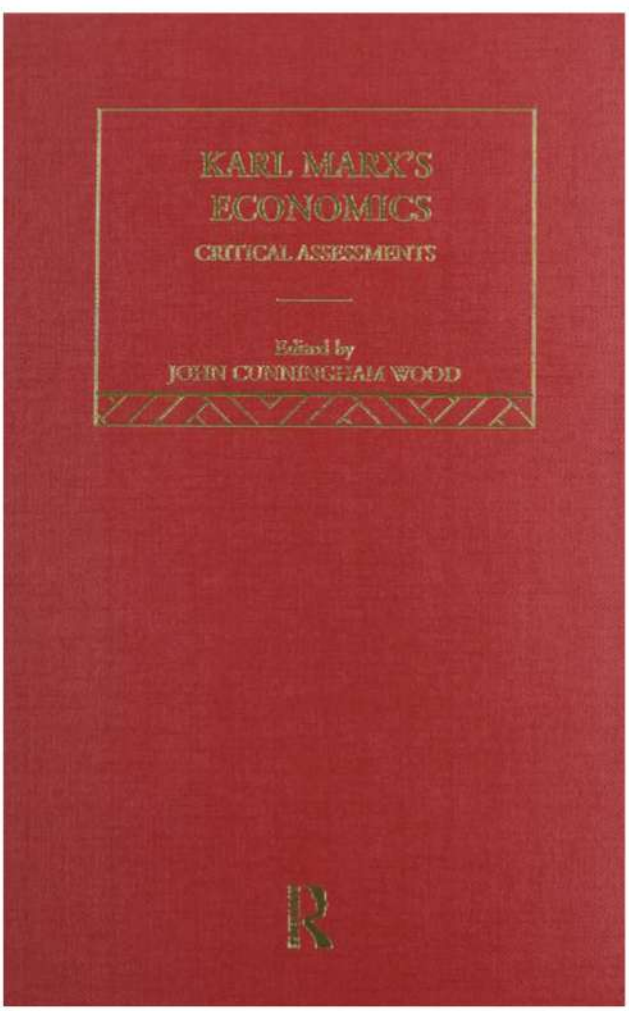
KARL MARX'S ECONOMICS
Critical Assessments

Edited by John Cunningham Wood

VOLUME III

FRAGMENTS



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SECTION THREE: MARXIAN ECONOMIC ANALYSIS

Commentary

R.L. Meek's 'Some Notes on the "Transformation Problem"' attempts to achieve three things. First, the article examines Marx's own discussion of the transformation of 'values into prices of production', dealing in particular with the meaning which ought properly to be ascribed to Marx's statement that 'total values equals total prices of production'. Secondly, Meek reviews two solutions of the 'transformation problem' which have been proposed and suggests an alternative method of solution, which he believes illustrates more effectively than the others the essential point which Marx was trying to make. Thirdly, Meek argues that an important gap in Marx's argument still remains, even after the 'transformation problem' has been solved.

B. Shoul's 'Karl Marx and Say's Law' attempts to show that Marx's position on Say's law was not a self-contradictory one, as often alleged. Furthermore, she argues that although Marx's position was a complicated one, it could be systematised from an examination of his theoretical structures, some of which assumed certain aspects of Say's Law and some of which did not. After her detailed analysis, Shoul concludes that Marx rejected Say's Law in so far as it generalised both the essential nature of the capitalist system and the mechanism of its equilibrium, but he accepted Say's Law merely as a formal statement of the logic of the economic circular flow, and also used it in the initial development of his theory of 'breakdown'. Thus, Shoul argues that Marx rejected the premises and implications of Say's Law as concealing the essential nature of the capitalist system. Yet, at the same time, he built an economic model himself in which crises and cycles would occur despite the operation of Say's Law, in spite of the assumptions of equilibrium between supply and demand.

T. Sowell's 'Marx's "Increasing Misery" Doctrine' shows that Marx was fully aware of Ricardo's peculiar conception of the value of wages and that he explicitly endorsed it. Sowell explores the meaning of the value of wages in Ricardian-Marxian terms, especially the meaning of a rise or a fall of wages in such terms. Accordingly, he considers the meaning of Marxian 'subsistence' and its relevance, some of the arguments used to support the

made but according to Steedman they are simplifications of a type sometimes made by Marx himself.

P.A. Samuelson's celebrated paper 'Understanding the Marxian Notion of Exploitation: A Summary of the So-Called Transformation Problem Between Marxian Values and Competitive Prices' provides a review of Marx's famous transformation problem. Part one of the article provides the setting to the controversy and discusses the tools required for its understanding. Part two presents a careful and detailed statement of the issues involved in the Marxian theory of exploitation. The final section of Samuelson's article reviews and elucidates the various analytical issues raised by the different contributions to the literature.

A.P. Lerner's 'A Note on "Understanding the Marxian Notion of Exploitation"' is critical of Samuelson's June 1971 article in which, so Lerner claims, Samuelson made unwarranted concessions to the 'overthoroughly' demolished labour theory of value. To Lerner, such conclusions impinged on the honour of scientific inquiry while they only clouded the significance of the essential insight. Lerner argues that the labour theory of value, diluted or undiluted, while of interest for historians of economic thought, has no place in contemporary economic analysis. He also notes that a distinction needs to be made between exploitation and surplus.

In his reply, 'The Economics of Marx: An Ecumenical Reply', P.A. Samuelson pleads guilty to having dealt with matters of interest to historians of economic thought, though he also notes that a range of issues raised in his paper have been the subject of debates and analysis by numerous economists. He then goes on to discuss, in considerable detail, laws of motion of values and prices and laws of the increasing rate of profit.

In 'Is Marxian Growth Crisis-Ridden?', S. Maital applies a formalised version to chapters 20 and 21 of *Capital* in order to probe the existence of crises and their frequency and magnitude in the context of Marxian growth. After developing his model, Maital concludes that crises depend on the interaction of three factors: the rate of change of technology and accumulation, the rapidity with which the economy adjusts to new technology and higher rates of accumulation, and the level of unemployment at which a crisis erupts.

D.J. Harris's 'On Marx's Scheme of Reproduction and Accumulation' examines the analytical structure of Marx's scheme of reproduction in order to clarify, after some restatement, the nature of the theoretical solution it offers to some of the central issues raised in recent theories of growth and distribution. Harris argues that of particular interest are questions concerning the possibility of steady growth in a capitalist economy and the determination of the rate of profits. The paper shows that for an economy in a state of reproduction, the scheme provides an internally consistent theory of the profit rate when the rate of exploitation is taken as given. The associated path of accumulation over time, derived under different assumptions concerning investment behaviour, displays possible sources of imbalance, including those found by Harrod.

In 'A Macro Model of the Endogenous Business Cycle in Marxist Ana-

(1) the fact that he does distinguish everyday market prices from the equilibrium production prices;
(2) the disagreement between himself and von Weizsäcker could be exaggerated since he did not discuss Morishima's fourteenth chapter in which there was a discussion of the mathematical interpretation of Marx's own views;
(3) technical comments relating to the wage-profit frontier and the exploitation frontier shift if there is technological improvement and the fact that the balanced growth multipliers are no more than weighted sums of the static multipliers or compound multipliers;
(4) their differences over the interpretation of Marx's simple commodity production.

In 'Marx in the Light of Modern Economic Theory', M. Morishima notes that there are two types of mathematical economists, one who applies existing mathematics to economic problems (the best example is Cournot) and the other who anticipates new mathematical problems within economics.

Morishima takes Marx as the second type of economist and discusses two of his problems: the fundamental Marxian theorem and the transformation problem. In regard to the fundamental Marxian theorem, Morishima proposes a generalisation of the theorem to the effect that it does not need the labour theory of value and hence is independent of any criticisms of that theory. In the final section of his paper, Morishima shows that the transformation problem is formally identical with the Markov chain process transforming the initial position to the ergodic position.

The object of Y. Akyüz's 'A Note on the Marxian Transformation Problem and Income Distribution' is to examine the implications of the transformation problem for a theory of income distribution. He also argues that the paper provides a technological basis with which to formulate the value and price system independently of each other. This is by no means unknown after many recent works on capital theory. He attempts to clear up some ambiguities with regard to the relation between values and prices, surplus value and profits, and, hence between the distributional variables of the two systems.

In 'The Marxian Theory of Value and Heterogeneous Labour: A Critique and Reformulation' S. Bowles and H. Gintis provide an alternative approach to the theory of value and, while they make heterogeneity central to value theory, they assert that their analysis is free of the circularity charged by Böhm-Bawerk, Samuelson, Pareto, Morishima and others. They also show that the traditional propositions relating surplus value to profits hold in the case of heterogeneous labour.

L. Cuyvers' 'A Mathematical Interpretation of Marxian Unproductive Labour' attempts to understand Marx's basic distinction between productive and unproductive labour in terms of matrix algebra — Cuyvers shows that Marx's distinction follows from his dual theory of labour value and use-value.

Cuyvers argues that once this theory is formulated in terms of matrix

qualitatively determinate category of the real wage which is consistent with and necessary to the process of capital accumulation. This is revealed to specify a whole range of possible levels of the real wage, a notion alien to the Ricardian idea of subsistence as equivalent to the equilibrium real wage. Ong then reviews Marx's two theories of the equilibrium real wage as the direct outcome of supply-and-demand in the labour market, and critically examines whether such theories can hold in the system where the wage bargain is settled in terms of an inconvertible-money unit. He also examines the objective basis for Keynes's criticism of the Classical theory of the equilibrium real wage. In the final part of the paper, Ong explores the possibility of a conflict between the subsistence requirements of wage-labour and the market-determined real wage.

Ong concludes that Marx's rejection of the problem of the wage in capitalist society involves two distinct levels of consideration. The first is of a fundamental nature involving the subsistence quality of the real wage. This requires that wage-labour must be able to reproduce itself as free and willing wage-labour for capital, and that capital must be able to undertake commodity production with wage-labour within the bounds of market 'rationality' and without frequent recourse to extra-market coercion, and to attain self-expansion in general. The second level of consideration involves the quantitative determination of the real wage, for the specific purpose of fixing the rate of profit under a given set of production conditions. Ong argues that this particular concept of the equilibrium real wage harks back to the Ricardian 'deductionist' theory of profits, and is logically independent of Marx's notion of subsistence.

U. Krause's 'Heterogeneous Labour and the Fundamental Marxian Theorem' extends the fundamental Marxian theorem (with joint production) from homogeneous to heterogeneous labour. He bases this extension on a new concept called the standard reduction of labour, because of its dual relationship to Sraffa's standard commodity.

S. Hollander's 'Marxian Economics as "General Equilibrium" Theory' endeavours to demonstrate that in Marxian theory, there is no one-way causal dependence of privacy upon distribution such as that often presumed to exist. He presents a brief account of the transformation of values into prices, with special reference to the unit of measurement presumed to apply. Hollander then demonstrates that the rate of surplus value and thus the profit rate are not *data* in the analysis of pricing, but variable, the levels of which are yielded as part of a general equilibrium solution.

Hollander also deals with the *rationale* for Marx's precise procedural exposition in *Capital.* He argues that Marx's hostile reaction in *Capital III* to orthodox theory was in spite of the fact that his analysis was identical to that of the Ricardians. Hollander claims that much of this can be explained by the simultaneous adherence on J.S. Mill's part to Ricardo's theory of profit and to serious abstinence approach which recognised a social function on the part of capitalists. To Hollander, Marx *asserted* but did not *prove* the logical deficiency of Mill's position.

In 'Productive and Unproductive Labor and Marx's Theory of Class', P. Meiksins attempts to clarify some of the confusion surrounding Marx's

D.K. Foley's 'Realization and Accumulation in a Marxian Model of the Circuit of Capital' presents a mathematical model of Marx's circuit of capital. In the model, the elements — the composition of capital, the rate of surplus value, the rate of capitalisation of surplus value, and production, sales and financial time lags — are measurable from the accounts of capitalist firms. Foley solves the model for exponential paths. He shows that a solution with a positive rate of accumulation generally exists. Foley argues that on paths with positive rates of accumulation and positive time lags in the recommittal of realised value to production an expansion of credit is required to permit the sale of commodities. Finally, Foley incorporates a model of demand pull inflation into the framework.

H. Holländer's 'Class Antagonism, Exploitation and the Labour Theory of Value' deals with problems of the theoretical basis for class antagonism in Marxian theory. He identifies the set of value judgements on social relations which constitute the Marxian concept of exploitation, and shows that the Marxian assertion of class antagonism due to the exploitation of workers crucially depends on the assumption that such value judgements are accepted by the workers. Holländer contends that this point is often not explicitly discussed in Marxian theory. Finally, Holländer attempts to prove — contrary to common belief — that the assertion of class antagonism is entirely independent of the labour theory of value.

In the first section of the paper, Holländer presents a simple model economy to which the analysis of Marxian exploitation refers. Section II offers an axiomatisation of the Marxian exploitation concept. In the third section, Holländer demonstrates that the theoretical apparatus developed in sections I and II generate the standard results of Marxian exploitation theory, and discusses the role of some crucial axioms. In section IV, Holländer provides a summary and offers a range of conclusions with respect to Marxian class theory.

M.R. Tool's two part paper, 'Social Value Theory of Marxists: An Instrumentalist Review and Critique' provides a detailed discussion of Marxists' social value theory. In part one, Tool characterises the position of representative Marxists — William Ash, Maurice Cornforth and Bertell Ollman — as that of philosophical and practising normativists who formally reject the positive-normative dichotomy, and who reject as well the familiar forms of both ethical relativism and ethical absolutism. Marxists employ social value theory to guide conduct. A synthetic and integrative formulation of that value theory was, he notes, represented as the 'fulfilment of the Marxist design'.

In part two, Marxist social value theory is critically approved from the perspective of instrumental social value theory reflecting the Veblen-Dewey-Ayres-Foster tradition of instrumental philosophy and neo-institutional economics.

Tool also distinguishes between areas of convergence or of concurrence on the one hand, and areas of divergence or of disagreement on the other hand, between Marxists' social value theory and instrumental value theory held by the neoinstitutionalists.

J.K. Lindsey's 'Classes in Marxist Theory' argues that Resnick and

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Some Notes on the 'Transformation Problem'[1]

R.L. Meek

Source: *Economic Journal*, Vol. 66, May 1956, pp. 94-107.

The debate initiated by Böhm-Bawerk on the alleged "great contradiction" between Volume I and Volume III of Marx's *Capital* has by no means been resolved to the satisfaction of all parties. In one form or another, and with various degrees of sophistication, a number of aspects of the question continue to be hotly disputed to-day. In particular, literature on the so-called "transformation problem" has multiplied considerably since Paul Sweezy drew the attention of English-speaking readers to it in 1946 in his *Theory of Capitalist Development.*[2]

The present article sets out to do three things. First, it examines Marx's own discussion of the transformation of "values" into "prices of production," dealing in particular with the meaning which ought properly to be ascribed to his famous statement that "total values equal total prices of production." Second, it reviews two solutions of the "transformation problem" which have recently been put forward, and suggests an alternative method of solution which (it is submitted) illustrates more effectively than the others the essential point which Marx was trying to make. Third, it says something about an important gap in Marx's argument which still remains after the "transformation problem" has been solved.

"Profit", wrote Marx, "is ... that disguise of surplus-value which must be removed before the real nature of surplus-value can be discovered. In the surplus-value, the relation between capital and labour is laid bare."[3] In Volume I of *Capital,* therefore, Marx presents us with an analysis of surplus value stripped of its disguise. In this first stage of his argument the surplus value produced in each branch of industry is assumed to accrue to the capitalists *in that branch* in the form of a net gain. Now, since the only possible source of this surplus value, according to Marx's account, is the surplus labour performed by the labourers actually employed on the job, it follows that the ratio of net gain to capital must be unequal in cases where the organic composition[4] of the capitals concerned is unequal.[5] In actual fact, however, the rates of profit in the different branches tend towards equality under developed capitalism, and the organic compositions of capital tend if anything towards greater inequality. It is evidently necessary,

determined in accordance with the Volume I analysis. And it would have been possible for him to illustrate this, as I shall show below, by an arithmetical example rather similar in character to that described above.

However, it would be wrong to suggest that Marx simply ignored this more difficult case. On the contrary, his examination of it, although by no means detailed, was sufficiently well organised to be said to constitute that second stage in his argument of which I have spoken above. He begins by dropping the assumption that none of the commodities concerned enters into the production of any of the others. In actual fact, he writes, "the elements of productive capital are, as a rule, bought on the market," so that "the price of production of one line of production passes, with the profit contained in it, over into the cost-price of another line of production." At first sight it might seem as if this would mean that the profit accruing to each capitalist might be counted several times in a calculation such as that which has just been described, but Marx has little difficulty in disposing of this superficial objection. The dropping of the assumption, however, does indeed make one "essential difference," which Marx describes as follows:

> "Aside from the fact that the price of a certain product, for instance the product of capital B, differs from its value, because the surplus-value realized in B may be greater or smaller than the profit of others contained in the product of B, the same fact applies also to those commodities which form the constant part of its capital, and which indirectly, as necessities of life for the labourers, form its variable part. So far as the constant part is concerned, it is itself equal to the cost-price plus surplus-value, which now means cost-price plus profit, and this profit may again be greater or smaller than the surplus-value in whose place it stands. And so far as the variable capital is concerned, it is true that the average daily wage is equal to the values produced by the labourers in the time which they must work in order to produce their necessities of life. But this time is in its turn modified by the deviation of the prices of production of the necessities of life from their values. However, this always amounts in the end to saying that one commodity receives too little of the surplus-value while another receives too much, so that the deviations from the value shown by the prices of production mutually compensate one another. In short, under capitalist production, the general law of value enforces itself merely as the prevailing tendency, in a very complicated and approximate manner, as a never ascertainable average of ceaseless fluctuations."[21]

Marx returned to the same point a few pages later, emphasising that the transformation process involves a modification of the Volume I assumption that "the cost-price of a commodity is equal to the value of the commodities consumed in its production." The price of production of a given commodity, he writes —

> "is its cost-price for the buyer, and this price may pass into other commodities and become an element of their prices. Since the price of pro-

Proceed now to transform these expressions into the following:

$$\begin{aligned} &\text{I.} && c_1x + v_1y + S_1 = a_1x \\ &\text{II.} && c_2x + v_2y + S_2 = a_2y \\ &\text{III.} && c_3x + v_3y + S_3 = a_3z \end{aligned}$$

on the basis of the following equalities:[29]

$$\frac{S_1}{c_1x + v_1y} = \frac{S_2}{c_2x + v_2y} = \frac{S_3}{c_3x + v_3y}$$

and

$$S_1 + S_2 + S_3 = s_1 + s_2 + s_3$$

The result of this calculation in the given case is as follows:

$$\begin{aligned} &\qquad c_1x \quad\;\; v_1y \quad\;\; S_1 \quad\;\; a_1x \\ &\text{I.} \quad 2.592 + 3.710 + 3.202 = 9.504 \\ &\qquad c_2x \quad\;\; v_2y \quad\;\; S_2 \quad\;\; a_2y \\ &\text{II.} \quad 15.552 + 13.911 + 15.052 = 44.515 \\ &\qquad c_3x \quad\;\; v_3y \quad\;\; S_3 \quad\;\; a_3z \\ &\text{III.} \quad 7.776 + 5.564 + 6.784 = 20.124 \end{aligned}$$

This calculation, like Marx's original one in the case where mutual interdependence was abstracted from, shows the result when a fixed aggregate of surplus value is re-allocated in the form of profit at the average rate among the various capitals concerned. The sum of prices diverges from the sum of values, but the real point to which Marx wished to draw attention when he emphasised the equality between total prices and total values in the original case — *i.e.*, that after the transformation of values into prices the fundamental ratio upon which profit depended[30] could still be said to be determined in accordance with the Volume I analysis — is illustrated in this case too. It is no longer true that the numerator and the denominator of the ratio remain unchanged as a result of the transformation, but under the assumed conditions *both will always change in the same proportion*, so that

$\frac{a_1x + a_2y + a_3z}{v_1y + v_2y + v_3y}$ remains equal to $\frac{a_1 + a_2 + a_3}{v_1 + v_2 + v_3}$. The achievement of this result is dependent (in the great majority of cases) upon the equality initially postulated between $\frac{c_2}{c_2 + v_2}$ and $\frac{\Sigma c}{\Sigma c + \Sigma v}$ — *i.e.*, upon the assumption that the organic composition of capital in the wage-goods

Adding unity to this ratio, we get $\frac{v+s}{v}\left(=\frac{\text{Working day}}{\text{Necessary labour}}\right)$. When the latter expression is applied to the totality of commodities, it becomes

$$\frac{\Sigma(v+s)}{\Sigma v}\left(=\frac{\text{Total labour force}}{\text{Labour required to produce wage-goods}}\right);$$

and, given conditions of equilibrium between the different branches of the economy, this ratio $\frac{\text{Total labour force}}{\text{Labour required to produce wage-goods}}$ is equal to the ratio $\frac{\text{Value of finished commodities}}{\text{Value of wage-goods}}$ $\left(=\frac{\Sigma a}{\Sigma v}\right)$. For example, in the following case Department I produces means of production and Department II consumers' goods; the ratio $\frac{s}{v}$ is the same for both Departments; and the equilibrium conditions appropriate to simple reproduction prevail between them (*i.e.*, $c_2 = v_1 + s_1$):

	c_1	v_1	s_1	a_1
I.	80	60	40	180
	c_2	v_2	s_2	a_2
II.	100	90	60	250

It will be seen that the ratios $\frac{\text{Working day}}{\text{Necessary labour}}\left(=\frac{5}{3}\right)$,

$\frac{\text{Total labour force}}{\text{Labour required to produce wage-goods}}\left(=\frac{250}{150}\right)$, and

$\frac{\text{Value of finished commodities}}{\text{Value of wage-goods}}\left(=\frac{250}{150}\right)$ are all equal.

13. P. Fireman, quoted by Engels in his preface to Volume III of *Capital*, p. 25.

14. This table is an amalgamation of those on pp. 183 and 185 of *Capital*, Vol. III, with some of the figures re-arranged.

15. The turnover periods of v are assumed to be the same in each case.

16. *Capital*, Vol. III, p. 186.

17. It is evident that the only case in which price and value would coincide would be one in which the composition of the capital concerned coincided with the "social average."

18. *Capital*, Vol. III, p. 188.

19. For an example of one of these exceptional cases, see the transformation exhibited in Tables II and IIIb on pp. 111 and 120 of Sweezy's *Theory of Capitalist Development.*

20. There is a slight technical difficulty here. When Marx said that "total values equal total prices" it is fairly clear that what he had in mind was the equality of the ratios $\frac{\Sigma a}{\Sigma v}$ and $\frac{\Sigma a_p}{\Sigma v_p}$, each calculated over the economy as a whole. (*Cf.* Dobb, *loc. cit.*). Given conditions of equilibrium between the different Departments, these ratios will be equal to the basic exploitation ratio $\frac{\Sigma(v+s)}{\Sigma v}$. In the case we have just considered, however, where the information which we are given covers only a part of the economy, it is obvious that the numerical value of the ratio $\frac{\Sigma a}{\Sigma v}$ derived from this information alone (assuming that we are able to derive it at all) is likely to differ from the numerical value of $\frac{\Sigma a}{\Sigma v}$ which we could derive from complete

Say's Law has several meanings, it is important to know in which of his models and for what reasons Marx accepted or rejected the different aspects of the law. The Marxian models to be considered are the following: (1) the circular flow model which postulates Say's Law; (2) the model of monetary exchange whch denies Say's Law; and (3) the dynamic model which provisionally assumes Say's Law only as a means for demonstrating a tendency to breakdown and the inevitability of crises and cycles in spite of the operation of Say's Law.

Differences of opinion are found among recent experts on Marx as to the very existence, as well as to the nature, of his theory of crises and cycles. All are agreed that Marx denied the validity of Say's Law; that is, that he argued against its central proposition that there could be no endogenously created crises.

But on more than this there is no agreement and the debate continues as to "what Marx really meant." Schumpeter contended that although in Marx's work there are valuable insights into the nature of crises, and that Marx was, in fact, the first economist to see the cycle as a whole, no single cycle theory can be found in, or reconstructed from, his work without many additional hypotheses.[3] Maurice Dobb, on the other hand, argued that, "Undoubtedly, for Marx the most important application of his theory was in the analysis of the character of economic crises,"[4] and that Marx's cycle theory was specifically based on the interaction of the falling tendency of the rate of profit and the countertendencies to this law.[5] Paul Sweezy wrote that in Marx there are elements of two cycle theories; one, somewhat inconclusive and unconvincing, based on the falling tendency of the rate of profit, and the other, more important, but not systematized by Marx himself, based on a disproportion between the growth in output and demand for consumption goods.[6] Joan Robinson argued that this disproportion between the output of consumption goods and effective demand is the cycle theory that Marx *would* have developed had he not been taken up by the "false scent" of the falling rate of profit which, she argued, explains nothing at all.[7]

The conclusions of the present essay on Marx are (1) that he was indeed "opposed" to Say's Law for the reasons (primarily monetary) generally adduced; (2) but that his position was more complicated than that of simple opposition, since some of his models postulate Say's Law; and (3) that the theory of crises and cycles for which there seems the best evidence in Marx is one of inadequate profits, *independent* of any shortage of demand, a consequence of more fundamental contradictions than those arising from the nonfulfillment of Say's Law. In other words, according to the present writer, Marx rejected Say's Law in so far as it generalized both the essential nature of the capitalist system and the mechanisms of its equilibration, but he accepted Say's Law merely as a formal statement of the logic of the economic circular flow, and also used it in the initial development of his own theory of "breakdown." Thus, Marx rejected the premises and implications of Say's Law as concealing the essential nature of the capitalist system. Yet, at the same time, he built an economic model himself in which crises and cycles would occur *in spite of the operation of Say's*

from the falling rate of profit.[16] However, the inadequacy of effective demand which, in Malthus' view, made for the general glut, was fundamentally an inadequacy *built into his own theoretical system.* This is because of his very definition of value, which he measured by the labor which commodities could *command,* not as with Ricardo, by the labor which commodities *embodied.* According to Malthus' definition, aggregate demand (subsistence wages, or labor "commanded") is defined in terms of the labor contained in commodities, and aggregate supply in terms of this quantity plus the surplus, or profit, created in production. Thus, given Malthus' particular theory of value, Say's Law *could* not hold, and, as Ricardo finally pointed out, Malthus' debates with Ricardo could lead nowhere because they started from different premises.[17]

In the case of Rosa Luxembourg who believed Marx should have been completely opposed to Say's Law, the argument (although based on the labor-embodied theory of value) also concerns difficulties in the "realization" of aggregate output, not in the case of simple reproduction, but only of expanded reproduction, or accumulation.[18] However, in Marx, accumulation itself furnishes the demand for these additional commodities although Luxembourg did not see this. Hence her own logically impossible solution — the noncapitalist market which somehow buys without ever selling anything.

Thus Luxembourg's "correction" of Marx's reproduction model, which itself formally expresses one aspect of Say's Law, rests on misunderstanding,[19] rather than on a logically alternative economic model. On the level of abstract economic logic, both Say's Law and Marx's reproduction models are but tautological expressions of the necessary equality of aggregate supply and demand. On this level a logically alternative model is not possible. It is in this sense that, as a first approximation, Marx constructed a theoretical world where Say's Law dominates.

IV. The Equality of Aggregate Demand and Supply and the "Money Veil"; Marx's Answer to Say's Law

In a different model from that discussed above, however, Marx argued that Say's Law *could not* operate. This is precisely because, while in the circular flow model it appears that commodities do exchange against commodities, in a model concentrating on the *monetary* exchange of commodities, it becomes clear that commodities must first exchange against money before they can exchange against each other. Marx's contention was that it is this dual exchange that gives the ever-present possibility of crises.

The fundamental theorem of Say's Law that, because commodities really exchange against each other, money is merely an instrument of exchange, represented for Marx a complete misapprehension of the fundamental nature of the capitalist economy. He believed that it is the specific peculiarity of the capitalist system that commodity exchange is a dual one, an exchange of qualitatively different use values which are at the same time quantitatively equal exchange values. It is this duality, he argued, that gives

> *cannot say that the most abstract form of the crisis is the cause of crises.* If one seeks the cause, it is precisely to understand why the form of its possibility becomes a reality.
>
> *The general conditions of crisis . . . must be developed from the general conditions of capitalist production.*[28]

In his specific discussion of Say's Law and of the formal possibilities and realization of crises, Marx did *not* develop the cycle theory that would indicate the fundamental "cause" of crises. This can be found in *Capital,* III, although it requires considerable reconstruction to make Marx's meaning clear.

Marx held that in the crises of reality the "formal possibilities of crises" become realized in a variety of ways. As a consequence, the precipitating factor which actually sets off any given crisis thus *appears* to be causal. But, according to Marx, such a precipitating factor is more superficial and should not be confused with the more fundamental "cause" of crises, the "general conditions of capitalist production." He gave numerous examples of such disturbances of equilibrium. For instance, the crisis can be set off by a monetary stringency. Or it might be precipitated by an inequality of depreciation reserves and the replacement needs of fixed capital. Or changes in the period of capital turnover, or of consumers' tastes, or of savings habits — all these can precipitate a crisis, make a formal possibility a reality, and by so doing give the crisis its unique historical features. Marx did not develop his argument to deal with the details of the concrete and varying disturbances of equilibrium. This is because he was more concerned with showing that, contrary to Say's Law, the very nature of the system makes crises always possible. However, Marx noted that the real crisis, when it did appear, whatever its precipitating factors, always seems to be due to partial overproduction somewhere in the system which is not corrected according to Say's Law, but spreads and cumulates into general overproduction.

V. Marx's View of Partial Overproduction and the General Glut

The theorem that partial gluts cannot lead to a general glut is central to Say's Law. The general acceptance of this theorem among nineteenth century economists, despite its blatant contradiction by reality, can be explained only by the facts that at the time when classical economics was in full flower the business cycle was in its infancy and that early crises were, in fact, associated with monetary and trade difficulties, which, it could be argued, arose from exogenous sources, from wars, politics, and errors in banking and trade policy.[29] In logic the theorem follows directly from the postulate that aggregate supply and demand are equal and from the theorems of competitive price adaptations and of factor mobility. Thus in theory no endogenously created crises are possible.

The inadequacy of the explanation brought forth criticism at the time, long before that of Marx. One of the chief critics was Malthus. Another

> the goal of the entire political economy since Adam Smith. The difference between the various schools since Adam Smith consists in their different attempts to solve this riddle.[39]

The riddle to which Marx referred is that the law of the falling tendency of the rate of profit is a "two-faced law" which explains both the *fall* in the *rate* of profit and the *rise* in the *mass* of profit.

The falling rate of profit is a long-run *tendency* in Marx's view, a tendency which the accumulation process restrains with various "counteracting causes."[40] Their effect is chiefly to cheapen the elements of capital, that is, to reduce the costs both of subsistence goods and material means of production, whether through increasing productivity at home or the advantages of foreign trade.

However, the long-run tendency of the rate of profit to fall was seen by Marx as a fundamental law, the source of periodic crises, themselves overcome by the effects of the counteracting causes, and hence of cyclical development.[41] Moreover, although Marx did not develop this analysis very far, the implication is clear that the falling rate of profit is inexorable, because the accumulation process develops on the basis of an ever increasing proportion of nonwage (and non-value creating) capital, and because the countertendencies to the falling rate of profit become less effective.[42] Thus the logical development of the Marxian model would be that the capitalist system is one of cycles induced by this tendency of the rate of profit to fall and of ultimate stagnation as the tendency of the falling rate of profit becomes stronger and the countertendencies weaker.[43]

The Marxian model of evolution is thus quite different from that of Ricardo. Like the latter it postulates Say's Law and deduces a tendency to stagnation due to the falling rate of profit. Unlike Ricardo's model, however, it deduces the falling rate of profit directly from the labor theory of value alone, with no additional postulates but that capitalists seek to maximize their profits. Also, unlike Ricardo's model, Marx's model offers an explanation of crises and cycles as well as a theory of secular trend.

From this discussion of Marx's different models it thus appears that his position on Say's Law was indeed complicated. In some models he used Say's Law for specific analytic reasons. In another model he directly opposed it. The difference between the models arises from the intention to isolate and emphasize specific features of the economy. Hence the complicated "position" on Say's Law is not one of inconsistency but the consequence of deliberate methodology.

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Marx's 'Increasing Misery' Doctrine

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Economists often assume as almost self-evident that Karl Marx's prediction of ever-increasing misery for the workers under capitalism refers to a decline in the amount of goods and services they will receive. Some writers have implied that only the intellectually dishonest could deny this view. It is readily inferred that the interpretation of Marx to mean a decline in labor's relative share is only an afterthought of latter-day Marxists seeking to salvage something from the ruins of the prediction [18, p. 383] [1, p. 213] [23, pp. 155-57] [3, p. 324] [22, pp. 34-35] [16, p. 61]. While labor's relative share has not declined, this at least has the dignity of a plausible prediction which went unfulfilled, while a theory of absolute misery would be thoroughly discredited by history. That some consideration of this sort has in fact provided the subjective motivation for some statements on this point by latter-day Marxists is probable, but to say that this is the only possible basis for the "relative misery" interpretation is something very different. It will be argued here that relative misery was precisely what Marx's prediction referred to, in so far as it was concerned with the purely economic aspect of the workers' condition. It will be further argued that Marx was not solely concerned with this aspect.

A standard argument against the relative-misery interpretation is that while "some passages in Marx ... bear interpretation in this sense, this clearly violates the meaning of most" [22, p. 35]. In order to avoid this charge, the argument that follows will not cite passages from Marx which "bear interpretation" as relative misery, but only such passages as bear interpretation in no other way. This argument, however, will not be simply a passage-quoting one, but will attempt to show how the substantive meaning of Marx's increasing misery prediction turns in part on the Marxian conception of the "value of wages" — which depends in turn on the whole value framework of Marxian economics, derived from Ricardian economics, whose peculiar conceptual framework caused similar misunderstandings of Ricardo long before Marx wrote *Capital.*

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also be absolute misery. In order to see what limits, if any, Marx assigned to this relative misery, some consideration of Marxian "subsistence" is required.

Marx's subsistence has sometimes been regarded as being minimum physical subsistence, or something very close to it — or, at least, something *fixed* at a definite level. Some writers have extended this idea to mean that Marx assumes a subsistence level toward which wages might tend to fall over time [20, pp. 908-11, esp. 910n.]. But this particular theory is entirely absent from Marx. There is not a secular tendency for wages to fall *to* subsistence; rather, workers tend to be *at* subsistence, but the content of this subsistence changes, consisting as it does of both "natural wants" and "so-called necessary wants" which are "the product of historical development" [5, p. 190]. However one might object to Marx's (and other economists') use of subsistence in this sense, the substance of his meaning is plain. The value of a worker's labor-power is that "value" or embodied labor "required for the conservation and reproduction of his labour-power, regardless of whether the conditions of this conservation and reproduction are scanty or bountiful, favorable or unfavorable" [6, p. 956]. It is sometimes claimed that a wage level fixed at subsistence (in the ordinary sense) is a necessary condition for Marx's theory of surplus value [23, p. 94], but in fact it is only necessary to show a difference between the output of labor and the output required to sustain the laborer.[4]

Marx's picture of the worker at subsistence, therefore, does not preclude increases in real wages in the conventional sense. Once a new higher standard of living becomes established, it too becomes subsistence, and represents the new value of labor-power, i.e., the real-wage level. Marx does not have a determinate theory of wages; how labor shares in the increasing productivity is a matter of bargaining power: it "depends on the relative weight, which the pressure of capital on the one side, and the resistance of the labourer on the other, throws into the scale" [5, pp. 572-73]. The Ricardian-Marxian conception is here manifested in the word "resistance." The worker is resisting a *fall* in wages, although Marx declares that the "lowest limit" of this fall is a wage which will purchase the former sum of commodities [5, p. 572]. If wages fall to any point above "the lowest possible point consistent with its new value," then despite this fall, "this lower price would represent an increased mass of necessaries" [5, p. 573]. Marx credits Ricardo with the original formulation of this law. Far from being a law of increasing misery in the conventional sense, it represents a law of a customary floor under wages, which would *prevent* such an occurrence.

A crucial but unstated assumption in Marx's increasing misery doctrine is that the workers themselves will judge wage movements from this relative point of view; otherwise Marxian "misery" when accompanied by material prosperity need never provoke revolution. Another assumption in both Marxian and Ricardian illustrations is a falling price level with increased productivity, so that it is meaningful for them to speak of a fall in wages in money terms, as well as in value terms, and to speak of a "cheapening" of commodities.

language wages were only said to rise, when they rose not in mere quantity but in *value*. ... Mr. Ricardo, therefore, would not have said that wages had risen, because a labourer could obtain two pecks of flour instead of one, for a day's labour. ... A rise of wages, with Mr. Ricardo, meant an increase in the cost of production of wages ... an increase in the proportion of the fruits of labour which the labourer receives for his own share ..." [17, pp. 96-97].

3. Marx declared in *The Poverty of Philosophy* (1847): "The natural price of labour is no other than the wage minimum." Engels, in the German edition of 1885, attached to this statement of Marx's the following footnote: "The thesis that the 'natural,' *i.e.*, normal, price of labour power coincides with the equivalent in value of the means of subsistence absolutely indispensable for the life and reproduction of the worker was first put forward by me [in 1844]. ... As seen here, Marx *at that time* accepted the thesis. Lassalle took it over from both of us" [8, p. 45n] (emphasis added).

4. Marx made this point in his criticism of the Physiocrats who assumed a fixed subsistence or value of labor-power: "If they made the further mistake of conceiving the wage as an unchangeable amount, in their view entirely determined by nature — and not by the stage of historical development, a magnitude itself subject to fluctuations — this in no way affects the abstract correctness of their conclusions, since the difference between the value and the profitable use of labor power does not in any way depend on whether the value is assumed to be great or small" [10, p. 45].

5. "The same laws, then produce for the social capital an increase in the absolute mass of profit and a falling rate of profit" [6, p. 256].

6. Marx asserts that this is the situation for the class, but does not deny that gifted individuals may escape the class situation. His attitude towards social mobility in this context is distinctly negative, since he sees it as strengthening and perpetuating the system as a whole: "The more a ruling class is able to assimilate the most prominent men of a ruled class, the more solid and dangerous is its rule" [6, p. 706].

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but with predicting phenomena that cannot at present be discerned. For this purpose what is required is a variable (or set of variables) in which observable changes are, with some degree of plausibility, associated with changes in the order of phenomena whose behavior one is interested in predicting. In other words, predictions are statements that take the following form: if A, there is x probability that B will occur. Whether or not we know the true or ultimate cause of the change in A is not essential to the success of the prediction. The proof of the pudding is in the eating. If we consistently achieve good results in predicting B, we have been successful, however unrealistic or incomplete our assumptions about the behavior of A.[5]

In the search for predictive variables, or the key indicators, theory is indispensable, for it posits relationships that seem on a priori grounds to have the property of stability. If it is going to be useful, however, the theory must distinguish between independent and dependent variables. It does not help the social scientist to know that everything in the system depends on everything else. He must have hunches about which variables lead and which follow. In short, he wants some kind of deterministic ordering of the factors with which he is concerned.

Historical materialism as fashioned by Marx was a model of social behavior which made such a determination. The forces of production were the independent variable, and social classes, law, ideology, morality, and so forth were the dependent variables. Changes in the former, Marx asserted, would be followed by changes in the latter. One may conjecture that Marx would have been perfectly willing to admit that changes in the forces of production could be caused by non-economic factors. The important thing to him was the consequences of these changes, regardless of how they came about. If Marx had said that social development depended on the interplay of economic and non-economic variables, with sometimes the one and sometimes the other uppermost, he would have been making a historically accurate statement, but not one that would have given us much help in identifying those sectors where one might anticipate change.

An analogy between historical materialism and an elementary theory of income and employment will perhaps serve to point up the issue. In explaining changes in the level of GNP, we do not merely say that GNP will change when there is a change in consumption (C), gross private domestic investment (I), government expenditures (G), or net foreign investment (F). We indicate that in the private sector of the economy I is more important than C or F, in the sense that we believe changes in I are followed by changes in the GNP. Thus we may predict that, given the value of the multiplier, GNP will rise by $x + y$ when I rises by x, or, given the values of the multiplier and accelerator, GNP will follow some cyclical path to a new equilibrium when forced out of an old equilibrium by a change in I. What causes investment to change may not be known, but if changes in other variables can be observed to follow changes in investment, it may serve as a key indicator for prediction.

In contrast to the classical theory of income and employment, the Keynesian theory was deterministic, and it was precisely for this reason that

theses with respect to class behavior.

Finally, the problems and conditions of economic development in the twentieth century are markedly different from those in the nineteenth century, opening up a damaging hiatus between the Marxian model and reality. Relationships it was once reasonable to assume stable no longer hold. Marx viewed a world in which private entrepreneurs dominated the growth sectors of economies, and very often the government as well, but we view a world in which more often government is called on to take the initiative in stimulating economic growth, relegating private entrepreneurs to a secondary role. The Marxian concept of the state, which was plausible in a capitalistic world and a key relationship in predicting political responses to the process of economic growth, does not help one much in an economy that is being planned to achieve socialist goals. Nor, for that matter, does it add to our understanding of mature economies in which government attempts to deal with the problems of the instability of income, the concentration of economic power and the insecurity of the aged and destitute. To be sure, one can, without much difficulty, find evidence of "capitalistic class" influence in government, an influence that interferes with the solution of these problems (for example, the resistance to the provision of adequate medical care for the aged). Yet working from Marx's model, one would not have predicted the progress that has been made. It is not an exaggeration to say that Marx's failure to understand the evolution of the state in the Western world prevented him from making the proper link between economic growth and political change. While he anticipated transformations in the institutions of capitalism, he did not anticipate that characteristic form of Western social organization variously called the mixed economy or the welfare state.

The reader may now feel that I have gone full circle and contradicted myself. Having started off by defending the economic determinism of the Marxian system, I am now suggesting that Marx fell down because he did not acknowledge the independent role that government could perform in society during the course of its development. I should first observe that a measure of the success of the Marxian system is the impossible demands we now impose on it. No doubt because of the megalomaniacal claims of many Marxists, we subject the system to tests to which we should not dream of subjecting less grandiose systems of analysis. If Marx failed to predict the emergence of the welfare state and the conscious attempts by government to stabilize income, his peers in the classical world of economics could not even conceive of the need for governmental action to that end, though they assumed that government was a free agent in the formulation of policy. In short, Marx was the last of the nineteenth-century classical economists, and should be judged by criteria indigenous to the nineteenth century and not by twentieth-century criteria.

Moreover, I have not claimed that historical materialism as stated by Marx was and is universally valid. I have made the less ambitious point that, given the conditions Marx observed, the deterministic form he gave the relevant variables in historical materialism yielded creditable results that probably would not have been forthcoming if he had conceived of

Smithian "value" and "real" wages, for example, are initially defined in senses relevant to a sort of economic sociology — value as human cost, and real wages (and other revenues) as the recipient's title to a quantity of his fellow-man's labour.[17] But these definitions give way to, or alternate with, definitions more in keeping with modern economic usage: value as price, and real wages as goods and services.[18] Moreover, throughout the classical period, from Adam Smith through J.S. Mill, categories of class income distribution did double duty as categories of factor returns. Rent, for example, was at times the return to differential natural productivities of intra-marginal land, and at other times (without notice) simply the revenue of landlords, including of course the return on investment in agricultural improvements.

Marxian analysis, like modern economics, insisted on a sharper distinction here, but unlike modern economists he did not make factor returns, allocational efficiency, etc., the central focus of his reasoning. Marx was in a paradoxically conservative rôle in clinging to the older classical questions, though he found their answers faulty. He was certainly not concerned with making capitalism work more efficiently (it is hard to imagine that he would have spent twenty years in the British Museum for that purpose), and he also studiously avoided providing "recipes" for the operation of a socialist economy. The question of the contributions and rewards of classes was, however, much more in keeping with his over-all concern. This question, to be meaningful, had to be in human terms — the contribution of capital*ists* and labour*ers*, rather than of capital and labour — and not in terms of the artifacts of the system which was itself on trial. The marginalist answer to Marx was largely irrelevant for this reason, whereas, for example, the Schumpeterian system, in which the entrepreneur personally contributes to economic progress, met Marx on his own ground.

In his emphasis on that aspect of the classical tradition which was in keeping with his own interest, Marx tended to read some of his own views back into the classical economists. Thus, for example, Ricardo's definiton of the value of wages in relative terms was taken by Marx as an indication of an underlying social philosophy stressing the relative positions of social classes, when in fact Ricardo meant nothing of the sort.[19] But for present purposes the accuracy of Marx's interpretation of the classical tradition is less important than the nature of that interpretation, its relevance for understanding the structure of Marxian economics, and more specifically its influence on the organization of *Capital.*

Marx deliberately separated the treatment of the social "essence" of capitalism (vol. I) from the treatment of the economic "appearance" or "phenomena" to which it gives rise (vol. III). Value and surplus value make their appearance in the first volume of *Capital,* and are the basic conceptual tools in the analysis developed there. Exchange-value (price) is treated systematically only in the third volume, where the analysis finally considers "the *forms of appearance* which serve as the *starting point* in the vulgar conception"[20] (Marx's emphasis). Only in the third volume does the analysis "approach step by step" economic entities as they appear "in their

ing to sporadic economic crises and depressions. "Violent fluctuations of price ... cause interruptions, great collisions, or even catastrophes in the process of reproduction."[48] While there are tendencies of the various sectors of the economy toward equilibrium by the competitive process, "the continuity of this process itself equally presupposes the constant disproportion, which it has continuously, often violently, to even out".[49]

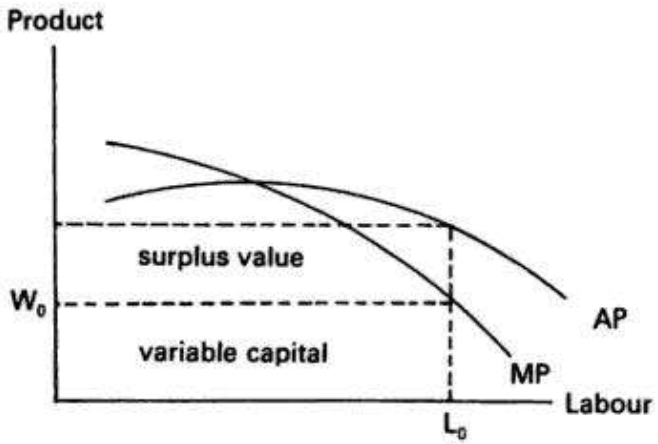
In 1847 Marx set forth the germ of the idea which he was to develop more than twenty years later in *Capital*:[50]

> The economists say that the *average price* of commodities is equal to the cost of production; that this is a *law*. The anarchical movement, in which rise is compensated by fall and fall by rise, is regarded by them as chance. With just as much right one could regard the fluctuations as the law and the determination by the cost of production as chance ... it is solely these fluctuations, which, looked at more closely, bring with them the most fearful devastations and, like earthquakes, cause bourgeois society to tremble to its foundations ...

This was one of the many areas in which Marx's thought remained unchanged from his early years to the end of his life. Even the assertion that it was "solely" price fluctuations which precipitated crises remained a part of Marx's theory of economic downturns, which was entirely a theory of disproportionality. Under static conditions it might be expected that price oscillations would settle down to the cost of production, but Marx saw capitalism as inherently dynamic, with irregularly declining costs of production among the various commodities, and shifting proportions within the growing mass of output. In earlier periods a more stable output was geared to a more or less known demand. But now, according to Marx, an ever-increasing supply was dumped on the market in anticipation of raising demand.[51] The opportunity for miscalculation was growing along with output.

In Marx's theory of crisis — he had no theory of the business cycle as a whole — it was fixed contractual obligations which enabled disproportionality and attendant price fluctuations to precipitate crises. Overproducing firms or industries find profits declining below anticipated levels while "fixed charges ... remain the same, and in part cannot be paid. Hence crisis."[52] This was not to say that any departure from equilibrium would produce a crisis. Some indefinitely defined magnitude of shock to the system was necessary, in order to produce a sufficient disturbance of confidence, a scramble for liquidity[53] and a monetary contraction. "At a given moment the supply of all commodities may be greater than the demand for all commodities, because the demand for the general commodity, money, exchange value, is greater than the demand for all particular commodities ..."[54]

Once the crisis is under way, even those sectors of the economy which had not been guilty of over-producing "are now suddenly in relative overproduction, because the means to buy them, and therewith the demand for them, have contracted. Even if there has been no overproduction in these



Thus, there is surplus value even though workers are paid the value of their marginal product, with no "exploitation" in Joan Robinson's sense.

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34. *Capital*, vol. III, p. 745.
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36. *Capital*, vol. III, p. 1026.
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$$\frac{C_1}{V_1} = \frac{C_2}{V_2} = k \quad (k \text{ is the given organic composition of capital})$$

$$C_1 + C_2 + V_1 + V_2 = K \quad (K \text{ is the given initial capital stock})$$

$$\frac{W_1}{W_2} = h$$

$$g = g(P', k, W_2) \quad \text{(all partial derivatives non-negative)}$$

The total number of equations is now 12. To the 10 unknowns of the labor theory of value we have added two (g and h). With 12 equations and 12 unknowns, we have *prima facie* equilibrium *if* there is no additional technological determinant for the capital-consumption ratio h between W_1 and W_2.

We turn therefore to solve for h, and incidentally illustrate the inner workings of an algebraic model of this kind. The best place to begin is with the supply and demand equality:

$$V_1 + (1 - g)\, S_1 = C_2 + gS_2$$

This can be expressed in terms of the uniform rate of surplus value S' and the uniform organic composition of capital k, using other equations of our model, by factoring out V_1 (on the left) and V_2 (on the right):

$$V_1[1 + (1 - g)S'] = V_2\,(k + gS')$$

This gives us an expression for $\frac{V_1}{V_2}$, which can be proved equal in turn to $\frac{W_1}{W_2}$, or h.

$$\frac{V_1}{V_2} = \frac{k + gS'}{1 + (1 - g)S'} = h.^{4}$$

To prove that $\frac{V_1}{V_2} = h$, we need remember only that $C_1 = kV_1$ and $S_1 = S'V_1$.

$$h = \frac{W_1}{W_2} = \frac{C_1 + V_1 + S_1}{C_2 + V_2 + S_2} = \frac{V_1(1 + k + S')}{V_2(1 + k + S')} = \frac{V_1}{V_2}$$

III

This section may be omitted by readers indifferent to economic-theoretical niceties. It merely completes and complicates the exposition of Section II by introducing a number of "Volume III" complications avoided in the

"Volume I model." If the organic composition of capital is not the same throughout, we must introduce price-value p_i, which may differ from unity, to avoid logical contradictions between uniform rates of surplus value and of profit in our two departments. Also, if we substitute arbitrary time periods like months or years for the turnover periods of constant capital, the rate of profit on capital (K) rather than on its flow (C) per period, will be:

$$P' = \frac{S_i p_i}{\frac{V_i + C_i}{d_i}} = \frac{S' p_i d_i}{1 + k_i}$$

where the d_i are technologically-determined depreciation or capitalization rates on capital, such that $\frac{C_1}{d_1} + \frac{C_2}{d_2} = K$.[5] (The d_i may vary between departments.) The motive for this manipulation is to yield an expression for the relative-price ratio $\frac{p_2}{p_1}$, which turns out to be $\frac{d_1(1+k_2)}{d_2(1+k_1)}$.

This, in turn, is necessary if we are to translate our supply-demand equality into price terms:

$$p_1[V_1 + (1-g)S_1] = p_2(C_2 + gS_2)$$
$$p_1 V_1[1 + (1-g)S'] = p_2 V_2(k_2 + gS')$$
$$\frac{V_1}{V_2} = \frac{p_2}{p_1}\frac{k_2 + gS'}{1 + (1-g)S'} = \frac{d_1(1+k_2)}{d_2(1+k_1)}\frac{k_2 + gS'}{1 + (1-g)S'}$$

As a final complication, the capital-consumption ratio h is no longer equal to $\frac{V_1}{V_2}$ when $k_1 \neq k_2$:

$$h = \frac{W_1}{W_2} = \frac{C_1 + V_1 + S_1}{C_2 + V_2 + S_2} = \frac{V_1(1 + k_1 + S')}{V_2(1 + k_2 + S')}$$

so that our expanded solution for this ratio is rather formidable:

$$h = \frac{k_2 + gS'}{1 + (1-g)S'}\frac{d_1(1+k_2)}{d_2(1+k_1)}\frac{1 + k_1 + S'}{1 + k_2 + S'}$$

We believe that, in practice, $k_1 > k_2$, meaning that the capital goods industries are themselves more capital-intensive than the consumption-

goods industries. There seems no good reason to assume pronounced inequality between the d_1 terms. We cannot, therefore, estimate offhand the direction of bias introduced by using the Volume I model to approximate the value of the capital-consumption ratio.

IV

Let us return to economics, and consider the economic quality of the solutions our algebra has produced for the capital-consumption ratio. Clearly, h is not, as in neoclassical economics, variable over a wide range with wage and interest rates. These rates enter into the ratio only in the attenuated form of the rate of surplus value or rate of exploitation S'. Even there, S' enters in a direction which varies with the growth coefficient g.[6] (Neoclassical theory would have led us to expect an unequivocal fall in the ratio as interest rates rose relative to wage rates, and S' also rose, regardless of the growth rate.) On the other hand, the ratio is not a matter of technology alone, as it usually appears to be in vulgar Marxism,[7] because a volitional decision of capitalists (or, under socialism, of planners) enters; namely, the division, symbolized by the growth coefficient g, of surplus value between capital and consumption goods. The higher is g, and the higher the economic growth rate, the higher is the capital-consumption ratio h.[8] We lack philosophical competence to explore the dialectical character of this alternative to the extreme and antithetical solutions of neoclassical and vulgar-Marxian economics. We merely suggest that the dialectic may enter.

V

The most general of these economic considerations is the 'disproportionality" element in Marxian business-fluctuation theory, whose importance (relative to other elements) we need not discuss here. Suppose, however, that we find ourselves out of equilibrium with respect to the capital-consumption ratio, the situation which the disproportionality theory would assert leads to crisis and depression. In particular, suppose that the current value h exceeds the equilibrium value, which we shall call $\bar{h}$. This means, in terms of our Volume I model (which, as in so many cases, makes matters clearer than the full Volume III one, and at negligible cost) that the supply of W_1 exceeds the demand for it, and/or that the demand for W_2 exceeds its supply. In the Marxian two-department system, these two conditions are identical, as below:

Department	Supply	Demand	Result
I	$C_1 + V_1 + S_1 >$	$C_1 + C_2 + g(S_1 + S_2)$	$V_1 + (1-g)S_1 > C_2 + gS_2$
II	$C_2 + V_2 + S_2 <$	$V_1 + V_2 + (1-g)(S_1 + S_2)$	$C_2 + gS_2 < V_1 + (1-g)S_1$

Looking only at the static equations, one may well ask (as the senior author has done frequently) how such disproportionality leads to a crisis rather than a boom, since overproduction in Department I is identical with its opposite in Department II. (Needless to say, we might equally well have started with $h < \bar{h}$, and with the over- and under-production cases reversed.)

To obtain recession from disproportionality in either direction, as Marx seems to do,[9] one need only add to the static system (under capitalism) a dynamic corollary, namely, that any departure of the capital-consumption ratio from its equilibrium value will be corrected more rapidly (again, under capitalism) by *contraction* of the overproducing sector than by *expansion* of the underproducing one. Thus, in the table above, the capitalist correction of $h > \bar{h}$ would be initially and primarily by reduction of W_1 rather than expansion of W_2, even when the expansion would be equally feasible. The result would be the restoration of equilibrium at lower levels of output ($W_1 + W_2$) and employment ($V_1 + V_2$) than the initial ones, although a socialist plan might equilibrate at higher levels. It makes no difference for this analysis whether the initial disequilibrium arose from a chance variation in h or some systematic technological or volitional change in h. Also, once again, the original disequilibrium could equally well have been in the opposite direction ($h < \bar{h}$), with overproduction in Department II and shortage in Department I.

VI

In reconstructing and developing economies, such as the Soviet Union after both World Wars, the existing capital-consumption ratio was systematically below the equilibrium value consistent with the desired or planned growth coefficient g, because of wartime shortages and destruction of capital equipment. It follows that, until the equilibrium capital-consumption ratio $\bar{h}$ is attained, a rise in h (higher growth rates of capital than consumption goods output) is a stabilizing move, and any reduction in h a destabilizing move. Thus, if we admit the desired or planned g as reasonable, Stalin was right, under Soviet conditions, to insist upon a steadily rising value of h. Also, insofar as socialist growth necessarily involves labor-saving capital accumulation, and an increase in the organic composition of capital k, like the Marxian vision of capitalist growth, the course of the equilibrium value of h would also be upward. To show this, we can apply the mathematics of our footnote 8, whereby we have both dh/dk and the mixed second derivative $d^2h/dgdk$ positive under realistic conditions.[10] Stalin was wrong, however, insofar as he either extended this doctrine to *all* socialist planning under *all* conditions, or assumed that the equilibrium value of the capital-consumption ratio also had to increase indefinitely to maintain constant growth rate, regardless of the course of k. Our sampling of Stalin's economics does not, however, suggest this generalization. In the relevant passage of his *Collected Works* (1926-30) he appears a Marxian pragmatist, conscious of the special circumstances of a country seeking rapid

overtaking of its rivals, both in technique and in productivity. The "generalization" issue seems not to have been raised explicitly.

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Notes

1. Let the capital-consumption ratio W_1/W_2 be h, and denote the overall capital-output ratio, converted to Marxian units of labor value as $W_1/(W_1 + W_2)$, by c, as in the notation of Sir Roy Harrod. Then:

$$\frac{1}{c} = 1 + \frac{1}{h}, \text{ whence } h = \frac{c}{1-c} \text{ and } c = \frac{h}{1+h}$$

as a pure number, obviously, $h > c$.

2. Particularly M. Bronfenbrenner, "*Das Kapital* for the Modern Man," *Science & Society* (Fall, 1965).

3. We are indebted to Professor Howard Sherman for having raised the issue of possible justification for Stalin's seemingly dogmatic and arbitrary position.

4. This equation has been derived by Mark Blaug. *Economic Theory in Retrospect* (Homewood, Ill., 1962), pp. 236 f.

5. Compare the Appendix to Bronfenbrenner, "Marxian Influences in 'Bourgeois' Economics," *American Economic Review* (May 1967), p. 634.

6. This is shown most clearly by differentiating the equilibrium value of h in the simpler Volume I model with respect to S'. We have:

$$h = \frac{k + gS'}{1 + (1-g)S'} \text{ whence } \frac{dh}{dS'} = \frac{g - k(1-g)}{[1 + (1-g)S']^2}$$

which has the negative sign (expected from neoclassical economics) only for a growth sufficiently small for $k > g(1-g)$. We may also put this result directly, in terms of the wage rate w, which (measured in labor hours) is always a proper fraction. We begin by writing:

$$w = \frac{V_1}{V_1 + S_1}, \text{ whence } \frac{1}{w} = 1 + S' \text{ or } S' = \frac{1-w}{w}$$

Making this substitution, the capital-consumption ratio may be rewritten:

$$h = \frac{wk + g(1-w)}{w + (1-g)(1-w)} = \frac{w(k-g) + g}{gw + (1-g)}$$

Differentiating, we have:

$$\frac{dh}{dw} = \frac{k(1-g) - g}{[gw + (1-g)]^2}$$

which, again, has the neoclassically expected sign (positive, this time) only if $k > g/(1-g)$.

7. "Standard" Marxism argues from h to g, like many of the examples of *Das Kapital*, Vol. II. That is to say, the value of h is considered technologically fixed (at least within limits), and attention concentrated on the likelihood (or unlikelihood) of achieving, under capitalism, a value of g consistent therewith.

8. Differentiating again in our Volume I model $\frac{dh}{dg} = \frac{S'(1 + k + 2S')}{[1 + (1 - g)S']^2}$ which is unequivocally positive for positive S'. Also $\frac{dh}{dk} = \frac{1}{[1 + (1 - g)S']}$ which is (trivially) positive under the same conditions.

9. Professor Sherman interprets the Marxian disproportionality theory quite differently, as leading to depression or boom according as supply exceeds or falls short of demand in Department II (consumer goods), although it leads to instability in both cases. In this view, as in much reformist literature, consumption dominates the entire economy. We are grateful to Sherman for showing us both published and unpublished manuscripts expressing this viewpoint, although it seems to us more underconsumptionist than Marxist.

10. Extending the argument of footnote 8, above:

$$\frac{d^2h}{dgdk} = \frac{S'}{[1+(1-g)S']^2} > 0$$

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Notes on Marxian Model of Capital Accumulation*

A. Erlich

Source: *American Economic Review*, Vol. 57, May 1967, pp. 599-618.

Economists are in the habit of being serious but not overly solemn in our meetings, which is wholly to the good. Allow me nevertheless to depart for a moment from the unwritten rule and to begin by saying that I consider it a very great privilege to be on the panel of this particular session. My reasons for feeling this way will, I hope, become clear from the presentation that follows.

An explanation of the slight change in the title seems in order. The notion of a model is associated these days with application of a more or less high-powered mathematics, and it is undoubtedly true that Marxian analysis of capital accumulation contained in Chapter XXV of the Volume I of *Das Kapital* cries out for a rigorous mathematical going-over. The same goes for the closely related "scheme of the expanded reproduction" presented in the concluding part of the Volume II and cast in the form of cumbersome arithmetics. But while the cry is duly echoed here, it will not be heeded: this writer's mathematics is much too featherweight for that. (My sense of regret on this score, let me add, is tempered by the realization that high mathematical skills are by no means in short supply in the profession, most obviously not among the distinguished group behind this table and that significant progress toward meeting the need I referred to has already been made.[1]) To call the present paper "Notes on Marxian Model" would be more in keeping with honest labeling practices.

The outlines of the story are familiar, and hence need to be recapitulated only briefly. The accumulation of capital propelled by the individual capitalist's desire to increase his wealth and power over people and enforced as a condition of survival by the exigencies of the competitive struggle is bound sooner or later to outpace the increase in supply of labor;

*I am much indebted to Professors Jagdish Bhagwati and Donald J. Dewey for their comments on the first draft of this paper. I also greatly benefited from discussions on related subjects which I had several years ago with Professors Joan Robinson and Nicholas Kaldor as well as with Mr. Piero Sraffa. The responsibility for shortcomings and for errors that still remain is, of course, entirely mine.

as a result, the wages rise and profits fall. The capitalists respond by introducing laborsaving machinery which makes part of the work force redundant. Yet while then continuing interplay between accumulation and technological progress arrests and reverses the fall in the rate of exploitation, it opens up other roads to ultimate self-destruction of the system. The rise in amount of capital per worker reduces the rate of profit; progressing "immiseration" makes the aggregate effective demand lag behind the rapidly expanding productive capacity; and these intertwined processes which work their way through increasingly violent ups and downs of the business cycles set the stage for the victorious proletarian revolution. A full-scale discussion of the theories underlying this panoramic view can obviously not be attempted here. I shall, instead, focus on a few selected issues, and argue (1) that several crucial propositions put forward by Marx could stand up much better if recast in terms of modern economics; (2) that his model of capital accumulation was more complex and capable of a wider range of solutions than is generally assumed; and (3) that a tighter integration of this model with the analysis of Volume II would help in plugging some of the gaps.

I

Regarding the first point, I have very little to add to what was already said by Professor Joan Robinson in the path-breaking *Essay on Marxian Economics* [17] and elaborated on in her later writings. To begin with, Marx was clearly handicapped by his "Say's law" approach to the saving-investment problem, even though he rejected the notion that supply creates its own demand and noted that an injection of additional investment expenditure into a system in equilibrium could set off a boom by its demand generating effects. But he clearly sided with his contemporaries, not merely in assuming that capitalists' savings were made for the purpose of further investment, but also in taking for granted that these savings would materialize as intended and that they would in fact be reinvested after having been made. ("Therefore save, save, i.e., reconvert the greatest possible portion of surplus value or surplus product into capital!" [11, p. 652].) By so doing, Marx effectively knocked out the props from under his argument about limited "consuming power of the society" as the ultimate cause of insufficient aggregate demand.[2] But even if he had succeeded in cutting himself loose from Say also on this score, he would still need a force which could keep the volume of investment below the size needed to bridge the increasing gap between the productive potential of the economy and the level of total consumption. On the face of it, the famous "law of the falling rate of profit" seemed to be the right candidate for the job. Yet this law was a very weak rod to lean upon, and here too, one can hardly do better than follow the criticisms of Professor Robinson, joined on this particular issue by Dr. Paul M. Sweezy whose *Theory of Capitalist Development* [21] appeared simultaneously with her *Essay*. (A discernible note of doubt can be found already in Mr. Maurice Dobb's *Political*

Economy and Capitalism [3], pubished in 1937.) As both of them pointed out, whether the rate of profit falls, rises, or stays constant depends on relative changes in the "organic composition of capital," and in the "rate of exploitation," and there are no compelling economic reasons why the first should increase more rapidly than the second.[3] Furthermore, technological progress need not always entail an increase in the organic composition of capital, particularly if capital is measured in terms of labor hours rather than in terms of physical volume. It might be added that in situations when an increasing amount of capital per man would go together with a decline or with constancy of the capital-output ratio, the likelihood of rising (or constant) rate of profit would be greater than in case of increasing capital-output ratio. Actually, Marx was candid enough to list explicitly these points (as well as a few others) under the heading of "counteracting causes." But his attempts to demonstrate that the law would nevertheless assert itself in the end were not convincing, and the same must be said about efforts made by several of his orthodox followers.[4]

Hence, in order to rescue the law from disintegrating, some variety of the "bourgeois" notion of diminishing returns to capital and/or declining marginal efficiency of investment would have to be brought in — indeed, as will be argued later on, Marx did come close to developing the last-mentioned concept. Similarly, in order to present "the limited consuming power of the society" as a factor of economic instability and as an impediment for growth, injection of the Keynesian distinction between intended and actual savings was indispensable. Barring such emendations and with the considerations of equity shunted aside as value judgments, the somber picture outlined in the introductory paragraph would turn into its opposite, to borrow one of Marx's favourite expressions. It would now become a vision of an economy whose savings are religiously plowed back into expansion and incessant technological improvement, with the major stop such as law of diminishing profitability pulled out for all practical intents and purposes and with the industrial reserve army keeping the labor supply elastic. A more eloquent eulogy for capitalism as a uniquely powerful and wear-resistent [sic] engine of growth would be difficult to conceive. It was not surprising that Schumpeter was so fond of invoking Marx against Keynes or that Tugan Baranovski was using tools from the armory of *Das Kapital* to develop his own version of J.B. Clark's "more mills that should make more mills forever," with consumption becoming increasingly expendable. (At this point Rudolf Hilferding, one of the leading theorists of the pre-1914 Austro-Marxism, commented, "If this is madness, there is a method in it, in fact — a Marxist method.")

II

In the preceding paragraphs we asked whether the assumption of steadily rising rate of exploitation could sustain the burden of one of Marx's two major prophecies and whether it was compatible with the other. It is not our task to inquire whether or not this assumption has been borne out by

the actual developments in capitalist countries of the West since Marx wrote: we do know the answer. More to the point in the present context, and less easy to resolve, is another question: to what extent does the perspective of the "immiseration" (implying either an outright decline in the living standards of the workers or at least a pronounced decline in the relative share of national income going to them) inescapably follow from Marx's own premises? The tenor of the crucial Chapter XXV of the Volume I, and quite definitely of the often quoted passage near the end of the Section 4, seems to leave little room for doubt. But the analysis, if examined in its familiar as well as not-so-familiar aspects, tells a somewhat different story.

To begin with, we find that the race between accumulation and labor force can conceivably be resolved in three ways rather than one, depending on circumstances. Indeed, Marx explicitly envisages a situation when "the price of labor keeps on rising because its rise does not interfere with the progress of accumulation." There is, we are told, "nothing wonderful" about it; already Adam Smith knew that "a great stock, though with small profits, generally increases faster than a small stock with great profits" [11, pp. 678-79]; the sentence quoted from Adam Smith is found in [20, p. 93]. The argument seems awkward; the cited statement could not possibly be true with regard to the behavior of a capital stock over several successive time periods. It could apply, however, either to different capital stocks of widely ranging sizes at the same point of time, or to a single capital stock observed at widely disparate stages in its life history, provided that this capital stock has been accumulating at an increasing rate at least over a considerable part of the intervening period. The last mentioned possibility would fit perfectly well the case of the opening up of a new area which Adam Smith was discussing when he made his dictum about stocks and profits. The increasing returns to capital resulting from such a situation could be expected to swamp the effect of rising wages, to be sure, only as long as these returns would persist. This was, presumably, what Marx had in mind when he approvingly cited Adam Smith, but he brought in another and more generalized explanation when he observed that "under special stimulus to enrichment, such as opening of new markets or of the spheres for the outlay of capital in consequence of newly developed social wants, etc., the scale of accumulation may be suddenly extended" [11, p. 672].[5]

The second alternative is less favorable to workers, and also more clearly defined. The wage increases eat into profits and thus reduce the volume of resources available for accumulation during the subsequent period.[6] As a result, the expansionary trend reverses itself and the demand for labor begins to taper off until the reduced rate of accumulation will have caught up with the rate of increase in the labor supply. However, even in this case Marx is cautiously noncommittal in appraising the final outcome; "the price of labor falls again to a level corresponding with the need of the self-expansion of capital *whether the level be below, the same, or above the one which was normal before the rise in wages took place.*" ([11, p. 679]. Italics supplied.)

No doubt, after all is said and done, the third alternative — the shift to

labor-displacing technology in response to increasing relative scarcity of labor — is both the best known and by far the most important. Yet here, too, the case is not as clear cut as it seems at first sight. Although Marx scathingly rejected the "compensation theories" of his contemporaries who believed in a quasi-automatic reabsorption of the displaced, he did outline several possible offsets of quite a different kind.

The first of them would probably not be considered a bona fide offset by Marx, and it is definitely least appealing (as well as most "static") of the lot. "Crippled as they [the displaced workers] are by the division of labor, these poor devils ... cannot find admission into any industries, except a few of inferior kind, that are oversupplied with underpaid labor" [11, p. 481]. At a different place, but in a similar context, Marx spoke of "greater resistance which some lines of production, by their nature, put up against a transformation of *manofactory* into machine-operated production" and which enables them to make use of some of the "disposable or unemployed wage laborers" [13, p. 277]. To a present-day reader this looks like a description of the "dual economy" in action, very much in the spirit of Professor Eckaus' memorable box diagram showing how the expansion of capital-intensive sector can cause further lowering of capital-labor ratio in the labor-intensive sector. An alternative way of reading the quoted statements, particularly the first, would be to interpret them as a reference to "disguised unemployment" [17, p. 38]. In such case, obviously enough, the whole operation would not constitute any offset whatsoever.

"Although machinery necessarily throws men out of work in those industries in which it is introduced, yet it may, notwithstanding this, bring about an increase of employment in other industries" [11, p. 483]. The analysis that supports this proposition is very "dynamic" and highly modern in substance, although not in language. A distinction is drawn between resource-saving and output-increasing innovations, with a clear implication that the latter are predominant[7]; and the stimulus imparted by such an industry A to the complementary industries B, C ... is traced in a way reminiscent of Professor Hirschman's backward-forward linkages.[8] Lastly, the impact of the economies of scale, working through a "feedback" type of repercussion, is shown to have powerfully affected, at an early stage, the very industry that was the natural vehicle of change: "As inventions increased in number and demand for newly discovered machines grew larger, the machine-making industry split up, more and more, into independent branches" [11, p. 417]. Such an impact, it would seem, could temporarily swamp the potential cyclical pattern built into the modern technology through growing importance of durable fixed plant as compared with "goods in process" — a point Marx was very explicit about.[9]

All of these "external effects" of laborsaving innovations could, of course, work themselves out only through investment. They clearly constituted one major category of the offset possibilities which Marx had in mind when he insisted that the displaced workers can be reemployed "only by an intermediary of a new and additional capital that is seeking investment, not at all by the intermediary of the capital that formerly employed

them and was afterward converted into machinery" [11, p. 481]. Another batch of opportunities for new investment that could perform the same function was provided by technological changes which were in the nature of product innovations rather than process innovations: "entirely new branches of production, creating new fields of labor, are also formed, either directly on the basis of machinery, or at least in the wake of the general industrial revolution brought about by it" ([11, p. 487]; translation slightly corrected). Lastly, to the extent that the stringency of the labor supply had been lifted, there would now be scope also for "accumulation as a simple extension of production, on a given technical basis," even though the "intermediate pauses" during which such accumulation of a "widening" variety could occur would tend to become shorter in the long run [11, p. 690].

All this raises a host of points of interpretation which unfortunately cannot be pursued here.[10] But one thing seems quite certain: the notions of steady and progressing displacement of labor by machinery and of the "accumulation of misery" as its concomitant turn out to be much less firmly anchored in the logic of Marx's argument than his own conclusions could lead us to assume. (No doubt, he could still argue that without the intervention of the laborsaving technological progress real wages would have amounted to a larger and rising fraction of the social product; but this would not do.) They emerge as a distinct possibility — no less, but also no more. The extent to which such a possibility might materialize would depend entirely on the volume of the "additional and new capital" that would be forthcoming. Actually, Marx came very close to saying this in so many words when he stated that "the invention of machines and application of the forces of nature sets free capital and people ... unless new spheres of production will be created or the old ones will be expanded and operated on a much higher level" [14, p. 342]. He seemed quite sanguine about potentialities for such growth when he observed that "with accumulation, and the development of the productiveness of labor that accompanies it, the power of sudden expansion of capital grows also ... because the technical conditions of the process of production themselves — machinery, means of transport, etc. — now admit of the rapidest transformation of masses of surplus product into additional means of production" [11, pp. 693-94]. However, this was only one part of the story he had to tell; and it is at this juncture that the analysis of Volume II must be brought in to round out the picture.

III

The last two decades brought a very pronounced increase of interest in and of familiarity with Marxian schemes of "expanded reproduction." I shall therefore forego the detailed exposition and concentrate not on what the model of the Volume II is but on what it does and, more particularly, on the way in which it can help out with problems raised in preceding sections.

To put it in a nutshell, Marx's major feat consisted (1) in slicing the

national income aggregate along a dividing line that was crucial for determining the growth potential as well as for keeping track of both contestants in the accumulation-labor race; and (2) in explicitly relating the output flows of the two major sectors, thus derived, to each other *and to capital stocks that produced them.* It is the feature indicated in the italicized part of the last sentence which is of particular importance to us. By translating the "reproduction scheme" into terms of a modified Harrod-Domar model (or more precisely, of the Feldman-Domar model) as done in the Appendix, and by putting it to work, we get the following results:

1. Other things being equal, an economy A with a higher share of its output coming from the capital goods sector (the Marxian "Department I") than the economy B will have a higher rate of economic growth, since it is able to make larger additions to its productive capacity over and above the current replacement needs. (In terms of original Marxian notation, the excess of $v_1 + s_1$ over c_2 is larger in A than in B.) Consequently, in order to increase its "warranted rate of growth," an economy would have to step up the relative share of the capital goods sector in its total output and in capital stock. Yet at this point the model would reveal its aspects which are more grim but also still more instructive.

2. To begin with, the model might be taken to mean that consumption cannot be lowered beyond what we could call the Von Neumann type of limit without reducing the number of workers manning the machines below the required level. (A more flexible interpretation would imply that a reduction in per capita consumption would negatively affect the efficiency of the given work force.) Yet this particular constraint on expansion could not have appeared to Marx as particularly severe, since he assumed that real wages lag behind the increase in the productivity of labor. Moreover, unlike his predecessors, he had no fear of diminishing returns in agriculture; and the notion of industrial development being obstructed by dependence on backward subsistence farming as the major source of food supply was undoubtedly still further from his thoughts.

3. But the model is much harder to assuage as far as the capacity side is concerned. The same logic that demands an increase in the share of sector 1 in the total income as a key to accelerated growth would make such increase dependent on the prior expansion of capital stock of this sector all the way up to the requisite level. (The full capacity utilization is assumed, of course.) Yet the rapidity of such an expansion would only partly depend on the extent of increase in savings that the economy would be able to undertake and to enforce. It would be decisively controlled by the relative share of the sector 1 in the total capital stock of the economy at the beginning of the process as well as by capital requirements per unit of new plant and its average gestation period. Given any halfway realistic numerical values for the ratio of total investment to the total capital stock and for the rates of speed at which stocks can be built (viz., run down by underreplacement), a marked shift in the sectoral composition of the economy must be a time-consuming process, even if pressed with utmost determination. As the illustrative example in our Appendix shows, it would (under the numerical coefficients adopted) take nearly two years to raise the relative size of the

sector 1 to a level consistent with the doubled rate of growth. It is true that quite a few underlying assumptions — no foreign trade, full capacity utilization, no allowance for the possibility of conversion of some of the sector 2 plants for production of sector 1 goods — are unnecessarily harsh, and should be relaxed. Marx was fully aware of it;[11] but several assumptions of the opposite nature — gross investment plowed back in its entirety into the sector 1, with actual disinvestment in sector 2 as a corollary; average gestation period being equal to no more than one year and not getting any longer in spite of the sharpness of the switch[12] — are sufficiently breath-taking to provide a counterbalance, to say the least. Hence attempts to raise the rate of growth faster than capacity limitations permit are bound to be resisted. Marx referred to a similar situation when he noted that "transition from simple to expanded reproduction ... will not always take place without difficulties" [12, p. 580]. And he came more directly to grips with the problem in a striking passage that sounded astonishingly like Keynes's much quoted statement about "pressure on the facilities for producing that type of capital [which] will cause its supply price to increase." "There is a check in reproduction and therefore in the flow of circulation. ... The same phenomenon (and this as a rule precedes crises) can occur if the production of surplus capital takes place at a very rapid rate, and its retransformation into productive capital so increases the demand for all the elements of the latter that real production cannot keep pace, and consequently there is a rise in the prices of all commodities which enter into the formation of capital" [13, p. 371].[13]

The implications of all this for the issues we have been dealing with thus far are most significant:

1. The "displacement" problem acquires a new look, particularly in the early industrialization stages Marx was primarily confronted with. The opportunities opened up by new technologies and the external effects that went with them were striking — but the speed at which the young industrial economies could utilize these opportunities must have been narrowly circumscribed by limited capacities in the nascent capital goods industries and by the severe teething troubles these industries had to experience in process of breaking away from their artisan past. To put it in terms of the dichotomy suggested by Keynes and developed by Professor Lerner, while the marginal productivity of capital would be high and rising, the marginal efficiency of investment would be low and steeply declining. Hence the offsets against displacement may not have worked very effectively at first. By the same token, the situation was bound to change after the new sector 1 had expanded and reequipped itself. (Needless to say, we are dealing here with not implausible hypotheses and nothing else.) Besides, England, as the leading industrial country at the time when Marx wrote, could derive little benefit from importing major ingredients of her growing capital stock; indeed, her comparative advantages (geography-given and manmade) were particularly strong in the sector 1 area.

2. The abovesaid, if valid, fully bears on the broader issue of the rate of capital accumulation. In an economy with a low-keyed growth the problem of "pressure on the [capital-producing] facilities" is not likely to be serious

even if the overall size of these facilities accounts for a relatively small fraction of the total stock. This is particularly true wherever a good part of investment activities occurs outside the modern sector, with labor being abundant, and nature not too forbidding; last but certainly not least, possibility of trading with the outside world on favorable terms would be helpful. But whenever an economy is experiencing a strong cyclical upswing, or whenever deliberate attempts are made to sharply lift the rate of growth from the hitherto prevailing level, the "ceiling" in sector 1 area are likely to make themselves felt sooner or later, more likely than not — in industries with particularly high capital-output ratios and long gestation periods. True, if the economy in question does have a substantial level of slack at the beginning of the process and if the inducement to expand is strong, the combined effects of multiplier and accelerator, involving a perceptible shift toward the sector 1 within the steadily growing investment volume, may carry the economy a long distance before the "ceilings" are hit; and either a better-than-average luck or a measure of realistic advance planning could go far toward eliminating them altogether. On the other hand, many booms die in their infancy and many leaps to higher steady growth rates fall short of target without ever getting close to ceilings of any sort. But whatever the case may be, the problem exists, and it has been widely recognized. The Marxian-type model, in our view, can be of great help in illuminating it.

3. The discussion of the preceding two paragraphs, overcompressed as it was, might convey a picture of greater rigidity than would be warranted by the facts of the case. To repeat, Marx explicitly noted important factors, making for greater flexibility: foreign trade, limited variability in degree of capacity utilization and in the service life of equipment, making use (even in process of partial replacement) of improvements in technology and, more particularly, of the fact that "when machinery is first introduced into an industry new methods of introducing it more cheaply follow blow upon blow" [10, p. 442]. Moreover, the services which the Volume II model performed for its Volume I counterpart were not unreciprocated. The whole "expanded reproduction" would be a monumental failure unless the growing plant capacity could find the labor to work with, and/or unless technological progress could keep reducing the labor requirements per unit of capital; and here, to be sure, the implicit accumulation model of Volume I would do its duty. Also the briefly sketched possibility of "dual economy" strategy could bring a measure of relief whenever the tension between investment opportunities and capacities would mount. Yet while all this could dull the knife edges, it would not transform them into slabs of butter.

IV

I have tried to demonstrate what the models contained in the two first volumes of *Das Kapital* could do for each other. Let me conclude by mentioning several things they could do for us:

1. The problem of technological displacement in leading industrial

countries appears in a different light to us than it did to Marx. However, this difference can be to a considerable extent explained in terms of his own analysis. It is still true that "not enough means of production are produced to permit the employment of the entire able-bodied population under the most productive conditions" [13, p. 302]. Yet the importance of the capacity as constraint on employment, even under less than "most productive conditions" has dramatically declined since Marx wrote. The capital stock in the developed countries has grown in size much faster than the labor force, and the sector 1 of the economy is now in a much better position to create adequate "offsets" against displacement tendencies. Hence the "industrial reserve army" can be absorbed into the system, provided that the aggregate demand is large enough. Nevertheless, noncompensated displacement might still occur if (*a*) technological progress is sharply labor-saving; (*b*) a considerable portion of new equipment is coming from plants that had been producing the old equipment and can use essentially the same sources of energy; to that extent the buoyant force of the "new industry effect" to which Marx (and Schumpeter) attributed such a great importance would be lost; (*c*) the capital stock of the economy was growing rather slowly over a long period of time; and (*d*) a substantial part of the sector 1 potential is preempted by military demands.

2. All this, if true, can establish only a possibility of technological unemployment. (Point (*b*) is certainly true only in part; but this might mean that the peak of unemployment would merely be shifted to the period when "new industries" had already met the bulk of reequipment demand.) To rule it out would be rash. Yet after all is said and done, it is understandable that the attention of some of the leading economists of our days moved back one link along the causation chain forged by Marx. The most striking instance of it can be found in Professor Robinson's recent writings which stress the role of labor scarcity caused by rapid accumulation as a powerful force pushing for technological progress. Space precludes elaboration of this point. I can do little more than record my agreement with Professor Robinson in her insistence that the emphasis on this relationship had been one of Marx's signal contributions, and note that here too the compliment is being returned, with Marx rescuing the original Keynesianism from some of its overstatements. The notion of investment of today digging the grave of the investment of tomorrow loses some of its drama if it can be shown how this very investment by pressing against a less rapidly increasing labor force, can propel the economy toward a new production function and thus generate investment opportunities in excess of what a mere sliding along the old one could provide. (Marx, as was repeatedly pointed out, made no allowance for the possibility of such "sliding along," while strongly emphasizing the none-too-peaceful coexistence of technologies of various vintages. But the neo-Keynesians have gone a long way toward him also in this respect when they stressed that the notion of a movement along a given production curve is of highly limited relevance for tracing the path of investment over time as distinct from describing individual investment choices at a given point of time, and when they effectively challenged the notion of the aggregate production function

for the whole economy.) This, to be sure, need not imply that investment opportunities thus created will be necessarily sufficient to lift the economy in question all the way toward full employment level and to keep it there, or that all technological progress is induced by labor scarcity; Marx certainly did not subscribe to such a monistic view either. But also those theorists who see the operative link between investment and technological progress in "learning by doing" rather than in labor scarcity (with others like Professor Robinson emphasizing both) frequently describe the overall interdependence between the two phenomena in a very "Marxian" manner. I refer primarily to the recent writings of Professor Kaldor.[14]

3. A brief postscript on the Volume II model seems in order. To begin with, a "ceiling" of the type described in the preceding section is a short-run concept, and it cannot therefore be expected to perform all the services of the "law of the falling rate of profit." Yet its role, while more modest and less doom-laden, is far from insignificant. By bringing into focus the basic fact that investment not only adds to the capacity but also presupposes a capacity of certain size and structure, the two-sectors construct injects an element of realism in our notions about the plausible speeds (or rather about plausible rates of change in speed) of accumulation processes. More particularly, it helps us to understand the "stop-go" pattern these processes are likely to produce when entrepreneurs are Schumpeterians or when central planners are Stalinists. (The connection between over-ambitious plans and quasi-cyclical fluctuations in the rate of growth of the Soviet-type economies was suggestively discussed by the Czechoslovak economist Josef Goldmann who also coined the *mot*: "Big leaps belong in the gym." I owe the reference to this phrase to Professor Holesovsky).[14] It is quite true that developed economies are likely to be more successful than underdeveloped in overcoming some of the rigidities of the model. But here the situation is analytically not unlike the case of technological unemployment, or in fact "even more so." Relaxation possibilities which have been duly listed before work much better for small and shortlived changes in the rate of growth than for discontinuous and enduring ones; and they are obviously not unlimited in any case.

Much of what has been said here represents, in all likelihood, a minority view, with the inevitable overcondensation making it, I suspect, sound rather dogmatic in spots. It would be incongruous to end on a note of consensus even if the term had not been so tarnished nowadays. And yet a basis for a limited agreement does seem to exist. It is a fact that Western economists of widely varying persuasions are now wrestling with problems posed by Marx instead of gingerly relegating them to the realm of "data." It is incontrovertible that in the Soviet Union and in Eastern Europe the revival of serious macroeconomic thinking along Marxian lines marks one of the major paths of return to intellectual integrity and sanity. This should make it easier for all of us, East and West, to take full measure of the man who refused to rig his assumptions to suit his purposes and had the giant's vision as well as the giant's heart to see the system he detested in its open-ended complexity. It seems therefore not too much to expect that many who are less inclined to accept important elements of Marxian analysis than

I am will join in honoring the creator of *Das Kapital* on the eve of its centenary.

Appendix

Notation:

K	—	capital stock
Y	—	national income
I	—	net investment
R	—	replacement
GNP	—	$Y+R$
"1"	—	capital goods' sector
"2"	—	consumer goods' sector
r	—	annual rate of growth
s	—	I/Y
V_y	—	K/Y
V_{GNP}	—	K/GNP

Steady Growth:

$r=5\%$; $s=15\%$; $v_y=3$; $v_{GNP}=2.5$

Year 1	K	Y	I	R	GNP
"1"	87.5	29.2	4.4	5.8	35
"2"	212.5	70.8	10.6	14.2	85
Total	300.0	100.0	15.0	20.0	120
Year 2					
"1'	91.9	30.6	4.6	6.1	36.7
"2"	223.1	74.4	11.1	14.9	89.3
Total	315.0	105.0	15.0	21.0	126.0

Accelerated Growth:

r is to increase from 5 percent to 10 percent, with V_y and V_{GNP} assumed constant. Consequently s must increase from 15 percent to 30 percent, in keeping with the familiar Harrod-Domar formula and the share of "1" in K, Y and GNP must go up accordingly. It is further assumed that, in order to carry out this increase at maximum speed; the whole $I+R$ is channeled toward "1" for the duration of the adjustment.

Year 1	K	Y	I	R	GNP
		As above			
Year 2					
"1"	116.7	38.9	9.6	7.8	46.7
"2"	198.3	66.1	16.2	13.2	79.3
Total	315.0	105.0	25.8	21.0	126.0

Year 3					
"1"	155.6	51.9	18.0	10.3	62.2
"2"	185.2	61.7	21.5	12.4	74.1
Total	340.8	113.6	39.5	22.7	136.3

$$s = \frac{39.5}{113.6} = 34.8\%; \qquad r = \frac{34.8}{3} = 11.6\%$$

Conclusion: under numerical assumptions of our example, it takes slightly less than two years to adjust the size and structure of the capital stock of the economy to the desired rate of growth, after which I'/I can again become equal to K'/K.

Notes

1. I am referring here to the writings by Professors Bronfenbrenner [1] and [2], Domar [4], Georgescu-Roegen [5], Lowe [9], Samuelson [19]. (The list is not intended to be complete.) The Soviet and eastern European literature on the subject has been growing steadily over the last decade, with the late Oskar Lange as one of the leading contributors; cf. his [8].

2. It is true that Marx makes an attempt to base his underconsumptionist position on the alleged fact that "the production of constant capital never takes place for its own sake, but solely because more of this capital is needed in those spheres of production, whose products pass into individual consumption" [13, p. 359] — a rather weak and highly "unMarxian" argument.

3. Cf. Robinson [17, pp. 35-42], and Sweezy [21, pp. 100-08]. It may be worth noting here that Marx, in a little-known passage, tried to supply such an economic reason by taking recourse to a Ricardian-sounding argument. The value of labor power, he insisted, declines more slowly than it would correspond to the overall increase in productivity of labor, because increase in productivity in industry is faster than in agriculture which produces the workers' means of subsistence. Cf. [15, pp. 359-60].

4. Cf. Rosdolsky [18]. The most elaborate and sophisticated defense of the orthodox Marxian position known to this writer was presented by Shane H. Mage in his unpublished Ph.D. dissertation [10].

5. It undoubtedly seems odd that Marx allows accumulation to outrun the labor supply, although fixed capital-labor coefficients are assumed throughout — a point stressed by Professor Samuelson [19, p. 901]. As will be shown later, in a different context Marx explicitly admitted the possibility of increase in the number of workers without a concomitant increase in the volume of plant operated by them, but not the other way round. Furthermore, the assumption that a developing economy would not experience any technological progress whatsoever is, of course, extremely drastic even on the first-approximation stage; and it certainly helps to discard the most simple explanation of an increase in real wages which "would not interfere with the progress of accumulation," unless the technological progress is taken to be heavily and uniformly capital-using.

6. As Professor Robinson rightly observed [17, p. 27] there is an interesting dualism in Marx's explanation of the mechanism behind the downturn in accumulation: he ascribes it at first to the weakened inducement to invest ("the stimulus to gain is blunted"— [11, p. 679]) only to return right afterward to the decline in volume of investible resources resulting from wage increases as the crucial factor. Indeed, the whole discussion has a distinctly pre-Keynesian flavor: divergencies in the rates of increase of capital and labor supplies are assumed to set off quasi-automatically a chain of equilibrating adjustments, with aggregate demand considerations left to look after themselves, and changes in inducement to invest being no more than a faithful reflection of the changes in the profit-wage ratio. True, also here the profitability schedule could be occasionally jerked upward as a result of "opening up of

new markets or of the spheres for the outlay for capital," but in context of this particular discussion Marx clearly treated such a possibility not merely as an exogenous, but as a fairly incidental factor.

7. "If the total quantity of the article produced by machinery, be equal to the total quantity of the article previously produced by a handicraft or by manofactory, and now made by machinery, then the total labor expended is diminished. . . . But, as a matter of fact, the total quantity of the article produced by machinery with a diminished number of workmen, instead of remaining equal to, by far exceeds the total quantity of the handmade article that has been displaced" [11, pp. 483-84].

8. "As the use of machinery extends in a given industry, the immediate effect is to increase production in the other industries that furnish the first with means of production. . . . When machinery is applied to any of the preliminary or intermediate stages through which the subject of labor has to pass on its way to completion, there is an increased yield of material in those stages, and simultaneously an increased demand for labor in the handicrafts or manufactures supplied by the produce of the machines" [11, pp. 484-85].

9. "Further, the machinery need not be renewed till it is worn out. Hence, in order to keep the increased number of mechanics in constant employment, one carpet manufacturer after another must displace workmen by machines" [11, p. 479]. Cf. also the often quoted passage on the "machine builder" in [16, p. 355].

10. A few of these points may nevertheless be briefly mentioned: (1) For economists brought up in the neoclassical tradition the notion of a jump from a labor-shortage to a labor-surplus situation as a result of "induced" laborsaving innovations seems puzzling. Shouldn't a shift to more capital using processes merely restore the equilibrium between supply and demand on the labor market? One way of answering this query would consist in noting that in the Marxian scheme of things the capitalists have every reason to carry the substitution of capital for labor beyond the point of full employment equilibrium; otherwise real wages could not be maintained at the level of reproduction costs of the labor power and would tend to eat into the surplus value. In short, "industrial reserve army" performs the same yeoman's service for Marx as "Malthusian devil" does for Ricardo. Yet while this argument, outlined in an early article by Oskar Lange [7] and later adopted by Sweezy [21], is not likely to cut much ice with economists who are not committed to the labor theory of value, Marxian analysis of technological change contains assumptions which in no way depend on such a commitment and which lend plausibility to the "overshot" thesis: (*a*) The technological progress in the case at hand is of a sharply discontinuous kind which makes the initial displacement effect on labor and on old-type capital quite pronounced; at the same time this progress involves a dramatic increase in amount of (new-type) capital per worker in an economy that is not very well adept at supplying it — a point to which we shall return; (*b*) the capital-labor ratios within each particular technological method are essentially fixed which makes it harder to reabsorb the displaced; and although Marx admits that the degree of utilization of plant can be varied [11, pp. 661-62], the portent of this relaxation is limited, because the capital stock of the economy (and, *a fortiori*, of its nascent modern sector) is implicitly assumed to be too small to provide jobs for the whole "industrial reserve army" even if utilized to the full capacity; (*c*) the preceding propositions explain the emphasis put on new investment as the only relevant offset to replacement. The argument runs exclusively in terms of capacity-increasing effect of such investment; Marx gave no indication of recognizing its income-generating effect in this particular context, and insofar he underestimated the reabsorption possibilities. Yet here, too, the lack of significant capacity reserves must be borne in mind. Owing to the relatively small size of the capital stock, the short-run impact of the multiplier on output and employment would be limited, although its effect in "enforcing" profits would be significant. (2) Are we to assume that new investment Marx is talking about in the paragraphs quoted above would, in his view, not have taken place at all if the innovation had not occurred or that it would have found its way into the system in any case albeit at a lower rate of return? It seems that with regard to the major portion of this investment the first interpretation would be correct. As we saw, Marx assumed that the scale of accumulation would be "suddenly extended" (i.e., that saving and investment out of profits would increase at the expense of capitalists' consumption) "under special stimulus to enrichment such as the opening of new markets or of new spheres for the outlay of capital." In case of a less dramatic increase in investment opportunities such a "sudden extension" would presumably not occur. But also then it would still be true that "the additional capitals formed in the course of normal accumulation serve *mainly* as vehicles for

the exploitation of new inventions and discoveries" ([11, p. 689]; italics supplied); and the same would hold for the full-scale replacement of the old capital.

11. "We here take no account of foreign trade, by means of which a nation can change articles of luxury either into means of production or means of subsistence and *vice versa*" [10, p. 636, footnote]. Marx's admission that the number of workers per given plant can vary has already been mentioned; and the opportunities of direct conversion from "2" to "1" were of limited importance in an era when industries producing consumers' durables of the mechanical-gadget type did not yet exist.

12. The lengthening of the average gestation period is a likely concomitant of such a switch for several reasons. The anticipated higher rate of growth would make it profitable, in many individual cases, to shift from the partial extention of the existing plant to more time-consuming full-scale construction of a new plant. This tendency would be particularly pronounced within the sector 1 industries whose share in the total output would have to be sharply increased; and the fact that the important basic-materials' subdivision of this sector has considerably higher gestation periods than the rest of the economy would tend to push up the average with added force.

13. E.g.: "A society where technical change and adaptation proceed slowly, where producers are reluctant to abandon traditional methods and to adopt new techniques, is necessarily one where the rate of capital accumulation is small. The converse of this proposition is also true: the rate at which a society can absorb and exploit new techniques is limited by its ability to accumulate capital" [6, p. 265]. The similarity between this passage and Marx's statements quoted in the footnote 10 (2) is evident. On the other hand, one could find in *Das Kapital* rudimentary elements of the "learning-by-doing" approach (cf. the brief quotation in the last paragraph of the preceding section, for instance) but their role in Marx's analysis should not be exaggerated.

14. It goes without saying that analogy between the "ceilings" in market economies and in the Soviet-type economies should not be pressed too far. Differences in impact and in the mode of operation are no less important than similarities. (I have briefly discussed both in my paper, "Development Strategy and Planning: The Soviet Experience," to be published in the forthcoming Universities-NBER volume, *National Economic Planning.*)

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Marxian Economics as Economics

P.A. Samuelson

Source: *American Economic Review*, Vol. 57, May 1967, pp. 616-623.

Genius or Crank?

This coming year Marx's *Das Kapital* celebrates its hundredth anniversary. At such a birthday party, only the Good Fairies should be invited. Those who cannot find anything at all nice to say should decline the invitation. On the other hand a great scholar deserves the compliment of being judged seriously; and truth does have its claims, on holidays as well as working days.

The "contradictions of capitalism," which Karl Marx saw everywhere, are as nothing compared to the contradictions of Marx himself. Marx was a gentle father and husband; he was also a prickly, brusque, egotistical boor. (Even Engels, his ever faithful friend, found it too much when Marx greeted the news of the death of Engels' working-class mistress with the callous response that now more work could be got done.) Although Marx was a learned man, he shows all the signs of a self-taught amateur: over-elaboration of trivial points, errors in logic and inference, and a megalomaniac's belief in the superiority of his own innovations. He introduced into scholarly literature manners not seen since the polemics of the renaissance. Too bad Marx could not have done systematic graduate work at Harvard under John Stuart Mill, and then been given a good chair at Columbia!

Evaluations of Marx show the same pattern of contradictions. Professor Bronfenbrenner, my colleague on today's platform, deems Karl Marx "the greatest social scientist of all times." Keynes consistently refers to the "turbid rubbish of the Red book stores" and dismisses the book we commemorate today as a "bible, above and beyond criticism, an obsolete textbook which I know to be not only scientifically erroneous but without interest or application for the modern world." This attitude Joan Robinson regards as rather a pity, saying: "Keynes could never make head or tail of Marx. ... But starting from Marx would have saved him a lot of trouble [as it did Kalecki]." In my Presidential Address, I find Marx referred to as "from the viewpoint of pure economic theory, ... a minor post-Ricardian

... a not-uninteresting precursor of Leontief's input-output."

There you have a spread of opinion — from the greatest social scientist to purveyor of rubbish. To ask what view is right is like asking whether the box in an optical illusion is inside-out or outside-in. There is no test-of-truth by which bets could be settled about the correctness of one view rather than another. Let me, therefore, turn my microscope onto aspects of Marxian economics that can be fruitfully discussed. But not before mentioning a reason why, beyond his scientific merits, we find a man like Karl Marx worth discussing.

For better or worse, Marx is an important figure in the history of ideas. And much is known about him — his fugitive letters, juvenile manuscripts, I dare say even his laundry lists. When a sizable audience knows much about a man — whether he be Dr. Samuel Johnson, Sherlock Holmes, or Karl Marx — the facts about him become subject to the law of increasing marginal utility. Frederick the Great's flute compositions would not sell as well under any other name. Most of Samuel Johnson's ideas were really pedestrian; but after we have pored much over his countenance, his face becomes like that of one of the family and each wrinkle takes on an interest all its own. Many a newly published fragment by Marx would be of no interest at all if known to be the work of some 1844 John Doe; the whole becomes greater than the sum of its parts — not because the Bronfenbrenner quotation from Veblen about the organic coherence of the Marxian system is really true, and not even because each fragment contributes something to the grand symphony of his thought, but merely because of an antiquarian interest that becomes like a detective-story game. Camp is a new word for an old — and, I may add, defensible — preoccupation.

But back to my microscope.

Tableaux of Expanded Reproduction

First, we can make a deposition — as the lawyers say — that Marx did, in his posthumous Volume II, innovate two-sector models of reproduction and growth. These are useful anticipations of work done in our day by Harrod, Domar, Leontief, Solow, Robinson, Uzawa, Pasinetti, Kaldor, Findlay, and many others. I do not honestly think that modern developments were much influenced, directly or indirectly, by Marxian writings; instead they grew naturally out of a marriage of the Clark-Bickerdike accelerator and the Keynes multiplier, and out of earlier works by Von Neumann and Frank Ramsey that show no Marxian influence. But still we all might well have benefited earlier from study of the Marx tableaux.

Second, there is a point made by Leontief himself. Many of these same Marxian models stressed the role of fixed capital in a way that the Austrian School generally did not. Because Böhm-Bawerk tied himself to simple arithmetic examples, his *Positive Theory of Capital* is almost always expressed in terms of circulating-capital models of goods-in-process. For Böhm, labor alone produces goods in the earliest stage of production — say

wheat. Then labor and wheat produce dough. Then labor and dough produce bread. There is no explicit need for durable capital goods in this "hierarchical" structure of Austrian production. (In terms of Leontief input-output the a_{ij} matrix is not only "triangular," permitting classification of goods into "earlier" and "later"; also, each good depends only on one earlier good, with all a's zero except, a_{i-1}, *i.*)

Marx on the other hand considered bread as being produced by labor and ovens; and ovens as being produced by labor and ovens. In Leontief's 1937 A.E.A. address on Marx, this is rightfully hailed as an important innovation. As Adolph Lowe and the late Frank Burchardt have stressed, the Leontief flow of circular interdependence is more Marx-like than Austrian.

Leontief refers to the "rather paradoxical situation. The dean of the bourgeois economists [Böhm] insisted on theoretical reduction of all capital goods to pure labor; he was opposed by the formidable proponent of the labor theory of value [Marx] in the role of a defender of the independent, primary function of fixed capital."

Leontief is calling attention here to a deeper paradox than that involved in the spectacle of a French Marxist advising the Indian government that labor is a redundantly free factor and capital alone is scarce — all having to be couched in terms of the concepts of the labor theory of value, a Yoga-like feat worthy of Hercules. Leontief goes on to claim superiority for the Marx model to handle the problem of high-wage-induced-substitution-of-machinery-for-labor. But is Leontief right in this contrast? In 1937 Leontief had not yet had the chance to remember the 1949 Non-substitution Theorem for the Leontief system. According to it, if the rate of interest or profit stays the same, that money wage increase which raises all prices proportionately in the Austrian wheat-dough-bread system will also raise all prices proportionately in the Leontief-Marx nontriangular system. Long-run substitution comes in either system only if the equilibrium interest rate changes.

Marx's model of expanded reproduction is perhaps the first example of those golden-age paths of compound interest which Cassel, D.H. Robertson, Von Neumann, Harrod, Domar, and all the rest have made so fashionable in modern economics. Before leaving it, let us note that it could lend substance to Marx's jest: "I am not a Marxian." Using it, he could say, "I'm not a post-Marxian of the Luxemburg underconsumptionist type." With historians Marx is able to have his cake and eat it too. On the one hand, he is the Ricardian critic of Malthusian underconsumptionist notions held by contemporary socialists like Rodbertus; on the other hand, he is hailed as a precursor of Keynes (and Major Douglas, Gesell, Hobson, Foster, etc.). Can a scholar have it both ways? In this respect, how can you be a precursor of Keynes without being a postcursor of Malthus? Perhaps being confused helps.

In any case, the compound interest rates of growth of the reproduction tableaux can provide the way out of some dilemmas of ultimate underconsumption that bothered Rosa Luxemburg and later Marxists. (See Paul Sweezy's valuable *Theory of Capitalist Development*, particularly Chap. X

and its Appendix.) If accumulation of profits can just suffice to keep all magnitudes growing in balance with smoothly growing labor supply for a few periods, compound interest says it can continue to do so forever. Many of the demonstrations to the contrary foundered on linear rather than exponential examples. (Yet, remember that saving and accelerator coefficients must be right in the beginning if the "warranted" growth rate is to just match the "natural" growth rate of labor so that the same behavior relations can be assumed to hold indefinitely; unless, as in bourgeois economics, there is a mechanism that causes such saving-accelerator coefficients to adjust to the requirements of equilibrium, it is an improbable razor's edge case in which the Marxian tableaux can step off in equilibrium.)

The Labor Theory of Value

As every encyclopedia reader knows, Marx believed in the labor theory of value. One might expect me at this stage of the birthday party to examine its demerits. But the many economists speaking on these platforms of the American Economic Association have examined its demerits far beyond my poor powers to add or detract. Let me therefore be dogmatically terse.

Proposition 1. Adam Smith held a labor theory of value for about as long as it takes a grown man to turn two pages of his book. David Ricardo never shook himself free of this incubus, but no reader of Sraffa's edition can fail to be persuaded that only some of the simplified numerical examples in the Ricardian system need have any reliance on such a theory.

Proposition 2. From the standpoint of science, the labor theory of value breaks down even before complications of capital enter into the model. With land scarce and different goods varying in their labor-land intensity, already goods will exchange at relative prices that are not proportional to socially-necessary labor content. Ricardo nodded and thought that by going out to the external margin of no-rent land, he could "get rid of the complication" of land costing. Why should we, or the Soviet planners, nod with him? (This point is obvious and appears in the first pages of the new edition of my *Economics*; yet when I searched the literature of the labor theory of value for it years ago, I could turn up only one reference to Lionel Robbins.)

Proposition 3. If Marx had intended to use the labor theory of value to lay bare the laws of motion of capitalism and if he had been barking up the right tree, then the inadequacies of the labor theory of value as exposited in Volume I of *Capital* would not really have mattered.

Let me explain what I mean. Most of Volume I would stand up if Marx stipulated, purely for expository simplicity, that the organic composition of capital (or as we would say, labor's fractional share of value added) were the same in all industries. By fiat the contradiction between equal rates of surplus value and equal rates or profit would disappear. (And make no mistake about it, Böhm-Bawerk is perfectly right in insisting that Volume

III of *Capital* never does make good the promise to reconcile the fabricated contradictions. When Paul Sweezy says that Rudolf Hilferding, in refuting Böhm's specific critiques of Marx, "gives a good account of himself and shows that even at the age of twenty-five he could stand up and trade punches with so experienced and inveterate a polemicist as Böhm-Bawerk," I have to pinch myself to remember that relative prices of goods do really change as demand changes even when their socially-necessary labor contents do not change — which is all the dispute is really about.)

In 1865, when Marx was at the height of his powers and had to boil down the message of his masterwork for a workers' audience, he introduced into the pamphlet, *Value, Price and Profit*, the simplifying notion that prices are proportionate to labor values — saying "apart from the effect of monopolies and some other modifications I now pass over." I suggest that much ink and blood would have been spared if he had done likewise in *Capital*. When a modern theorist assumes equal factor intensities in a two-sector Ramsey-Solow model, he does not defend the oversimplification: he is content to know that anything interesting turned up in it is likely to be of relevance for a more complicated model.

In summary, if labor-theory-of-value reasoning, as applied to an impeccable model of equal factor intensities, turned up new light on exploitation in an existing system or if it turned up new light on the laws of development of capitalism, it would be an invaluable tool even though not defensible as a general theory of markets.

If, and if. Let us see whether Marx was at all barking up the right tree.

Laws of Motion of Capitalism?

The usual claim for superiority of Marx's system is not that he beats the vulgar economists at their own game of describing equilibrium pricing, but that their game is not worth the playing: whereas Wicksell, Walras, and Chamberlin give a good enough description of the economic system as it is, we must turn to the Marxian system for insight into the laws of development of the capitalistic system. Its inferior statics can be forgiven considering its much superior dynamics. Such a claim, if it can be sustained, is indeed a weighty one.

Let us review the authorities. Leontief, in that same 1937 address, makes heavy weather of finding much to praise in Marx besides his anticipations of input-output. But Leontief is able to say:

> However important these technical contributions to the progress of economic theory, in the present-day appraisal of Marxian achievements they are overshadowed by his brilliant analysis of the long-run tendencies of the capitalistic system. The record is indeed impressive: increasing concentration of wealth, rapid elimination of small and medium sized enterprise, progressive limitation of competition, incessant technological progress accompanied by the ever growing

> importance of fixed capital, and, last but not least, the undiminishing amplitude of recurrent business cycles — an unsurpassed series of prognostications fulfilled, against which modern economic theory with all its refinements has little to show indeed.
>
> Neither his analytical accomplishments nor the purported methodological superiority can explain the Marxian record of correct prognostications. His strength lies in realistic, empirical knowledge of the capitalist system. (*A.E.R.*, Mar. sup., 1938, pp. 5, 8.)

Here Leontief is referring to the then recent work by Oskar Lange, whose death we have so recently mourned. The years 1934 to 1944 constituted Lange's wonder decade, during which he turned out brilliant articles in capital theory, welfare economics, Keynesian model building, and much else. In the 1935 *Review of Economic Studies*, Lange compares the merits of Marxian and modern economics and finds Marxian economics superior in specifying the institutional data out of which can be formed a theory of capitalistic development. Despite its outdated concepts, Marxian economics is believed by Lange to be able to explain what bourgeois economics has utterly failed to explain: "the fundamental tendencies of the development of the Capitalistic system — the constant increase of scale of production leading to the present monopolistic (or rather oligopolistic) Capitalism; the substitution of ... 'planning' for *laissez faire*; ... free trade to protectionism; ... imperialist rivalry among the principal capitalist powers; increase of economic instability leading to rebellion (Socialism or Fascism)."

Here Lange is proceeding from the 1933 *Kyoto Economic Review* article by Kei Shibata, which asserted that Marxian political economy "sets forth theories which ... enunciate systematically the organisation of present-day capitalistic society and the laws governing its development." As I understand him, Lange is agreeing with the dynamic superiority of Marxian economics and seeking its source; but, unlike Shibata, he does not concede its superiority to explain the then current economy. For Lange points out current "problems before which Marxian economics is quite powerless. What can it say about monopoly prices? ... monetary and credit theory? ... incidence of a tax, or of technical innovation on wages?"

You will notice that Leontief credits Marx with great prophetic powers but is noncommittal as to whether Marx's economic theories helped him to arrive at these (possibly merely lucky) guesses. Lange attempts to make stronger claims for Marxian theories. He says they deduce that "the fundamental change occurs in production and that the 'necessity' of such a change can be deduced only under the institutional set-up specific to Capitalism. Thus a 'law of development' of the Capitalist system is established ... not a mechanical extrapolation of a purely empirical trend. ..."

So much for the claims. But is it so? Let us be honest children and ask whether the Emperor is really wearing clothes, and whether those clothes really do follow some grand theoretical pattern.

Specifically, was Marx right as a prophet of the future of Victorian

capitalism? The immiserization of the working class, which he thought to deduce from the labor theory of value and his innovational concept of surplus value, simply never took place. As a prophet Marx was collosally unlucky and his system collosally useless when it comes to this key matter. This is not to deny Joan Robinson's view that such a prophecy had a certain propagandistic value. She says, "This error, like Jesus' belief that the world was shortly coming to an end, is so central to the whole doctrine that it is hard to see how it could have been put afloat without it. . . . 'You have nothing to lose but the prospect of a suburban home and a motor car' would not have been much of a slogan [for the Communist Manifesto]." With friends like this, who has need for an enemy?

Let's now move on to the growing monopolization under capitalism. For thirty years Marx seemed to have been right in this prophecy, even though for the next seventy years he does not seem to be borne out by the most careful of researches on industrial concentration. But suppose he (and numerous non-Marxian socialists) had been right in this view. Would such an extrapolation be deducible in any way from the surplus value ratios, $S/(V + C)$, of any of the volumes of *Das Kapital?* No one has yet shown how, and I have to agree with the recent book of Paul Sweezy and Paul Barran which seeks to identify as an important explanation of the stagnation of Marxian social science the fact that "the Marxian analysis of capitalism still rests in the final analysis on the assumption of a competitive economy" (*Monopoly Capital,* 1966, p. 4).

Since time is short let us rush on to consider whether it is an inevitable law of capitalist development that the business cycle should be getting worse and worse. Shibata and Lange, writing in the 1930's, might be forgiven for thinking so, just as writers in 1929 can have been expected to celebrate the demise of economic fluctuations. Who can blame someone for not having predicted in 1867 the successful development of the Mixed Economy, in view of the fact that so astute a philosopher as Joseph Schumpeter managed to miss foreseeing it as late as 1947? I throw no stone at Marx, because I have never believed in the big-picture theories of anyone — Toynbee, Spengler, Schumpeter, Veblen, Marx, or even Rostow and Galbraith. But those who have been bewitched by a belief in the timetable of history, as deduced by theoretical laws of motion of capitalism, should taste the bitter bread of disillusionment.

Had Lange been writing in 1937, after Keynes, he might have added to the 1935 sentence "Marxian economics would be a poor basis for running a central bank or anticipating the effects of a change in the rate of discount" the sentence, "and it would be a poor basis for understanding the role of fiscal policy in maintaining high employment." What admissions! This is equivalent to saying, "Marxian economics is powerless to explain the 1937-67 developments of European and American economies."

The cash value of a doctrine is in its vulgarization. To understand the pragmatic content of Marshall, you must read Fairchild, Furniss, and Buck. To prove the Marxian pudding, only read the Soviet textbooks dealing with American and Western economic systems. Aesthetics aside, their predictive powers have been unbelievably erratic and perhaps only to be

understood in terms of the dictum: Marxism has been the opiate of the Marxians.

But this is a birthday party and I approach the boundaries of good taste. Let me conclude by wishing that, like Tom Sawyer attending his own funeral, Karl Marx could be present at his own centennial. When "the Moor" rose to speak, how we would all pay for our presumptuousness!

62

Marxian Influences in 'Bourgeois' Economics

M. Bronfenbrenner

Source: *American Economic Review*, Vol. 57, May 1967, pp. 624-636.

"Why on earth should a man, because he is a Marxist, be a drivelling idiot?"
— Boris Pasternak, *Doctor Zhivago.*

I

Das Kapital's centenary finds Karl Marx still a controversial figure, wherever he is neither a plaster saint nor a four-letter word. Nowhere has he been easily forgotten, and *Das Kapital* is still the most influential unread book in existence.

Precisely because Marx is a controversial figure, let me state in advance my personal bias concerning him. This bias is expressed most readily by analogy. Suppose one asked a sample of Unitarian ministers their choices as the greatest religious philosopher of recorded history. Most would vote, I am sure, for Jesus, Buddha, or Moses, and yet a Unitarian is neither a Christian nor a Buddhist nor a Jew. In the same way, were I personally asked to name the greatest social scientist of all time — not necessarily the greatest economist — I should name Karl Marx, but without considering myself a Marxist or being considered one by my exclusivist Marxist friends. There are too many "bourgeois" elements in my thinking, however great my admiration for the Marxian theoretical structure, and I remain a muddled eclectic. (F.B.I. and Birch Society please note.)

II

My assignment, to consider bourgeois economics' debt to Marx, recalls this Association's last full-dress "Marxism" session, in 1937. At that time Wassily Leontief and the late Leo Rogin agreed that both contemporary orthodoxy and the early New Deal owed considerably less to Marx than many anti-intellectual and anti-Roosevelt extremists supposed at the time.[1] With Rogin's "policy" verdict I shall not disagree, but Leontief's "theory"

verdict might well be revised upward in view of our own advances since 1937. Which leads me to wonder, may not further upward revision of my own estimate be required, if it is exhumed in 1997?

I propose to modify my assignment in two ways. First, by limiting myself to the debt owed the Marxian system by the so-called "conventional" wisdom of our profession and omitting any consideration of the relation between Marx and the dissidents who preceded and followed him. Second, by considering not only the debt we owe Marx in fact, which now appears to me greater than it did to Leontief a generation ago, let alone to Böhm-Bawerk and Thorstein Veblen a generation before Leontief, but also the debt we should have owed him from the outset had his ideas been more felicitously phrased and our predecessors more willing to listen to them.

These modifications may require defense. The problem immediately arises, in the first place, or separating out Marxism specifically from the wave of economic heterodoxy, socialist and non-socialist, which has served as antithesis to the great theses of first the classical and then the neo-classical schools. This problem I lack scholarship to solve, and I should prefer to interpret my function in such wise as to enable me to dodge it instead.

Marx was, like Keynes, primarily a synthesizer, at least in his economics. There are few if any elements of his system which cannot be found in embryo in one or another predecessor. (The English "Ricardian Socialists" come immediately to mind.) There are yet fewer elements not paralleled by one or another reformist or socialist contemporary or near-contemporary. Marx's genius lay, like Keynes's, in synthesis, in combining bits and pieces from one and another system into a whole greater than the sum of its parts. It is this aspect of Marxism, in particular, that seems to have gone unappreciated by Marx's earlier bourgeois critics, who tend to hack away at trees without disturbing the forest.[2] It is worth pausing to observe those modern and ultramodern constructs which went unrecognized for two generations or more. At the same time, who can say whether some quasi-Marxian influence in conventional economics came directly from Marx or from any of half-a-dozen sources independent of Marx, including the *Zeitgeist?*

III

Before getting down to the substance of this paper, besides redefining my assignment for my own purposes, I should like to help lay an extraordinarily durable ghost. This ghost is the perverse influence some people suspect that Marx exercised on the subsequent development of theoretical economics. It is the belief that the subjective, marginal, or utility revolution in value and price theory was prompted ideologically, to escape from the consequence of the labor theory of value as developed particularly by Marx.[3] This thesis is not proven; in fact, the weight of evidence seems to be against it.

Offhand, the case looks suspicious in both time and place. Volume I of *Das Kapital* appears in 1867. The year 1870 is the accepted date for the

Jevons-Menger-Walras utility revolution, which carried the field where earlier efforts along identical lines had apparently been dismissed out of hand. Moreover, the labor theory failed more rapidly in the German-speaking countries, where Marxism was strong, than in the French- and English-speaking ones, where it was weaker. (The successor to the classical labor theory was not uniformly marginal utility. Most notably in Germany, the residuary legatee was some form of historicism, but that is another issue.)

The main evidence against the Marxophobe thesis regarding the development of utility theory seems to be that *Das Kapital* itself succeeded so slowly, except in primitive, precapitalist Russia. "In Western Europe, Engels had to write virtually all the reviews ... under his own name and various pseudonyms."[4] By the time the first volume became reasonably well known, in the 1880's, the utility revolution was independently in full swing, and marginal productivity was peering marginally over the marginal horizon.

As for the German anticlassical revolution, it was well under way by 1867; in fact, one of Marx's favorite vulgar-economist whipping-boys was none other than Wilhelm Roscher, best known to doctrinal history as a principal founder of the "older" historical school.

There is a subordinate point of similar import. Marx was no shrinking violet regarding his own importance in the history of thought, but both he himself and his followers have pointed to Ricardo, his predecessor, as having frightened the bourgeoisie with the implications of the labor theory of value and induced its weakening and abandonment by the vulgar economists. *Theorien über den Mehrwert* is of course the text here, and subsequent Marxian and neo-Marxian accounts of doctrinal history take a similar line.[5]

IV

In considering what students should know about Marxian macroeconomics (in un-Marxian isolation from the remainder of Marx's social philosophy) I have found two expository devices both effective and time-saving: (1) formulating Marxian statics as a simple Lausanne school general-equilibrium system, and (2) formulating Marxian dynamics in a "dilemma" diagram, by which no profit rate could remain, as technology progressed with a laborsaving bias, simultaneously high enough to avoid liquidity crises and low enough to avoid overproduction at (or below) any predetermined unemployment percentage. These devices or "Marx-like models" having appeared in print elsewhere,[6] I relegate them, in modified form, to an Appendix. Here, with occasional references to specific equations of this Appendix, I limit myself to a catalogue of some nine "modern" elements of *Das Kapital*, not all of which I find personally congenial, which academic economists missed almost entirely until the 1930's.[7] Keynesian parallels should be obvious, and also "structuralist" ones, involving *inter alia* Leontief's own input-output system.

1. Division of the private economy into "investment" and "consumption" sectors has become commonplace in the post-Keynesian generation, but it apparently dates from Marx.

2. If I am justified in including certain imprecisely specified "functions" — Section IV, equations (15)-(16) of the Appendix — into the Marxian schema,[8] he was an embryonic general-equilibrium theorist in advance of Leon Walras.

3. Marx presents a theory of underemployment equilibrium well in advance of Keynes, with the unemployment rate tending, for structural reasons, to increase over time.

4. The notion of a minimum rate of profit, below which capitalists will seek to hoard their savings in monetary form, seems to be a first cousin to the Keynesian liquidity trap in interest theory. Indeed, Marx's entire interest theory concentrates on equalizing returns to "money" and other capital; it may be a modern monetary one ahead of its time,[9] although my old-fashioned inclination is to believe otherwise on balance.

5. Marx antedated current institutionalist and structuralist writers, from Veblen and Ayres to Leontief and Chenery, in downgrading the importance of prices, and price-induced substitutions, as compared with purely technical production relations.[10]

It is the unimportance of prices, and *a fortiori* the unimportance of their divergence from values, for anything but the statical equilibration of markets and profit rates, that makes the labor theory of value so easy to uphold in the Marxian framework, both definitionally and as a workable approximation to competitive microeconomic facts. The point may be worth repeating: Nothing in Marx's aggregative "laws of motion of capitalism" would be affected in any significant way by any change in the pattern of divergences between prices and values, the p_1 terms in the Appendix.

6. I owe to Leontief's 1937 paper to this Association an appreciation of the indebtedness to Marx of business cycle theory, which may itself be in something of an eclipse at the moment. A running quotation will touch the high spots of Leontief's appreciation:

> Present-day business cycle analysis is clearly indebted to Marxian economics. It would hardly be an exaggeration to say that the three volumes of *Capital* helped more than any other single work to bring the whole problem into the forefront of economic discussion.
>
> It is rather difficult to say how much Marx actually contributed to the solution of the problem. The two principal variants of the Marxian explanation of "economic crises" are well known. One is the theory of underinvestment, the other is the theory of underconsumption. Both might contain some grain of truth.
>
> It is easy to find numerous hints and suggestions which can be interpreted as anticipating [each] and every modern theoretical construction.
>
> [Here Leontief quotes from the Marx-Engels correspondence a passage indicating that "toward the end of his life Marx actually anticipated the statistical, mathematical approach to business cycle analysis."]

> The significance of Marxian economics for modern business cycle theory lies, however, in the famous Marxian schemes of capital reproduction. An intelligent discussion of economic fluctuations must be based on some theoretical model revealing the fundamental structural characteristic of the existing economic system. In this field the original contributions of post-Marxian economics are rather uncertain. [Marx] developed the fundamental scheme describing the inter-relation between consumer and capital goods industries. The Marxian scheme still constitutes one of the few propositions concerning which there seems to exist a tolerable agreement among the majority of business cycle theorists.[11]

7. As in business fluctuations in contrast with stationary states (or Von Neumann rays!), so in imperfect in contrast with pure competition, Marx gives us no finished theory but an urgent sense of general unease, integrating facts and analysis, which has come to fruition long after his death. I remember my teacher, Frank H. Knight, warning me against undue interest in imperfect competition; specialists in that area, he said, usually ended up as Marxists!

8. Passing to more general and methodological matters, one hesitates to point out the smooth and natural articulation of Marxian statics and dynamics, because this virtue is shared with Marx's classical predecessors. However, *Das Kapital* was the last system with this feature — at least until Schumpeter. Static analysis took over the field in the 1870's, and we are not yet back to the Marxian level.

9. In the same way, Marx's assimilation of theory and practice, of economics and other social studies, is not new. He stands last, and possibly greatest, in a series from Locke through Hume and Smith, Ricardo and Mill, in what we self-consciously call today an interdisciplinary tradition. After Marx, such architectonics went out of fashion among economists, and was left to philosophers and sociologists uninterested in economics, or sated with it. It is characteristic that Keynes confined the "social philosophy" of the *General Theory* so largely into one chapter. Following his (and Schumpeter's) day, economists are once more raising their sights to embrace the other social disciplines, but no practitioner of Marx's own stature has yet emerged.

V

Because my critique of Marx differs both from the standard Böhm-Bawerkian textbook one and from the one Professor Samuelson is presenting today, let us consider it, if only as the reverse side of the appreciation expressed up to this point.

As for the statics, the besetting sin is ambiguity, a misdemeanor rather than a felony. Some of this ambiguity — for example, the frequent confusion between stocks and flows, particularly as regards constant capital — Marx might well have corrected had he lived to polish his system for a

second edition. Another type of ambiguity, exemplified by the question of whether he proposed to set up a general equilibrium or disequilibrium system, cannot be resolved short of presenting the question to Marx's ghost, since it was not presented to him in the flesh. Rather, what I have in mind is the so-called "transformation problem," or the relation between values and prices.

Here the problem is less that Marx failed to make his meaning clear than that he offers alternative solutions with no basis for choice among them. If we accept my device (in the Appendix) of using p-coefficients as ratios of price to value (pure numbers) instead of absolute prices, one may argue, with textual justification, for some such equation as (3), which makes total and average values equal "total" and average prices. But one can argue just as readily, and again with textual justification, for making the sum of surplus values equal to the sum of profits (with all receipts and costs converted into prices). Some have also suggested setting price arbitrarily equal to value for one or another sector of the economy, which Marx never did. (A "luxury good" sector, composed of capitalists' consumption goods, is a common choice, because it does not reflect back to any other sector in the form of cost.) The point is not only that Marx made no clear choice, but that his system includes no clue for making one. The system works equally well either way, but with, in general, different results.[12] One is reminded of Mrs. Robinson's strictures against neoclassical price theory and its ambiguous treatment of "normal profits."[13] The "transformation problem" is the Marxian equivalent.

Allied to this ambiguity is another, involved in System II and equation (9) of the Appendix. This is the aggregative equality of supply and demand. Should it be expressed in terms of value (labor time) or of price (labor time as modified by p-coefficients)? Since supply and demand are market phenomena, and hence involve market prices, I have chosen the second alternative, following a suggestion by Mr. Yutaka Kosai. Most of the Marxian illustrations run in value terms, however, as did my own earlier efforts. Clearly, a substantive difference is involved, except in the trivial special case where all p-coefficients are equal to unity.

VI

Passing to the Marxian dynamics, I have somewhat less to add to the standard bourgeois appraisals. But once again, it is not completely clear what Marx is saying. Is the motive force of capitalist decline a falling rate of profit plus a liquidity trap of some sort, a tendency toward overproduction and underconsumption manifest in "realization crises," or some dilemma compounded of the two? There is again a related ambiguity: is collapse to come more or less automatically from accumulated disgust with prolonged stagnation and increasing unemployment, or can we expect the revolution before such a point is reached? My own interpretation leans toward a "dilemma model," with the realization crisis the dominant weakness, insofar as monopoly or oligopoly may prop up the profit rate by raising the rate

of exploitation for a capitalist class which forms a diminishing proportion of the population.[14] On the issue of stagnation versus cataclysm, or the timing of the revolution, I am not sure Marx ever made up his mind, after disappointment of his hopes for the late 1840's. He would take his socialist revolution either way and at any time, and the sooner the better!

Assuming these ambiguities resolved, the principal shortcoming of Marx's uniquely original and influential dynamics appears to be interdisciplinary — an odd weakness indeed, in view of Marx's own stress on the unity of the social studies, history, and philosophy. Two illustrations involve logic and political theory, respectively.

As regards logic, I can do no better than repeat the main point of Professor Murray Wolfson's recent logical-positivist critique.[15] To Wolfson, Marx's forecast of capitalist downfall is so imprecise as to time, place, and pattern, that it is difficult to imagine any sequence of historical events in finite time as refuting it. Being irrefutable, the Marxian dynamics become, by logical-positivist criteria at any rate, essentially meaningless.[16] And indeed, it seems as difficult to cite Russian or Chinese semicapitalist or developing-country experience as supporting the Marxian system as to cite the last century of American or Western European advanced-capitalist experience as disconfirming it more than temporarily.

In the domain of political philosophy, Marx's theory of the state and its economic functions, however revolutionary in its own day, seems fundamentally outmoded in the large by institutional developments. It is no longer enough to laugh off the capitalist state as "merely" the instrument of the capitalist ruling class. Even accepting this proposition with fewer reservations than most Americans do, its significance is no longer so obvious as it was in Marx's lifetime. Viewed purely as an instrument of the capitalist class, the state has an interest in preserving the capitalist order, and need not sit idly by on bayonets while that order crumbles away in depression and stagnation. Furthermore, the modern state commands resources of monetary and fiscal policy undreamed of in Marx's philosophy, which was apparently shackled to metallism and budgetary balance by the implications of the labor theory of value. Whatever the flaws of contemporary monetary-fiscal economics, it will not do to dismiss them as "creation of fictitious values," an orthodox Marxist procedure of the New Deal period.[17]

The Soviet trend toward "competitive coexistence" since Stalin's death is often associated with retreat from Marx's original position, and the Chinese charge of "modern revisionism" is entirely plausible. Instead of denying the efficacy of monetary and fiscal policy in averting stagnation, the revisionist line calls the method wasteful, bellicose, and divorced from the people's welfare as compared with all-out "rational" socialist planning for growth and progress. Whatever one may think of this argument — to me, the issue remains wide open — it has progressed a long way from any volume of *Das Kapital.*

VII

The foregoing estimate, viewing Marxism primarily as macroeconomics, is intended as neither outright acceptance nor outright rejection. On the static side, it is probably less unsympathetic than most American classroom presentations. On the dynamic side, it is more conventionally critical, but not to the point of suggesting that Marxian dynamics is completely outmoded, no longer worth taking seriously, or an impossible basis for useful extensions.

Let me close by repeating another position I have already taken.[18] I look forward from the centenary of *Das Kapital* to the time when, in America as elsewhere, serious academic work in controversial Marxian economics is carried on by professed Marxian economists as well as others like myself, and when the ideological handicap under which Marxists presently suffer in seeking academic preferment is lowered from three strikes to one, and preferably abandoned completely. And, if the point needs making before this audience, I also look forward (with considerably less confidence) to similar freedom for controversial bourgeois economics by bourgeois economists in predominantly socialist countries.

Appendix

Notation

Department I (subscript 1), produces capital goods.
Department II (subscript 2), produces consumption goods.

- W — Value, measured in labor-hours (hours of socially-necessary labor).
- C — Constant capital, depreciation and intermediate goods, measured in labor-hours (a flow, not a stock).
- V — Variable capital, wages of production workers, measured in labor-hours (of product, not of actual labor).*
- S — Surplus value, property income plus salaries, measured in labor-hours.
- p — Ratio of price to value, a pure number.
- w — Wage rate of productive labor, measured in labor-hours of product.
- S' — Rate of surplus value, S/V.
- P' — Rate of profit, essentially $S/(C+V)$.
- K — Fixed capital (a stock).
- d — Depreciation rate, essentially C/K.
- g — Proportion of S invested in output of Department I.
- k — Organic composition of capital, C/V.
- h — Capital coefficient of Department II, W_1/W_2.
- u — Rate of unemployment, $1-(\Sigma V_1/V_o)$.

* V_o — The "full employment" value of ΣV_t.

Equation Systems

I. Labor Theory of Value (8 Equations)

1-2. $W_i = C_i + V_i + S_i \; (i = 1, 2)$

3. $\Sigma W_i = \Sigma p_i W_i$

4-5. $w = \dfrac{V_i}{S_i + V_i}$

6. $S' = \dfrac{1 - w}{w}$

7-8. $P' = \dfrac{S_i p_i}{V_i + (C_i/d_i)}$ or $P' = \dfrac{S'_i p_i}{1 + (k_i/d_i)}$

Notes:

1. From (4)-(6) we also have $1/w = S' + 1$.
2. The wage rate w is also constrained by the standard of living, expressed by the past wage rate w_{-1}. This constraint does not take equational form; it may be expressed by the condition that the quotient or difference of w and w_{-1} should not exceed some constant ϵ in difference from unity or in absolute value, respectively.

II. Supply and Demand (1 Equation)

9. $p_1[V_1 + (1 - g)S_1] = p_2(C_2 + gS_2)$

III. Structural Equations and Identities (4 Equations)

10-11. $k_i = \dfrac{C_i}{V_i}$

12. $\Sigma C_i = \Sigma d_i K_i$

13. $u = 1 - \dfrac{\Sigma V_i}{V_o}$

14. $h = \dfrac{W_1}{W_2}$

IV. Functional Relationships (2 Equations)

15. $g = g(P', h, W_2)$ ... all derivatives nonnegative.

16. $u = u(S'_{-1})$, so that, from (7-8) $P' = \dfrac{[u(S'_{-1})]^{-1}}{1 + (k/d)}$

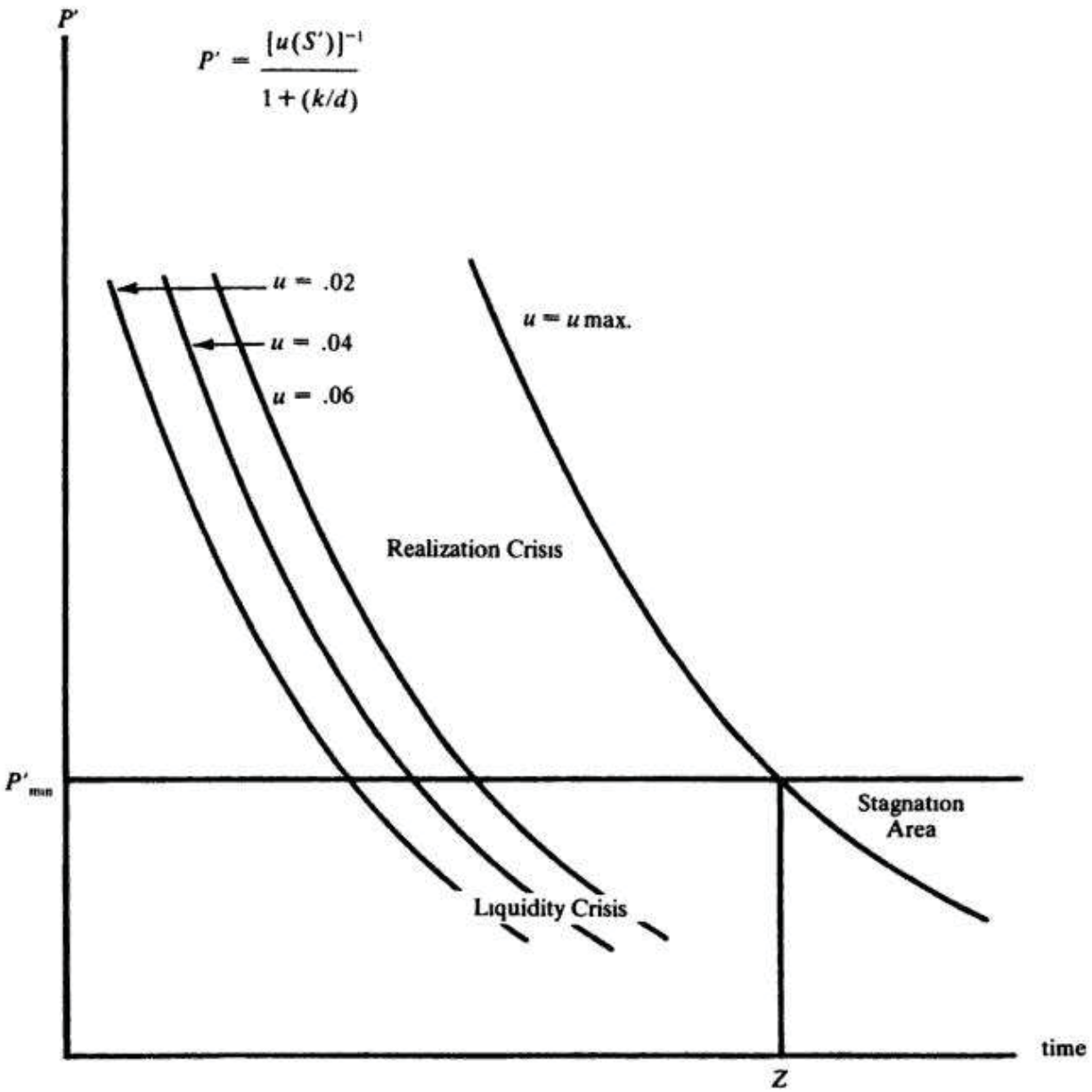
Note: S'_{-1} in (16) is a proxy for the recent-past rate of surplus value, and does not refer exclusively to the period immediately preceding. The derivative du/dS_{-1} should be considered positive.

Unknowns (16)

W_t, C_t, V_t, S_t, p_t — 10 in all
S', P', w, h, g, u — 6 in all

Note: All other variables are technologically determined.

"Dilemma" Diagram



Notes: 1. k presumed to increase with time.
2. No time trends in d or P'_{min}
3. Z = *Zusammenbruch* (collapse, breakdown).

Notes

1. Wassily Leontief, "The Significance of Marxian Economics for Present-Day Economic Theory," and Leo Rogin, "The Significance of Marxian Economics for Current Trends of Government Policy," John Ise and Joseph J. Spengler, discussants (*A.E.R.*, Mar. sup., 1938).

Stronger views than these are quite commonplace. I cite at random Raymond Aron, "The Impact of Marxism," in Milorad M. Drachkovitch (ed.), *Marxism in the Modern World* (Stanford Univ. Press, 1965), p. 15, as a strong statement with which I propose to take issue: "To profit from the progress ... in economic thinking since Ricardo and Marx, one would have had to dispense with the conceptual apparatus of *Das Kapital*."

2. However, consider Veblen, "The Socialist Economics of Karl Marx and His Followers," *Q.J.E.*, Aug., 1906, reprinted in *The Place of Science in Modern Civilization* (New York: Huebsch, 1919), p. 410 f. "Except as a whole ..., the Marxian system is not only not tenable, it is not even intelligible. ... No member of the system, no single article of doctrine, is fairly to be understood, criticised, or defended except as an articulate member of the whole and in the light of the preconceptions and postulates which afford the point of departure and the controlling norm of the whole."

3. Two examples will suffice, one from an eminent economist and the other from an outsider with iconoclastic ambitions: "It is worth recalling that parts of [the marginal productivity theory] were, to some extent, originally developed to provide a rebuttal to Marx's theory of exploitation." Tibor Scitovsky, "Some Theories of Income Distribution," in *The Behaviour of Income Shares* (Princeton Univ. Press for National Bureau of Economic Research, 1964), p. 22; "[E]ver since Marx used Ricardo to expound his famous labor or surplus theory of value (a thunderous moral statement) traditional economics has noticeably lost interest in what was formerly the central problem in economic theory, the problem of value." David Bazelon, *The Paper Economy* (Random House, 1963), p. 15.

4. Bertram D. Wolfe, *Marxism* (Free Press, 1965), p.x. Engels wrote at least nine separate reviews of the first volume of *Das Kapital* (*ibid.*, n. 3). The British Marxist historian E.J. Hobsbawm writes of British reaction: "Between 1850 and 1880 it would have been hard to find a British-born citizen who called himself a socialist in [the modern] sense, let alone a Marxist. The task of disproving Marx was therefore neither urgent nor of great practical importance. ... [Although the earliest non-Marxist 'expert' on Marx wrote in 1879], "I doubt whether anything even approximating to a usable non-socialist summary of the main tenets of Marxism ... exists before Kirkup's *History of Socialism*" (1900). "Dr. Marx and the Victorian Critics," in *Labouring Man: Studies in the History of Labour* (London: Weidenfeld and Nicolson, 1964), p. 240 f. Professor Herbert G. Gutman has supplied me with parallel American information as well. For example, the Chicago *Tribune* warned against socialism in December, 1873, for the reason (among others) that Marx had rejected classical economics! Three years later, a New York labor paper (*The Socialist*) began summarizing the first volume of *Das Kapital* as a weekly serial. Gutman, "Failure of the Movement by the Unemployed for Public Works in 1873," *Polit. Sci. Q.*, June, 1965, p. 272.

5. For example, Rogin argues, discussing Jevons (*The Meaning and Validity of Economic Theory*, Harper, 1956, p. 468 f.): "Ricardo's theory of the inverse relation [between wages and profits] ... was developed incidentally to his preoccupation with the trend of profits as the criterion of economic progress. ... But with the shift from the social and political conflict between landlords and the industrial bourgeoisie to the one between labor and capital, Ricardo's theory [N.B. Not Marx's theory] served to feed theoretical fuel to the flames of the latter conflict." A more elementary Marxist writer, John Eaton (*Political Economy* [New York: Int. Pub., 1966], p. 27) is more explicit: "Marxist economic theory was built upon the scientific foundations laid by ... Adam Smith and Ricardo, for whom the labor theory of value was the foundation of economic science ... [T]he labour theory of value enabled Marx to show the nature of capitalist exploitation and that capital itself was doomed to extinction. The defense of capitalism called, therefore, for an attack upon the labor theory of value. Bourgeois theory was quick to sense this, and from about 1830 [N.B. Not 1867] has been in quest of an economic theory that rejected the labor theory of value."

6. M. Bronfenbrenner, "*Das Kapital* for the Modern Man," *Sci. and Soc.*, Autumn, 1965, "Classical and Marxian Macro-Economics in Separate Nutshells," in *Essays in Honour of Marco Fanno* (Padua: Cedam, 1966), pp. 140-50, and "The Marxian Macro-Economic Model: Extension from Two Departments," *Kyklos*, June, 1966. My debt to Lawrence R. Klein, "Theories of Effective Demand and Employment," *J.P.E.*, Apr., 1947, will be obvious. Candor also requires the admission that a proposal for translation of the *Science and Society* essay into German has been rejected (in East Germany) because of alleged distortions of Marxian doctrine. The modifications in the present Appendix reflect primarily criticisms received at a Johns Hopkins University seminar in May, 1966.

7. On the Marx-Keynes relationship, which became apparent at the end of this decade, compare Mark Blaug, *Economic Theory in Retrospect* (Irwin, 1962), p. 270 f.: "Most authors are impressed by the similarities . . . : Two-way disaggregation on the product side of the social accounts; a monetary theory of the rate of interest; the rejection of Say's Law; emphasis on the declining marginal efficiency of capital; and a chronic tendency toward oversaving in a mature economy."

8. The Marxian underconsumptionists, such as Rosa Luxemburg, would doubtless deny the authenticity of (15). Other Marxists would also deny, with some horror, the entire notion of Marx as an "equilibrium" economist, since the term has taken on optimal and/or full employment overtones above and beyond its service as a check on logical consistency. Compare Bronfenbrenner, "Classical and Marxian Macro-Economics," *op. cit.*, p. 150.

9. For this interpretation, see Blaug, *op. cit.*, p. 265, citing *Das Kapital*, Vol. III, Chap. 13. But suppose, with, e.g., Böhm-Bawerk, an economy in which goods are borrowed and lent *in natura*, or in which the numeraire is an abstract, noncirculating unit of account. Would not a rate of interest prevail here too (under capitalism), along the lines of the exploitation theory of interest more commonly ascribed to Marx?

10. Marx may himself have been anticipated by Ricardo in this respect, if one accepts Piero Sraffa's interpretation of *Production of Commodities by Means of Commodities* (Cambridge Univ. Press, 1960) as modernized Ricardianism. To me, the Sraffa system appears to omit the considerations underlying the Ricardian theory of rent. This makes it, as a Ricardian system, "Hamlet without the Dane," while, as a Marxian one, it is only "Hamlet without Rosencrantz and Guildenstern."

11. *Op. cit.*, pp. 3-5. Professor Howard Sherman has shown me his unpublished essay on "Marx and the Business Cycle," which goes into further detail.

12. For a demonstration that the results do in fact differ, with a three-sector model, so that no single set of prices satisfies both of Marx's "invariance criteria," see Blaug, *op. cit.*, pp. 213-15 (correcting several misprints).

13. Joan Robinson, "The Basic Theory of Normal Prices," *Q.J.E.*, Feb., 1962, pp. 10-12.

14. I owe to Professor Nobuo Okishio an interpretation of the falling rate of profit which would, if valid, apply under monopolistic as well as competitive conditions. Ignoring all distinctions between stocks and flows by setting our d equal to unity, we have:

$$P' = \frac{S}{C+V} < \frac{S+V}{C} = \frac{\text{"living labor"}}{\text{"dead labor"}}$$

In the Marxian vision of technical progress (*Das Kapital*, Vol. III, Chaps. 4-6, 13-15), by Okishio's interpretation, it is really this last ratio rather than the organic composition of capital k, which tends to fall over time. (As has been remarked frequently, especially by students of Chap. 14, Marx was less dogmatic about "Marx's Law" than many of his followers have been.) Let us agree that the living-labor/dead-labor ratio falls over time, but this ratio is clearly greater than the rate of profit itself. It does not follow that P' falls over time, since the fall of the capital-labor ratio could be counteracted by a rise in the ratio $SC/[(C+V)(S+V)]$.

15. Murray Wolfson, *A Reappraisal of Marxian Economics* (Columbia Univ. Press, 1966).

16. It is probable that the younger Marx and Engels, in the halcyon days of the *Communist Manifesto* (1848) did indeed anticipate a more or less immediate collapse of capitalism, beginning in the advanced areas of Western Europe. In this interpretation, Marx stands disconfirmed, but only in a preliminary or juvenile version which anticipates *Das Kapital* by twenty years and more.

17. Neo-Marxists (revisionists?) of that period were more perceptive, as witness Rogin, "Marxian Economics and Government Policy," *op. cit.*, p. 14: "Marx never envisaged state action on a large scale in the interest of the masses, of recovery, and of economic stabilization. In fact, the main task of those who wish to employ the Marxian theory in concrete economic analysis is to adapt it to the requirements of an economic process which involves a vast amount of government regulation and participation."

18. M. Bronfenbrenner, "Marxian Economics in the United States," *A.E.R.*, Dec., 1964.

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Why Does Marxian Exploitation Theory Require a Labor Theory of Value?

S. Gordon

Source: *Journal of Political Economy*, Vol. 76, January–February 1968, pp. 137-140.

It has generally been conceded, even by economists who are sympathetic to Marxian thought, that Marx's version of the labor theory of value is no more adequate as a theory of relative prices than is that of the English classical economists. The analysis of capitalistic economic processes contained in Marx's *Capital* is not, however, dependent upon the play of relative prices, as neoclassical economics is, and the long controversy over the "transformation problem" initiated by the appearance of the first volume of *Capital* in 1867 now appears to have been a discussion of a technically interesting, but rather unimportant difficulty. If Marx's analysis is treated entirely as a macroeconomic model of capitalism, it is not necessary to show any correspondence between particular market prices and "values" measured in labor terms. Measuring output (as Marx defined it) in terms of prices and in terms of labor values generates the same aggregate sum simply because an inherent property of an arithmetic mean is that the algebraic sum of deviations from it equals zero. Difficulties commence when one attempts to divide the economy analytically into sectors, as Marx does in his "reproduction" models, but one can still proceed by relating the sectorial price and value aggregates to one another via specified coefficients.[1] This method is similar to the employment of Lagrange multipliers in handling constraints in modern programming analysis.

But if there is no essential difference between measuring aggregate output in terms of market prices and in terms of "socially necessary, abstract labor units," why bother with the latter at all? Such labor units are not directly observable, nor is it conceivable that an adequate procedure could be devised which would render them measurable independent of market prices. Why not simply drop the labor theory of value entirely and carry through the analysis in terms of prices? The question has often been asked but not, as far as I am aware,[2] satisfactorily answered. Paul Sweezy, whose analysis of the Marxian value problem did much to clear up the technical issues involved, proceeds to the brink of abandoning the labor theory altogether, but then draws back, saying that an analysis in terms of labor values is necessary in any attempt to deal with the problem of the distribution of

income among social classes and the exploitive relationships this may involve. But he does not explain concretely why this is so and leaves the reader with the impression that the argument is essentially tautological (Sweezy, 1946, pp. 128-30). In this note I will attempt to fill this deficiency by showing why a labor theory of value is necessary to Marx's theory of class exploitation.

Marx's exploitation theory can be described as consisting of three statements. First, we can define his basic normative assertion: the sole basis of any moral right to real income is derived from the performance of socially necessary labor, measured in abstract units. We can call this a "distributive-rights function" and write it, in general terms, as

$$R = R(L), \tag{1}$$

where R is the quantity of right to receive income and L is the quantity of labor performed. This statement applies both to individuals and to social classes. (It should be noted, in passing, that this is the normative criterion implicitly employed by Marx in his analysis of capitalism, but it is not the criterion of just distribution which Marxian theory conceives to be operative in the ideal state of communism.)

The second statement consists simply of the empirical fact that the national income under capitalism is divided between laborers and property owners. We can call this a "distribution equation" and write it as

$$O = l + p, \tag{2}$$

where O represents net national output and l and p represent wages and "surplus value," respectively. The third necessary statement is the labor theory of value; in general terms:

$$O = O(L). \tag{3}$$

Marx's essential theory of exploitation may be put thus: Only labor creates value and deserves income, but property-owning capitalists get income too, and this can only be regarded as *theft* by the capitalist of what rightfully belongs to labor. Property income is "the yearly accruing surplus product, embezzled, because abstracted without return of an equivalent from the ... labourer" (Marx, 1961, I, 611). And capitalism as an economic system is merely a disguised form of exploitive society: "The essential differences between the various forms of society between say, for instance, a society based on slave-labour, and one based on wage-labour, lies only in the mode in which this surplus-value is in each case extracted from the actual producer, the labourer" (Marx, 1961, I, 217).

But it is not yet clear why equation (3), representing the labor theory of value, is necessary to the exploitation argument. Why cannot equations (1) and (2) alone constitute such an argument, since the first of these asserts what distribution *ought* to be and the second what it *is* in fact? From (1) and (2) above it would appear that any positive magnitude of p could be

declared to represent exploitation — a gap between the *ought* and the *is* of the economic system. This was the simple line of reasoning of many post-Ricardian socialists who laid down as an ethical assertion "the right of labour to the whole produce of labour," but there is a technical problem that is not met by a simple proposition of this nature. It is as follows: If rights to income are the result of labor performed, how can we be certain that the sum of rights so acquired is exactly equal to the sum (value) of goods produced? If this requirement is not met, there will be some output with no just claimants or some just claims with no output left to satisfy them. This is where the labour theory of values enters Marxian exploitation theory. If equations (1) and (3) are both linear and proportional and have the same coefficient, that is, if

$$R = \alpha L \tag{1'}$$

and

$$O = \alpha L, \tag{3'}$$

then it necessarily follows that for any given quantity of labor performed in the society, $\Sigma O = \Sigma R$, and the total product is exhausted by the *just* claims made upon it. This is, implicitly, Marx's exploitation theory. In the value theory itself he, in effect, made $\alpha = 1$, which is the reason why many commentators on *Capital*, including Marxists, have viewed the value equation as a definition of what constitutes value rather than as a true functional statement. The same observation may be made about equation (1') with $\alpha = 1$. It is impossible (for me, at least) to conceive of any ethical argument by which α in equation (1') could be rendered different from unity if one insists on writing a distributive-rights equation of this sort (though pragmatic criteria could easily be advanced and could, for example, be made the basis of taxation in a socialist state). But it is not essential to Marx's theory of distribution and exploitation that α should equal any particular value, as long as it appears as the coefficient in both value and distributive-rights functions of a linear and proportional type.

In summary then, a labor theory of value is necessary to Marxian exploitation theory in order to solve the product-exhaustion problem. It need not be so strict a labor theory as Marx advanced; but whatever is asserted to be the proportionality relationship between labor input and value of output produced must also be asserted to be the proportionality relationship between labor performed and right to income acquired.

Notes

1. See, for example, Martin Bronfenbrenner's model of the Marxian system, most clearly expounded in "*Das Kapital* for the Modern Man" (Bronfenbrenner, 1965).

2. This qualification is necessary because the Marxian literature is now so vast that no one can be master of all of it; and certainly a non-specialist such as myself cannot be.

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The Vicissitudes of Marxian Economics

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Source: *History of Political Economy*, Vol. 2 (2), Fall 1970, pp. 205-224.

I

My subject is Marxism since Marx; more specifically, Marxian economics since volume 1 of *Das Kapital* (1867). My purpose is to contribute to the explanation of when and where Marxian economics has flourished, when and where it has declined. I limit myself to times and places where the "free market in ideas" includes both most varieties of Marxism and many of its principal rivals. Thus, I shall not consider countries where a form of Marxism is a secular religion, like the Soviet Union since 1917, nor countries where Marxism is officially taboo, like Germany under the Nazis.

2. The facts to be explained are reasonably well known. In time, Marx's masterpiece fell originally on deaf ears and threatened to sink without trace. Friedrich Engels wrote at least nine reviews under different pseudonyms in an effort to get the volume noticed at all. Interest in Marxism, including Marxian economics, rose in continental Europe during a generally depressed period from the 1870s through the early 1890s; Marx remained relatively neglected in the English-speaking countries. By the date of Engels' death (1895) the claim of Marxism to constitute the only "scientific" socialism was taken seriously on the Continent, even when it was not accepted. A decline set in about the turn of the century, marked by the rise of a revisionist heresy which dominates most social democratic parties of western Europe. The key volume was Eduard Bernstein's *Evolutionary Socialism* (1899). The decline continued during generally prosperous times, well into the years of World War I. In English-speaking countries, it was more than offset by the initial availability of Marx's *Capital* in English; in fact English appreciation of Marx lagged Continental and especially German-language appreciation by approximately one generation.[1]

3. A Marxist revival, shared by western Europe and America, this time without lag, dates from the Russian revolutions of 1917. It proceeded

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slowly through the Soviet Union's first decade, following suppression of Bolshevik revolutions in central Europe. Marxist revival accelerated when the Soviet Union's first two Five-Year Plans (1928-38) coincided with the Great Depression (1929-39). It has continued ever since, save for a pause in the decade 1955-65 following the failure of the anticipated postwar depression to appear on schedule, even after the suspension of major hostilities in Korea. The Marxist revival continues today; if anything, it has accelerated since approximately 1964. Marxism has provided one important root of the so-called New Left, the other roots being anarchism and utopianism not elsewhere classified.

4. In space, Marxism has enjoyed its greatest strength in emerging nations. By emerging nations I mean the less developed countries (LDC's) which are poor, are undergoing the traumatic process of fairly rapid industrialization, and are or have recently been subject to colonial or sphere-of-influence domination by foreigners. These three attributes may exist singly or in combination; any one is sufficient to support an exciting Marxian left. Marxism has been weakest in self-satisfied and self-confident countries like late-Victorian England and the "new era" America of the 1920s.[2] Today, some form of Marxian economic analysis is important, though not necessarily dominant, among intellectual circles in the representative LDC's of Asia, Black Africa, and Latin America and to a lesser extent in the Middle East and Arabic Africa. It occupies a similar position in Japan, which is no longer an LDC. As an amateur Japanologist, I shall consider the contemporary Japanese case separately.

II

5. The outline of my thesis may be apparent already — that is, that objective conditions have been more important than abstract intellectual merit in accounting for both the rises and declines of Marxian economics. I should like to be permitted two digressions before I attempt to support the thesis further.

6. *First digression.* Although a flourishing Marxist movement has been a product of social and economic malaise, it has not been the sole such product. The circumstances which foster Marxism also foster alternative movements, with which Marxists have lived in varying degrees of antagonism and symbiosis. Examples, in the last quarter of the nineteenth century, were anarchism and narodism in Europe and Russia, populism and the free silver and single tax movements in America. During the Great Depression there were varieties of fascism and anti-Semitism in Europe; there were the New Deal, Technocracy, and funny-moneyism in the United States. At the present day, the international New Left includes utopian, anarchist, and pacifist elements along with its Marxian ones.[3] Marxism's rivals range from CEPALism (structuralism) in Latin America to Moslem fanaticism in the Middle East and the potentially fascist "new religions" of Japan.[4]

7. *Second digression.* Many Marxists claim that the "utility revolution" of the 1870s in academic economics was an attempt to evade the Marxian

extensions of the classical, or Ricardian, system. The argument is not that Jevons or Menger or Walras set out to refute Marx. It is rather that the rapid acceptance of their views contrasts suspiciously with the bored rejection of similar ideas from, e.g., Say, Senior, and Gossen prior to the publication of *Das Kapital.* Maurice Dobb, the dean of Marxian economists in Britain, has put the matter this way:

> It is, at least, a remarkable fact that within ten years of the appearance of the first volume of *Kapital,* not only had the rival utility principle been enunciated independently by a number of writers, but the new principle was finding a receptivity to its acceptance such as very few ideas of similar novelty have ever met. . . .
>
> After all, the new departure consisted more of a change of form than of substance, as Marshall always emphasized. That so many of the economists of the last quarter of the century should have advertised their wares as such an epoch-making novelty, and tilted their lances so menacingly at their forebears, seems to have an obvious, if unflattering, explanation; namely, the dangerous use to which Ricardian notions had been recently put by Marx.[5]

8. Such assertions embody conjecture without evidence. I have no hard evidence on the other and perhaps less plausible side. Let me, however, raise certain questions. In the first place, was not the utility revolution largely won, in the Anglo-Saxon countries and in France, before Marx's work became well known? In the second place, was not the dominant German antithesis to classical economics, the principal instrument of anti-Marxism, historicism with a nationalist slant, rather than the utility theory of a somewhat provincial and declining Austria? And in the third place, were not the utility and productivity theories of 1870-1900 substantially improved, by their brush with the differential calculus, over their precursors of the previous generation?

III

9. To resume the main thread of the argument, there are three claimants to responsibility for the survival value of Marxian economic thought. The first ground is its intrinsic superiority as technical economics. The second ground is its presentation, including its linkages with all the other elements in Marxian social philosophy. The third ground is its responsiveness to what Freud has called civilization and its discontents. My thesis is that the third ground is the most important (and the first ground possibly least important), and that the tide of Marxism rises and flows, both temporally and geographically, with the discontents of civilization. This thesis is, I think, consistent with Marx's own materialistic interpretation of history and with his associated "epiphenomenal" explanation of ideology, although Marx, like Freud, exempted his own theory from the general rule.

10. The professional bias of economists inclines them to the view that the validity (generality, elegance, and rigor) of an economic theory is asso-

ciated closely with its longevity. We recall the closing pages of Keynes's *General Theory*, about the ideas of economists being "more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas."[6]

11. Would it were so! There are certainly intellectual domains in which Keynes is right and in which full-fledged "scientific revolutions" have driven their predecessors all but completely from the field.[7] One thinks of Newtonian and Einsteinian revolutions in physics, Darwinian and Mendelian revolutions in biology, Copernican and Galilean revolutions in astronomy, the demises of phlogiston chemistry and social-Darwinist anthropology, and so on. But economics is made of sterner stuff. "Discredited" doctrines have long half-lives; economists may never have experienced a full-fledged scientific revolution, precisely because vested interests are involved. In the face of guidelines, guideposts, and incomes policies, who will confirm the demise of the medieval *justum pretium?* Can any observer or participant in international trade or finance, on however small a scale, proclaim the passing of mercantilism in any form, however crude or however primitive?

12. Consider now three issues selected almost at random from the intellectual history of Marxism. If Lord Keynes had told us the whole truth in the passage cited, the first two of these issues might have been nails in the coffin of Marxism, whereas the third might be raising it from the dead. Actually, none of the three has furnished more than technical debating points in either direction.

13. Oldest of our three issues in point of time is the transformation problem, as between values and prices. How, under pure competition, are relative "prices of production" aligned with relative "values" in terms of socially necessary labor time, when the production processes for different outputs involve different organic compositions of capital?[8] I need not bore you with all the alternative hypotheses, some of them traceable to particular scriptural passages in Marx or Engels, who apparently never checked these passages for consistency. At one extreme, Böhm-Bawerk suggested in 1896 that failure to solve this conundrum convicts Marx of a "great contradiction" important enough to invalidate the entire structure of his theoretical system. At another extreme, Mrs. Robinson suggested in 1942 the scrapping of Marx's labor theory of value as excess baggage. At a third extreme, Meek has proposed forgetting the whole problem as piddling and unimportant, despite the high-level intellectual and logical issues involved, since Marx was not, after all, much concerned with price theory.[9] Rather than repeat my own incompletely informed and less extreme position, I can simply express my doubt whether the status of Marxism would depend significantly, at any place or time, upon anyone's choice among the extremes. After all, the interwar Marxist revival was well

under way before Great Depression macroeconomics had shaken Böhm-Bawerk's authority and while most of our predecessors were still crediting Böhm-Bawerk with demolition of the Marxian structure.

14. My second issue is Viennese in origin, like Böhm-Bawerk's critique of 1896. It is also anti-Marxian, but less exclusively economic. It pertains to Marxian dynamics, perhaps more fundamentally than Böhm-Bawerk's "great contradiction" charge pertains to Marxian statics. According to the Vienna School of logical-positivist philosophy, any meaningful proposition pertaining to the external world should be at least conceptually refutable by evidence. Conversely, any nonrefutable proposition is tautologous or meaningless or both. This criterion has been applied by Murray Wolfson to the Marxian forecasts of the eventual replacement of capitalism by some form of socialism, leading in turn to communism.[10] Since these predictions are devoid of specificity as to time and place, they are essentially irrefutable and therefore meaningless. Neither can Marx's predictions be regarded as confirmed by, for example, Russian, Chinese, or Cuban experience, since it is by no means certain that such leaps from late feudalism or early capitalism straight to socialism were what Marx had in mind. Indeed, Karl Kautsky, the direct intellectual heir of Marx and Engels, felt sure in 1917-18 that the Bolshevik revolution in backward Russia was entirely premature and could end only in defeat or in Napoleonic dictatorship. We need not deal here with "The Proletarian Revolution and the Renegade Kautsky."[11] The point is, once again, simply that even if Kautsky had been 100 percent right in 1917-18, and even if Wolfson is 100 percent right today, and even if the world adhered completely to logical-positivist tenets in academic philosophy, the progress of Marxism would hardly have been affected.

15. My third and last intellectual issue involves an innovation more sympathetic to Marxism. It concerns the somewhat esoteric Two Cambridges controversy in capital theory. Standard neoclassical capital theory, defended by the American Cambridge, puts physical capital on a par with physical labor in production and distribution economics. It also denies that capital is indirect labor, in any sense more fundamental than that in which labor is indirect or "human" capital. The position of the British Cambridge, which dates back directly to Piero Sraffa in the 1920s (and eventually to Marx and Ricardo), was for many years merely an oral tradition, but was put into controversial writing by Joan Robinson in 1953. This position concludes that in a world of heterogeneous capital goods, as distinguished from homogenizable "capital jelly" or "meccano sets," the values of particular capital goods may depend upon the ratio between wages and capital rents, i.e., upon the income distribution. It would thus be illegitimate to speak of a *given* quantity of capital (in a production function) except in the Marxian sense of labor applied indirectly.[12] It seems to follow, among other things, that the entire neoclassical structure — production functions, marginal productivities, and all that — needs drastic revision. Also, if this view is correct, it is easy to see how Marx returns into his own. Once again, this is no place to probe the details of the controversy, which become very technical indeed.[13] My only interest here is to inquire

rhetorically, whether its outcome, if there ever is an unequivocal one, will affect seriously the rise or the decline of Marxian economics.

IV

16. It may surprise many economists who have tried without success to swallow *Das Kapital* in large doses in any language when we ask them to consider the stylistic and rhetorical advantages of Marxism over its rivals. These advantages are two in number. Neither denies the frequent turgidity and prolixity of *Das Kapital* itself as an essay in persuasion. Each explains rather why these flaws are unimportant.

17. Marx's first advantage is his overpowering breadth, including the complementarities between the several parts of his system. Keynes (for example) was likewise distinguished for breadth among the economists of his day, but he seldom if ever relates his probability theory or his aesthetics to economic matters, so that no aspect of his thinking is systematically buttressed by the others. It is entirely otherwise for Marx and Marxism. At the present time, Marx's early philosophical and sociological writings, particularly as they relate to psychological alienation, glamorize his economics for people who know no economics themselves — and even for some who think they know enough to downgrade Marx as "a minor post-Ricardian" in our discipline narrowly interpreted. Similarly, Marx's fame as the economist who made socialism scientific glamorizes his philosophy of history among philosophers and historians, and his theory of the state in a class society among sociologists and political scientists.

18. Nor is this mutual glamorization between the parts of the Marxian whole a mere matter of hokum and press-agentry. Again comparing Marx with Keynes, I recently reread certain of Marx's essays covering the career of Napoleon III and Keynes's more celebrated *Economic Consequences of the Peace.* In my eyes, Marx comes off the better of the two, precisely because he brings a complete system of thought to bear upon the special problems of France during the twenty-three years from 1848 to 1871. Whereas Keynes is content to let us sneer at certain "fat figures in the public eye" as clowns, villains, pedants, or simple nonentities, Marx shows us at least plausibly why such persons as "Napoleon the Little" — and for that matter, this Napoleon's immediate precursors and successors — come to power, who maintains them in power, and how the process relates to the communist scares of 1848 and 1871.

19. The Marxian "essays" just cited were in most cases prepared either as newspaper "think pieces" or as political pamphlets for working-class audiences. This brings us to the next great literary advantage of Marxism. The same Marx who could "turn off" the public with the first chapter of *Das Kapital* was also the author of political pamphlets without equal in the modern world. In economics, there are *Value, Price, and Profit* and *Wage-Labor and Capital,* which between them form the upper limit to many a true believer's knowledge of economic science. In historical and political philosophy, there is the *Communist Manifesto,* doubtless the greatest of

them all, and the later *Critique of the Gotha Program.* In current history, the most influential have been the three "French" pamphlets: *Class Struggles in France, the 18th Brumaire of Louis Bonaparte,* and *The Civil War in France.* What is more, Marx's disciples continued in the pamphleteering tradition after the Master's death, most successfully in the uses of Engels, Lenin, and (in our own day) Mao Tse-tung and Che Guevara. Whether we agree or disagree with their conclusions, we must grant that their works are *not* turgid, that they *avoid* jargon above the sloganeering level), that they aim *directly* at a public largely self-educated, that they are of reasonable length, and that they specialize in tying together pieces from disparate disciplines.

20. What has ailed similar efforts by our better academic economists, Keynes again included? Some are too belletristic or assume too much in their readers by way of background. Some are too short and scrappy, some too long for our rapid-fire age. Perhaps most of them are treated only as potboilers in the writing, what with deadlines to be met, Great Books to be assembled, Washington or Timbuctoo to be visited, movers and shakers to be advised, perhaps even classes to be met. Possibly there is in the writers' thinking no unifying principle so thorough and pervasive as the Marxian. I would myself deny that the scientific quality of their work is any higher. At any rate, none of us has yet indited an academic-economic equivalent to the *Communist Manifesto* or *Value, Price, and Profit.* Keynes is an example of one who failed, to whatever extent he tried. Perhaps one of our contemporaries may yet succeed in this particular arena; Milton Friedman among the orthodox and J.K. Galbraith among the dissenters would be on anyone's list of "most likely to succeed"; thus far, however, neither of them has in fact succeeded.

V

21. The vicissitudes of Marxian economics do not seem to be dominated by its validity with a capital V. Neither do its stylistic felicities provide a sufficient explanation. I have suggested that these vicissitudes are dominated rather by the state of economic and social malaise, by the acuteness of civilization's discontents. Such a case one can never really prove, but one can indicate in more-or-less organized fashion certain of the discontents responsible for the recent and current Marxian revival. To be meaningful, such a study should approach a multiplicity of countries and periods, with widely differing circumstances. The best I can do is to consider the United States (since approximately 1929) and Japan (since the close of World War II); I do not know any LDC well enough to discuss the situation there. But as America and Japan are different although related, and as Japan has experienced reconstruction — allied closely to development — as well as economic prosperity, we should expect to find their discontents overlapping but not identical.

22. First, the United States. Taking the long view, a cyclical trough of American radical economics, including Marxism, came on August 3, 1929,

when Thorstein Veblen died eleven weeks before Wall Street's Black Thursday.[14] It has been rising for the subsequent generation, if one excepts a putative "American celebration" during the 1950s. The rise has been at an increasing rate since approximately 1960. No inflection point is in sight, let alone a peak. Plausible explanations include the following set of eight causes.

(1) The American economy has not attained — let alone maintained — high employment from 1929 to the present day without the aid of a hot or cold war, a swollen military budget, and the inflationary victimization of fixed-income groups. Economists have of course devised and "proved" blackboard theorems to the effect that it *could* do so. The relevance of such theorems is dubious in the absence of historical evidence.

(2) Our dark-skinned racial minorities, Negro and Spanish-speaking, were once confined largely to semi-visible rural areas, where their plight could be blamed on the special wickednesses of people in white sheets or ten-gallon hats. They have now moved to visible urban ghettos, where scapegoats more personal than "the system" are harder to come by.

(3) Our liberal tradition has been dented by Joe McCarthy, George Wallace, and their imitators. Similar outbreaks of star-spangled fascism are possible again, centering on the issue of who lost Vietnam.

(4) At the time of Veblen's death, the USSR was shifting gears from a New Economic Policy — widely misinterpreted as a capitalist comeback — to the first of its centralized Five-Year Plans. The successive Soviet plans have not only "worked" but have served as models for other countries, with varying degrees of centralization and varying commitments to socialism. Bluntly, the socialist alternative has proved its viability in the period since 1929. Such technical innovations as electronic computers, input-output analysis, and the new science of operations research have played a role on the socialist side of the conflict.[15] At least as important have been socialist methods of enlisting the enthusiasm of youth, as witness not only Mao's Red Guards but the international student movement from SDS to Zengakuren.

(5) Despite our classroom concern with diminishing marginal utility, including the marginal utility of income as a whole, economists have failed to conjure with its effects upon both tastes and ideology. What seems to be happening in the American middle class is that the marginal utilities of both income and wealth have declined sharply, following the recent spurts in national product, national wealth, and "affluence." This decline in the marginal utility of income and wealth, as against alternatives like leisure, awareness, equality, and Love, may be a perfectly rational explanation for manifestations which our critics call "sick," as per the London *Economist's* characterization of the United States as "the neurotic trillionaire." One writer goes so far as to suggest that the marginal utility of the G.N.P. now exceeds zero only when the increment goes into the public sector or the pockets of poverty.[16]

Evidence of that neglected phenomenon, the rising substitutability of leisure and Love for income and wealth, is the flowering of drop-out and counter-culture communities in large cities, woodland wildernesses, and

academic slums. What with gifts, sharing, and part-time employment, affluence has opened and "sold" this alternative to segments of society that are economically much broader, and esthetically much less gifted, than populated Soho or the Left Bank in the last century at comparable standards of living.

(6) Consider next two externalities of American affluence, namely, pollution and automation. Under the first head we can add to the obvious air and water pollutions noise pollution, food pollution, people pollution — overpopulation, overcrowding, housing shortages — and time pollution — commuting, queueing, and perhaps boredom. Some of these pollutions are traceable to the coincidence of affluence and urbanism rather than affluence alone. They may be relieved eventually by the replacement of obsolete metropolises by uniform, quasi-suburban "conurbations" like Boswash or Chipitts. Others may yield to technological changes like the contraceptive pill or some practical substitute for the gasoline engine. But all these things take time, which may run out for the capitalist ideology before the vested interest in urban property, existing technology, and such "ponderous vendible intangibles" can be bought off or bankrupted.

As for the automation problem, this may be a macroeconomic bugaboo if it be taken to imply unemployability at any positive wage, or drastic shift of the income distribution from labor to property.[17] But as a barrier to "interesting" and "meaningful" jobs at the wages affluent-society members consider their birthright, it shows no signs of abating.

(7) We have mentioned Vietnam in passing. It deserves fuller treatment, in view of the possibility of repetition nearer home. This increasingly unpopular intervention has forced unpleasant career and life-style decisions, sometimes also life-and-death decisions, on an entire generation. The indifferent have been polarized by these decisions into establishment types and radicals. The radicals are by no means all Marxists, but Marxian thoughts and slogans, economic and sociological, have entered into the thinking and emoting of the entire group.

(8) There must also be included a profound disillusionment with the liberal-labor demigods which had, by and large, substituted for Marxism during the 1940s and 1950s. The political heirs of Franklin Roosevelt set up the military-industrial complex under the aegis of the Cold War. They acquiesced in the Bay of Pigs, the Dominican intervention, and above all in the Vietnamese one. The trade-union movement accepted, if it did not precisely seek, junior partnership in both the Cold War and the emerging garrison state. Like any other monopoly, it engaged in monopolistic restrictionism, which took on racist overtones as blacks migrated northward and found themselves excluded. The world's leading black economist has said: "The trade unions are the black man's greatest enemy in the United States."[18] Disillusionment has also spread from institutions to individuals. By unhappy chance, if nothing more, no liberal leader since John F. Kennedy has succeeded, either in America or overseas, in matching more than momentarily the mass appeal of a remarkable quartet of basically Marxist leaders from the socialist camp: Mao Tse-tung and Ho Chi-minh from Asia, Fidel Castro and Che Guevara from Latin America. The closest

Western approach has been that great liberal and free-enterpriser, Charles de Gaulle!

VI

23. If the American case included the whole of civilization's discontents, Japan should be a happy country; and if our present thesis were correct, Japanese Marxism should then be on the downgrade, which it decidedly is not. Consider three Japanese advantages in particular.

(1) The Japanese "economic miracle" — roughly, a 10 percent annual growth rate sustained with minor interruptions over nearly a twenty-year period — has not been a creature of the defense budget. On the contrary, the Japanese defense budget has been held in the neighborhood of 0.8 percent of the G.N.P., despite American urgings to raise the percentage.

(2) Japan has refrained from external military adventures since 1945 and also from the conscription which would be required to support them. Both external adventures and military conscription are clearly banned by Article 9 of the Occupation-imposed "Peace Constitution" of 1946.[19]

(3) Japan has "racial" problems, involving primarily Koreans and a quasi-untouchable outcaste group formerly called *eta* and now called *Shinheimin* or *Buraku-min.* In seriousness, however, these problems compare to the Puerto Rican problem on the American East Coast. Japan has no counterpart to the American Negro problem.

24. With no Vietnam, no black militance, no military-industrial complex in the background, American Marxism would surely be less important than it is. Yet Japanese Marxism is more flourishing than American. A Japanese bill of particulars against capitalism in general, and particularly against America seen as the predominant capitalist power and symbol of the capitalist system, includes the following seven matters.[20] Many of them have no American equivalents, just as Vietnam and the race problem have no significant Japanese ones.

(1) Capitalism in Japan involves the need to expand overseas to protected markets and sources of raw materials. Capitalism outside Japan involves something similar, plus discrimination against imports and immigrants from Japan. This combination of capitalisms led Japan into the China Incident of 1937-41, which was Japan's Vietnam. The China Incident in turn led to the disastrous Pacific War of 1941-45, which ended with Hiroshima and Nagasaki. Japan's present capitalist prosperity was founded on the logistic support of the U.S. war effort in Korea. It is maintained to an important degree by the logistic support of the U.S. war effort in Vietnam and of U.S.-supported regimes elsewhere in east and southeast Asia (notably Korea, Taiwan, Vietnam, and Thailand). In short, capitalism means war. (This is not the place to argue against this simplistic view of recent Japanese political and economic history, which I personally consider less than half true. My only point is that a large and growing percentage of Japanese believe it implicitly.)

(2) A capitalist power, the United States, continues to hold naval and

air bases on Japanese territory, and has been ruling by military law approximately a million of ethnic Japanese inhabitants of Okinawa and the other Ryukyu Islands. Capitalism is the system of the oppressor.

(3) Japan knows what atomic war is, and is threatened by its resumption insofar as U.S. bases on Japanese soil, and Japanese industry supporting U.S. military activities elsewhere in Asia, attract the lightning from Russia or from China. A turn to socialism would break off Japan's special relationship with the United States and eliminate the danger of atomic war from Japanese soil.

(4) Japanese Pan-Asianism, with its anti-Caucasian overtones, was never pro-capitalist, capitalism being a white man's economic system. (So was Marxism before 1949, but that does not matter.) Pre-1941 Japanese Pan-Asianism was nationalist, military, and anti-communist, as exemplified by the Greater East Asia Co-Prosperity Sphere and the doctrine of Eight Corners (of the Orient) Under One (Imperial Japanese) Roof. Since 1945, Japanese Pan-Asianism has taken the form of sympathy with Asian popular movements fighting either white colonial rulers or indigenous governments supported by Western powers. The chief beneficiaries of this sympathy have been the People's Republics of China, North Korea, and North Vietnam. All are professedly Marxist; increased Japanese sympathy for Marxism in general has profited from Japanese sympathy for these Marxist governments.

(5) Being neither fools nor illiterates, the Japanese are well informed about the various American discontents we have just outlined. These American discontents provoke a reaction in the Japanese, who see little future in following a capitalist road leading to the American dump of problems. This reaction is important because it follows the overselling of American institutions and ways of life, during the halcyon days of the Occupation, as necessary or even sufficient ingredients for solution of all the world's problems, including Japan's.

(6) The "economic miracle" is itself a disappointment to Tarō Yamada, who is Japan's John Q. Public, Jacques Bonhomme, or Ivan Ivanovitch. For one thing, the gains have been maldistributed, going largely to owners of equity securities and urban land, particularly the latter. Also, the gains have been achieved substantially by forced saving or forced frugality, meaning inflation, to such an extent that the left-wing slogan of *bukka baizō* has been a successful rebuttal to the government's *shotoku baizō*.[21] The proceeds of Japanese saving, both forced and voluntary, have been channeled into increase of plant capacity, at the expense of both desired consumption and public services. Tarō Yamada can complain, with reason, that while Japan produces at the contemporary Western level, his own living standard is that of Italy or of western Europe twenty years ago. One social critic speaks of the contradiction in the life of the average Japanese who commutes every day between one of the world's richest nations, Industrial Japan, and one of the world's poorest, Household Japan.[22] As for public services, particularly the amenities associated with the welfare state, it is more than statistically significant that the "Hirschman ratio" between social overhead capital expenditures (SOC) and directly productive

activities (DPA) has been falling steadily, contrary to the experience of other developing economies.[23] In the summer of 1969 the Economic Planning Agency of the Japanese government published a *Kokumin seikatsu hakusho* [White paper on the people's livelihood] according to whose admittedly crude statistical indices Japan's relative rank was only 44.0 percent in "environmental factors" (mainly public services) as against 67.8 percent in "private factors" (mainly supplied in the private economy).[24] Statistics such as these, and still more the facts behind them, led the Planning Board to speak, in language unusual for economic reports, of "*seichō-keizai no kunō* [the anguish of a growth economy]."

(7) Tokyo is the world's largest city, with two other major metropolises, Kawasaki and Yokohama, within 25 miles of its center.[25] For this reason, and also because much Japanese gasoline is of low quality, certain of Tokyo's pollution problems give the West a foretaste of things to come. *De te fabula narratur*, as Marx reminded a still bucolic Germany when recounting the woes of industrializing Britain. Among the worst of Japan's pollution problems, and among those most provocative of discontent, is carbon monoxide in the atmosphere. Apparently, 10 parts of this colorless, odorless, tasteless gas — a by-product of incomplete combustion — per million parts of atmosphere as a whole suffice for toxic effects; 100 parts per million are fatal. The rush-hour level in downtown Tokyo, near the Imperial Palace, has been measured at 78 parts per million. Taira reports that "in the districts of Tokyo where air pollution is severe, the residents shut themselves up in their houses as tightly as possible, and breathe ... with the help of oxygen-producing devices which can be bought at about $100 apiece," while for those who must go out in rush hour, "some talk is even heard of anti-pollution attire much like an astronaut's space suit as a serious commercial proposition."[26]

VII

25. In summary, the rises and declines of Marxian economics as an influential branch of social thought depend very little upon its intellectual validity, as judged by our usual technical standards. More important for the long-run viability of Marxian economics have been two advantages: embodiment in an impressive system of social philosophy, and the availability of a wide range of effective materials for an equally wide range of intellectual interests and levels. More important in explaining the ebbs and flows of Marxian economics has been the state of civilization and its discontents. Marxism ebbs and flows with the ebbs and flows of these discontents as felt subjectively. To judge by either America or Japan, these subjective discontents have little correlation with the gross national product per capita or with its growth rate or with the other measured indexes of economic prosperity. Or rather, while a sufficiently low level of measured well-being or a sufficiently high rate of unemployment is at times sufficient encouragement for Marxism, their reversal is not a sufficient condition for its discouragement.

65

The Marxist Theory of Value Revisited

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As a background to the discussion, this article begins with an extremely brief review of the relevant material on the labor theory of value in the Classical economists, Marx, and Marshall (as a representative of nineteenth-century neoclassical economics). The main part of this article is an attempt to relate and compare Marxist and neoclassical economics, first taking Marxist theory as a special case of neoclassical value theory, and then taking neoclassical value theory as a special case of Marxist political economy. Marshall's exposition of neoclassical economics is used for comparison because he is clearly aware of, and reacting to, Marx, and because of his lasting influence. Where it is necessary, more modern neoclassical approaches are also considered. In addition to the works of Marx, those of his followers are considered, with a distinction made between the more dogmatic and the more "revisionist." Finally, the views of the various schools are discussed with regard to the question of "surplus value."

The Classical Approach

Adam Smith wrote: "Labour ... is the real measure of the exchangeable value of all commodities. The real price of everything, what everything really costs to the man who wishes to acquire it, is the toil and trouble of acquiring it."[1] Ricardo wrote in a similar vein, "The value of a commodity or the quantity of any other commodity for which it will exchange, depends on the relative quantity of labour which is necessary for its production, and not on the greater or less compensation which is paid for that labour."[2] Smith presented several other theories along with the labor theory, and Ricardo never completed a consistent presentation of it. Nevertheless, we must examine the Classical arguments that led to the conclusion that all value is determined by labor.

Suppose we examine an economy in which each producer is an independent unit, doing his own work, hiring no one, and being hired by no one. He may produce farm goods, or may hunt for animals, or may do

handicraft work. Then the Classical argument says that the value of what he produces (its price) is determined by the labor put into it (its cost). Or, to put it another way, the ratios at which things exchange are determined by the ratios of the labor put into them; provided, of course, that they have some kind of utility to the consumers. To begin with the simplest case, assume that the producer also makes his own machinery and mines his own raw materials from scratch, *à la* Robinson Crusoe.

In the simplest case, it is almost a platitude that products exchange according to their labor costs. Suppose that some men hunt beaver, while others hunt deer. If it takes on the average twice as long to catch deer as to catch beavers, then a deer-catcher will demand two beavers for one deer (or twice as much "money" for a deer as for a beaver). If the market rate of exchange is only one for one, the hunter will switch over to catching beavers, because it takes only half the time and the reward is equal. As hunters quit catching deer and the supply of deer in the market decreases, competition for the smaller supply must force a rise in the price of deer, till one deer is exchanged for two beavers. Only then will an equilibrium exist, in which it is equally profitable to catch deer and beavers, so that there will be no further switching. Conversely, if one deer is selling for *three* beavers, hunters will switch to deer-catching until the lack of supply drives up the relative price of beavers back to the two-to-one ratio. Thus, when the system comes to rest, the ratio of prices in exchange will equal the ratio of labor times expended.

If it is necessary to purchase equipment from others, such as a bow and arrows, the answer is still basically the same (though everyone may gain from the greater productivity due to the specialization of labor). If the bow and arrows are offered at a price relatively greater than the labor time bestowed on them, the hunters may go back to making their own bows and arrows. Hence, the bow and arrows must be included in their price of deer at their own labor cost, regardless of whether the bow and arrows are made by the hunter or someone else.

The Classicals generally used an example of a barter economy, because they felt that money made the operation of the economy less obvious, but made no essential change. Within the narrow limits of the price problem, we may temporarily accept this notion. Then we may go on to apply their basic reasoning on values to a society that regularly uses money, and is capitalist in the sense that there is private ownership of productive facilities, the goal of production is private profit, and workers are free to be hired and fired. In this case, the "capitalist" supplies capital in the form of factories and equipment, while "workers" supply the labor-power needed for production (here we ignore landlords and land). The final product must sell for a price equal to the total labor put into it, including the labor that went into producing the factories and equipment that were used up in the productive process.

The argument is essentially the same as in the simple economy of independent producers. If the capitalist tries to sell (or exchange) the product at a higher relative price than is justified by the labor in it, then other people can produce it for less, either for themselves or to sell in competition with

him. In other words, if the price is above the labor value, so that a profit above average is being made, other capital will flow into the industry and increase its supply until by competition the price falls to the level of its total (labor) value. Yet the capitalist can at least obtain that price because no one can produce it for less. If the price should fall below the (labor) value, profit will be below average, capital will flow out, and supply will drop. Eventually, competition will force the price back up to its full (labor) value, and only then will equilibrium be reached.

The Marxist Approach

Value

Marx was most interested in exploring the sociological and institutional basis of capitalism,[3] but he accepted the Classical economic categories as the handiest tools to do the job. Thus, Marx discusses the same exchange relationships as the Classicals, but he always reminds us that they reflect more basic relationships between men and men in production. In a capitalist economy, Marx states that the value of any commodity is determined by the amount of labor embodied in it (including the "congealed" labor embodied in the plant, equipment, and raw materials used up in the process of production).[4]

Marx does not "prove" this statement because he assumes an agreement with the Classical argument: If competition makes long-run supply equal demand, at that point the exchange value of the commodity must be determined by the total amount of labor embodied in it. Marx often emphasizes that he *begins* with long-run supply equal to demand, and *therefore* with value equal to the amount of labor. This "value," we shall find, is the same thing as "price," provided among other things that there is long-run equilibrium and pure and perfect competition.

Marx immediately notes several common-sense qualifications to the "law of value." First, it applies only to labor expended under the usual contemporary technological conditions. If a person produces an automobile by hand, the product will still have a value equal only to the labor necessary to produce it in the usual mass production process. Second, the product must have a utility; labor expended on useless objects does not count. Notice, however, that although utility must be present for any value at all, it does not determine the *quantity* of value produced. Utility may be a factor determining demand, but if we assume that supply and demand are now balanced and equal, then the quantity of value must be determined by something else, namely the labor expended. In other words, on these assumptions the demand will determine the distribution of labor or amount of each product, but it cannot affect the relative price or exchange ratio of products.

Finally, expenditure of more skilled labor will count as some multiple of an hour of average labor expended. This is because the labor expended in "producing" (educating) the more skilled worker, for example, an engineer, is greater than that expended in producing an ordinary worker;

and therefore, he passes on to the product a greater value per hour. Marx does not mention these three qualifications each time he uses the law of value, but they are to be understood; and this is a perfectly legitimate scientific abstraction from irrelevant complications.

Surplus Value

Marx next goes on to discuss the crucial question of profits (or "surplus value," as he calls it) and wages (or spending for "variable capital," as he calls it.)[5] He finds a confusion in the Classical approach. If all products, including labor, are bought and sold at their labor value, how is it possible to make a profit? If, for example, a chair takes a total of eight labor hours to produce, and if it is exchanged for other products (or money) also produced by eight hours of labor, where is the profit? If a capitalist hires a worker for eight hours, pays him for eight hours, and sells the product for eight hours' value, how can he make a profit? Yet Marx resolutely stands by the Classical labor theory, and does *not* argue that the capitalist makes profit either by cheating the consumer or by cheating the worker. On the contrary, Marx argues that the capitalist normally makes his profit by selling the product at its value, while buying the worker's power to labor or labor-power at *its* value.

Marx's point rests on a very simple distinction, which he claims was overlooked by Adam Smith and most of the Classicals. There is a difference between the value of what the worker produces and the value of the worker's own power to labor (or his labor-power). The wage of the worker, or the value of his labor-power, is determined by the labor expended in producing the worker. That labor includes what is necessary for his food, clothing, shelter, and education as well as the food, clothing, shelter, and education of his family.

The labor embodied in the final product — leaving aside the labor in the depreciated capital and raw materials, which is included in the final price at a value just equal to its cost — is much greater than the labor that is required to keep the workers functioning. In other words, a worker produces far more in a day than the wages paid to keep him alive and functioning. This difference is "surplus value," which reflects the objective fact of excess labor expended by the worker.

Wages

Even if all other products are sold at their cost of production in terms of labor hours, what makes Marx think that the worker's labor-power is sold at his own cost of production in labor hours? For other commodities, one can argue an exchange value equal to labor cost on the basis of competitive equalization of supply and demand; but isn't it true that the supply and demand for labor have many unique features? Suppose wages are above or below the long-run labor value of the worker. Will this automatically raise or lower the supply of labor?

Only if we think in Malthusian terms will the population automatically rise (due to our animal instincts) if wages rise, or automatically fall (due to starvation) if wages fall. Marx called this theory a libel on the human race,[6]

and certainly did not believe in it. Marx rather argued that wages are kept down by a reservoir of unemployed. This reservoir is kept filled by constant technological innovations, which reduce the demand for workers. This explanation, however, is much more hypothetical than the rigid Malthusian statement, so that counteracting forces may allow some part of increasing productivity to land in workers' wages. The counteracting forces would include trade union activity, a swift enough rise in demand for products, and government intervention. The Malthusian population pressure has been overcome in the U.S. by more rapid technological advance, and the Marxist long-run technological unemployment has been overcome to some extent by the counteracting forces mentioned above. Therefore, wages up to this time have generally risen with rises in productivity in the U.S., and the labor theory of value with respect to the value of workers must be modified in some degree.

Marx did not predict an absolute long-run decline of wages; though he did predict wage declines in depressions, and a long-run *relative* impoverishment of workers in contrast to the rapid increase in the wealth of the capitalist class.[7] The share of wages in U.S. national income does not appear to have drastically changed in the last hundred years, though conservatives claim it has risen somewhat, while radicals claim it has fallen somewhat. On the other hand, the United States still has "poverty," evidenced by the very low income of about a third of our family units, which third goes into debt in an average year. For the wage workers as a whole, it may be claimed that the debts of some just about equal the savings of others. Thus, it is true that consumption spending ordinarily runs 95 percent or even 100 percent of wages. Nevertheless, this would prove Marx's "subsistence" theory of the value of the workers and his long-run wage theory only in a very peculiar and formal manner. If a movie star makes a million dollars a year, and manages to spend it all on luxury consumption, that certainly should not be called a "subsistence" wage. Even the Soviet economists do not allege that U.S. wages have fallen. They refer in very general terms to the degradation of American culture (television programs?) as proof of impoverishment. And they explain that high U.S. wages are partly a result of the exploitation of foreign countries. Yet even if all U.S. corporate earnings from overseas investments are considered to be "exploitation," and even if all of this were used to "bribe" American workers by higher wages, it could only account in quantity for a negligible percentage of the U.S. wage bill.

This completes a very rough sketch of the basic Marxist theory of prices, profits, and wages. All of the most difficult problems, especially the transformation of "values" into the more realistic "prices of production," have been swept under the rug. We shall return to a more systematic analysis of the Marxist model in comparison with the neoclassical one after a very brief statement of the relevant parts of the neoclassical model as seen in the work of Alfred Marshall, perhaps its most influential nineteenth-century expositor.

The Neoclassical Approach: Marshall

Alfred Marshall[8] was the first economist to attempt a synthesis of the Classical cost of production theory (a form of the labor theory?) with the marginal utility theory of the early neoclassical writers. Yet Marshall specifically disagreed with Marx's version of Classical theory, and directly attacked Marx's conclusions. Marshall's was the definitive "neoclassical" work followed in all details for many years.

Marshall developed the concepts of "long-run" and "short-run" time periods.[9] In the short run, production is limited to present capacity because the time is too short for new investment to result in more available capital or greater capacity to produce. The long run is a long enough time for new investment to put more capital goods in place and expand the capacity to produce.

The Long Run

In the long run, says Marshall, the "price" equals the "cost" of production.[10] Marshall then follows Ricardo's arguments that for the long run, commodities will sell at their "cost of production" (*including an average profit*). If profit is above average in one industry because of high prices, capital moves into this industry so that increased competition in supply lowers prices till they equal costs. If profit is below average in one industry because of low prices, capital moves out of that industry so that restricted competition in supply raises prices till they equal costs. This equalizing flow of capital is possible in the long run (assuming pure and perfect competition) because the "long run" is by definition sufficient time to expand or contract capacity in each industry till demand is balanced by supply in each. In the long run, Marshall took as the simplest case the condition of constant returns to scale (other cases are much more complicated, but the conclusions are proven to be the same).[11] This means that the "cost" per unit, as Marshall uses cost, stays the same no matter how few or how many units are produced. We may think of an expansion of production from one factory to two factories, where the second is identical to the first, and where technology is not allowed to change. In this case, the level of output has no effect on costs.

What is the importance of the demand for goods or their utility to consumers in this case?[12] Suppose that for some reason radios suddenly become twice as desirable to consumers. We would then argue that the demand for radios would double at any given price. If we were selling a million radios for a dollar apiece, we could now sell the million radios for two dollars apiece. In the long run, however, two million radios will be built, and the cost per unit for the second million radios will be the same as for the first million radios (because we assume up to this point constant returns to scale). There is then no reason in a purely competitive system for the price to change in the long run (so long as there is no change in the technology of production). Therefore, in the long run, a change in utility or consumer demand will change the amount of production of a particular commodity, but *the change in utility will have no effect of the long-run price*

(or "value") *of that commodity.*

Given the simplifying assumptions we have used so far, the long-run price must be determined exclusively by the cost, including a "normal profit."[13] Suppose in one industry a high price allows more than the average profit; while in a second industry a low price pushes the profit under the average. In this case, as explained earlier, the competitive mechanism described by Adam Smith will eventually cause capital to flow from one to the other, and will equalize profit rates *in the long run.*

In the Marshallian approach, the long-run "cost" is composed of the long-run price of labor supplied *plus* the long-run price of depreciated capital and used-up raw materials *plus* the normal or average "profit" (ignoring rent on land as a negligible factor). What determines the long-run price of labor? Marshall agreed with Marx that the long-run price of labor is determined, like every other commodity in capitalism, according to its long-run cost of production.[14] The long-run cost of producing labor must include its subsistence at whatever level national habit has accustomed itself, plus enough more to keep labor reproducing and educating its children. If wages go below this level, the Classicals argued that population would drop, and Marx argued that the reserve of unemployed would decline. In either case, wages would be pushed back up toward the long-run normal. If wages rise above the long-run level, either population rises or unemployment rises, so wages are pushed back down again. Marshall states explicitly: "If the economic conditions of the country remain stationary sufficiently long ... human beings would earn generally an amount that corresponded fairly with their cost of rearing and training, conventional necessaries as well as these things which are strictly necessary being reckoned for."[15]

If the model is consistent, then the long-run price of depreciation in capital and the price of used-up raw materials are also equal to their costs.[16] This means that such intermediate products enter into the final selling price at exactly the price paid for them. Thus, it is quite legitimate to concentrate on the values added by workers and capitalists at this stage, and to leave aside the value of items purchased from earlier stages of production.

Finally, as we have seen, each industry in a purely competitive economy must have the same average long-run profit rate, else capital will flow in or out until equilibrium is once again achieved.[17] Marshall calls this average profit part of the long-run cost, since the "waiting" of the capitalist is a subjective effort.

It is interesting that Marshall himself admits to using the word "waiting" as a substitute for the word "abstinence" precisely because of the ridicule with which Karl Marx treated "abstinence" as an apologia for profit.[18] Since a normal profit is a part of the long-run cost, Marshall concludes that price does not equal cost in the long run. Alternatively, we may say that long-run price equals long-run labor cost *plus* long-run cost of depreciated capital and used-up raw materials *plus* the "cost" of a "normal" or average profit.

The Short Run

Marshall[19] distinguishes a *"very short run,"* when supply or cost is a set amount, and cannot be changed. In that case, in the private enterprise economy, it is the demand by consumers, based on their subjective evaluation of the utility of the product, that will set the price.

Generally, however, Marshall deals with the "short run" in which supply can be expanded or contracted within the limits of existing factories and equipment.[20] The cost may vary as supply varies, but for any given supply, it is fixed. As we approach a "maximum" or very intensive use of capacity, the cost per unit tends to increase. Thus, as output rises in the short run, the additional cost per unit must rise. On the other hand, it is a platitude that to sell the higher output, the industry must lower its prices. Thus, as output rises in the short run, the additional revenue per unit must fall. As a result, a point is reached where rising costs per unit and falling prices per unit mean an end to additional profit from additional output; that is, profit is at its highest point and will fall if more is produced. Therefore, output and prices are set at this point where no additional profit is to be made by producing more output. In the short run, then, price is set by both demand and cost conditions. Notice that it is only in the *very* short run that price is set by demand alone. In the long run, we saw, price is set by cost alone.

Comparison of Marxist and Neoclassical Theories

Historical Background

During Ricardo's lifetime, the labor theory of value ruled supreme, but soon after it was challenged by critics and weakened by "supporters." The process continued from the 1820s to the 1870s. John Stuart Mill in the 1840s and 1850s could be considered as a supporter of the labor theory only by a considerable stretch of imagination, for he identified cost of production with labor *plus* abstinence from consumption. Moreover, Mill strengthened the trend toward concentration on micro problems in a static analysis, quite alien to the Classic attention to the evolution of the economy as a whole. The main neoclassical "revolution," however, came in the 1870s with Jevons, Menger, and Walras, who emphasized the theory of marginal utility to the exclusion of almost all else. These marginalists saw the problem of economics as the optimizing of production and consumer satisfaction with given amounts of labor, resources, and technology. Hence, they began with the psychological reaction of consumers to commodities, and not with the relations of man to man, as Marx always did. In fact, several of them consciously aimed at replacing Marx's growing influence.[21]

Attack on Marx

Soon after the third volume of Marx's *Capital* was published in 1894, important attacks were made on it by prominent economists. The most famous of all was the criticism by Böhm-Bawerk.[22] In his attack, Böhm-Bawerk claims that the marginal utility theory is the only valid theory of value, that the labor theory of value is contradicted by the facts of relative

prices, and that Marx's transformation to prices of production in the third volume of *Capital* is in complete conflict with the basic theory of value of the first volume of *Capital.*

The Marxist answer to the Böhm-Bawerk type of attack came primarily from the Austrian neo-Marxists in the 1900s; and it has been continued by the "orthodox" Marxists of the U.S.S.R. ever since. The Marxist answer admits nothing and challenges each of Böhm-Bawerk's arguments. On the one side, the Marxists argue that Marx's value theory in Volume I of *Capital* is a perfectly legitimate first approximation of the price theory in Volume III of *Capital,* and that this price theory is in very good accord with the economic reality. On the other side, they attack the marginal utility theory on many different grounds.[23] In the first place, they attack the motivations of its founders, claiming that its only reason for being is the refutation of Marx. Secondly, they criticize its social and ethical connotations and conclusions — that is, the defense of capitalism and private profit. Though it is true that the early marginalists drew such conclusions, it is not so clear that these conclusions are a *necessary* result of their technical analysis. Finally, the Marxists criticize the methodology of marginal utility economics. It is a subjective theory, and lacks the objective measure of labor expended (but does this matter for micro-economic questions?). It is very formal and technical, and far from the real problems of political economy (but is it more formal than Marx on prices in Volume III of *Capital?*) Conceding all of these criticisms, it should be noted that they do not amount to a refutation of the early marginal utility theory, much less of the modern formulations of it.

Revisionist Theory

The first revisionists, such as Bernstein,[24] described both the labor theory and the marginal utility theory as extreme abstractions, far from the facts of economic life. Bernstein notes that "surplus value" is even more abstract than "value," since it also involves an approximation to the "price of labor" and other cost elements. He concludes that the best approach is merely to observe the "fact" of exploitation of labor on a purely empirical basis, dispense with theoretical explanation of it, and then denounce it on an ethical basis. Needless to say, the orthodox Marxists attacked this desertion of theory as vulgar and "superficial" deviationism.

Other revisionists in the early 1900s accepted Böhm-Bawerk's arguments against the labor theory and in favor of marginal utility theory. They merely argued that Marx's economic conclusions could be reached on the grounds of marginal utility theory. (The orthodox Marxists have always claimed that the labor theory is essential to all of Marx's economic conclusions.) To the extent that they repeat Böhm-Bawerk's argument on basic value theory, we have already discussed this viewpoint. To the extent that they discuss the derivation of Marx's conclusions from neoclassical theory, we shall consider this viewpoint when we come to the theories of the progressive Marxists of the present period.

The main road of Marxist economic debate was determined, first, by the Austrian left Socialists and later by the more radical Leninists. In the

1910s and 1920s, the discussion left the question of basic value theory and turned to an analysis of monopoly and imperialism. It was only in the 1930s, under the impact of the Great Depression and the planned development of the Soviet economy, that Marxist debate returned to more specifically economic problems of value and cycles, though in a new context (even while neoclassical economics was developing an extensive theory of monopoly and imperfect competition).[25] We leave aside the discussion of the theory of economic planning and related Soviet debates, but we may introduce here other aspects of the trend of modern "revisionism," as the most orthodox Marxists like to call it.

Modern Progressive Marxists

The modern "revisionist" trend, beginning perhaps with Oskar Lange,[26] attempts in essence to reconcile the marginal utility theory with the labor theory. Lange's main contention is that the two theories belong to two different, separate, realms. Neoclassical theory holds primarily in the short-run, static analysis of micro-economics problems; it studies the economics of maximization of output from given resources, and is therefore useful to planners in a socialist economy (as well as private entrepreneurs running a factory). Marxian theory holds primarily as an analysis of the basic institutions and the dynamics of the economy as a whole; it is therefore most useful in understanding such macro-economic problems as the business cycle and the long-run evolution of capitalism.

The orthodox Marxists have also reacted to this approach as a thing of the devil, for any reconciliation of labor theory and marginal utility theory is considered "revisionism." The debate today on this point is mainly located in the Soviet Union, and centers around economic planning. Here, however, we may note that historically the marginalist theory came to maturity (with Marshall) only after the death of Marx, so his own few comments related to it deal only with very early and very crude forerunners. Furthermore, the first practical use of the neoclassical theory was in the attack on Marxism, either as a complete refutation or as a reason for extensive revisions of the Bernstein variety. By the 1900s, when the two sides had crystallized, there was no chance for a fruitful discussion between them nor for any open-minded consideration of one by the other. It was this tradition which helped freeze the dogmatic Soviet position until very recently. On the other side, Marxism was long ignored by Anglo-American economics, even while this economics developed the technical apparatus for economic planning (either in a capitalist or in a socialist form), a sharp liberal critique of monopolistic behavior, and a more or less clear separation of technical tools from apologetics for capitalism.

Summary of Contemporary Views

Most conservative neoclassical economists continue to argue that Marxism is all wrong and in complete contradiction to neoclassical economics.[27] Similarly, most conservative Marxists continue to argue that neoclassical economics is all wrong and in complete contradiction to Marxist economics.[28]

Most liberal neoclassical economists argue that Marxist economics is a

very special case within the framework of neoclassical economics, that its price theory agrees with neoclassical theory under very restricted assumptions.[29] On the other hand, most progressive Marxists consider neoclassical economics as a technical adjunct to Marxism, with a very restricted field of vision (tied to a faulty ideology).[30] These two views are not necessarily contradictory: one might consider that neoclassical price and allocation theory is a useful adjunct to the broader Marxist view of the political-economic evolution of capitalism, while still recognizing that Marx's own statements on price theory represent a special and limited case within neoclassical price theory.

We must now turn from these general statements to a systematic confrontation of the two theories on specific issues.

Marxist Price Theory as a Special Case of Neoclassical Theory

Marxist price theory may be considered as a sub-class of neoclassical price theory, utilizing certain special assumptions. The assumptions and qualifications are indicated below.

(1) Pure and Perfect Competition

Marx began with the assumption of pure and perfect competition to investigate value and surplus value under these conditions. Under competition commodities must sell at their value (including an average amount of profit) because a higher price will tend to increase the supply while a lower price will tend to decrease the supply, thus bringing price back to value. The supply may be increased by more competitors or decreased by competitors moving out of the industry. But without competition this mechanism does not work. In that case, Marxist theory does not indicate the exact price, but only the direction in which it deviates from value.

Marx, like the Classicals, knew that a higher degree of monopoly means *more* restriction of production and a *higher* price. But there are no analytic tools for a more precise analysis. Thus, the labor theory of value is not too helpful in analyzing any kind of monopoly price, whether it results from concentration and merger of capital, or from unique holdings such as a particular waterfall or a non-reproducible object such as a painting. The lack of precision became most obvious in Stalin's famous pronouncement that monopoly capitalism "needs" the "maximum" profit.[31] By contrast, the neoclassical theory is able to furnish a precise and elaborate analysis of monopoly price and output in terms of demand (marginal revenue) and supply (marginal cost).

Yet this result is strange in some ways, and would have been totally unexpected by an observer writing as late as 1925. Up to that time neoclassical theory had completely neglected the existence of monopoly. In the next few years an extensive discussion finally led to the definitive works of Chamberlin and Robinson in the 1930s.[32]

On the other side, Marx was the first major economist to predict the emergence of monopoly and economic concentration. He thoroughly

explored its causes in terms of technological advance and the economies of large scale enterprise. He further indicated the economic effects of monopoly on the distribution of income between classes, and the social and political effects on its vast power. Finally, Lenin made monopoly power the keystone of his theory of imperialism. It is only in micro price theory of monopoly that the dreary state of Marxist analysis has shown little recovery from the level of Stalin's pronouncement.[33]

(2) Long-run Equilibrium

We have seen that in neoclassical analysis there is a sharp distinction between the "short run," in which supply may change to meet demand only within the limits of present capacity, and the "long run," in which the level of capacity itself may rise or fall so that supply may adjust to any demand. In the short run price is determined both by utility as reflected in demand *and* by costs as reflected in supply conditions. In the long run price is determined *only* by the "cost" of supply, since demand affects only the amount of output sold. *If* all "costs" may be resolved into labor cost, then the long-run case fits the Marxist argument that the value of any commodity is determined solely by the labor embodied in it.

Marx does not explicitly limit his value theory to the long-run time period, but it is taken for granted and implied in all that he says. He states very often that in his basic analysis he is only concerned with the situation where supply equals demand, and the context makes clear that this is long-run demand and supply. Marx is not interested in the details of competitive jockeying for position, but *begins* his analysis at the point where competition has equalized long-run supply and demand in each industry. Later on, as we shall see, Marx recognizes another qualification which transforms the value concept to the more realistic "price of production" concept (similar to Marshallian "cost"). Here he explicitly states, "The price of production includes the average profit ... it is in the long run a prerequisite of supply, of the reproduction of commodities in every individual sphere."[34] In other words, if the long-run price is below this level, suppliers will not make the average profit and will move out of the industry (but if it is above that level, then profit is above average and more suppliers are attracted into the industry).

In the short-run, the price according to the neoclassical analysis clearly rests on both demand and supply. Demand is determined by both income and marginal utility. A large enough increase in demand must move production to a point of higher costs per unit because it eventually approaches the capacity limit (by definition). Of all this, Marx has nothing to say, unless one wishes to read some of it into his discussion of demand as an index of "social necessity." Even his meager discussions of this point should rather be interpreted, however, as relating to long-run or aggregate problems.

Marxists would do best to admit that Marx has no theory of short-run prices and outputs at the firm level because he was not interested in these issues. Of course, this would also mean that Marx furnishes no guide to how the socialist manager should or would act within the limits of his pro-

duction capacity, but it likewise means that Marx presents no doctrinal barrier to the consideration of any efficient scheme. Marx's discussion of short-run demand is all related to the aggregate problems in which he was interested. Thus he explains that aggregate short-run price may be below aggregate value in depression or deflation, while it may be above aggregate value in inflation. Similarly, in discussing aggregate distribution, he considers how short-run wages may be temporarily above or below the value of the workers' labor power.

(3) Socially Necessary Labor and Technology

One of Marx's explicit qualifications to the labor theory of value was the point that the best available technology must be used. Suppose all other firms are producing watches by automated production, but one firm produces an *identical* product by an enormous expenditure of hand labor. Then the product of that firm will not have a higher exchange value than the others because the labor expended is more than is "socially necessary" at present.

(4) Demand, Utility, and "Social Necessity"

Marx seldom discussed the role of demand in determination of individual prices because (a) it plays no role in long-run price, where his interest lay; and (b) he left the discussion of monopoly price for a later stage of discussion. He did, however, give an extensive discussion of the role of aggregate demand in determining aggregate output and price levels.

It is well to emphasize that Marx does not deny the operation of demand (and utility to consumers) in determining prices and outputs. Marx carefully states that a commodity must have some "use-value" (or utility), or else it can have no exchange value in the market.[35] If there is no demand, the price will be zero. In the long run, however, the *level* of demand — if it is above zero (and if costs per unit are constant) — can have no effect on the price, though it fixes the output and the allocation of resources.[36] In fact, the recognition by Marx that "use-value" is a necessary condition for any value, combined with the usual Marxist statement that the aim of socialism is the production of use-values for the population, has been used by several East European economists as a justification of the widest use of supply and demand or (marginal) utility concepts in planning.[37]

In connection with long-run price Marx shows the role of demand in the allocation of capital and labor. Thus Marx states the more specific qualification that only "socially necessary" labor expenditure gives rise to value. As we have seen, Marx uses the term "socially necessary" in one sense to indicate that the exchange value is determined only by that labor which makes use of the technology currently available to the society. Yet Marx also uses the term "socially necessary" to indicate that the labor value is determined only by that labor which is used in producing products in the proportion demanded by society from each industry. Thus Marx writes:

> If this division of labor among the different branches of production is proportional [to the demand], then the products of the various groups

labor to also show a higher profit. (Of course, in the actual business world only a very small amount of capital is set aside to pay wages at any given time. Wage payments occur only periodically, and capital is not kept in a money form between payments. Money for wages is normally taken from current revenue just before it is needed, so it is hard to isolate Marx's "capital used to purchase labor-power." It is certainly *not* the same statistic as the total flow of wages paid in a given period, such as wages paid in a year. But this is an additional complication ignored in the rest of this discussion; it cannot change the conclusions in any way.)

For Marx, the simplest version of the labor theory is only a first approximation (both logically and historically), so there is nothing contradictory in later modifying its conclusions to account for these additional facts.[44] When competition evens out the rate of profit, it causes profit or "surplus value" to flow from industries using a relatively high ratio of living labor (and producing relatively high profits) to those industries using a relatively low ratio of living labor (and producing relatively low profits). Competition does this by lowering high prices and raising low prices until there is a uniform rate of profit for all industries. The price in each industry then equals the "cost"of production plus a uniform rate of profit on capital, where the cost includes the wages plus the value of the used-up plant, equipment, and raw materials. This price is called the "price of production."

According to Marx, the price of production in each individual industry will equal the value of its product *only* if the ratio of the value of labor-power expended to the value of the used-up capital goods happens to be identical to the average ratio for all industry. Marx calls this key ratio the "organic composition of capital." In every industry where this ratio happens to be different from the average ratio, the individual prices of production will differ from the individual values. However, Marx argues, the aggregate amount of value produced will still equal the sum of prices, and the aggregate surplus value produced will still equal the sum of profits.

So long as the aggregate labor expended remains the same, the aggregate value and surplus value produced do not change. Competition merely redistributes the surplus value from one industry to another until there is a uniform rate of profit on capital. Thus, in Marx's own opinion, the labor theory of value and surplus value holds only for the *aggregate* product. The famous attack on Marx by Böhm-Bawerk[45] emphasizes that such an aggregate sum of values is meaningless because economic theory is concerned only with the *relative* value of commodities in exchange. Of course, Böhm-Bawerk was thinking only of price and allocation problems, and not of the whole range of Keynesian aggregate problems in which aggregate value is not only useful but necessary.

The aggregate equality of (1) values and prices, and the equality of (2) surplus values and profits, rests on the grounds that all of the individual deviations above and below value must exactly cancel each other. This is necessarily true *only if* no commodity enters into the production of any other.[46] In the more general case we note that capital goods are used in the production of other goods, and that the individual prices of capital goods

also deviate from *their* individual values. In this more difficult model we can prove only that one of the two equalities must hold, but that both will hold only under very special and accidental circumstances. Thus, if we wish to maintain the equality of aggregate surplus value and aggregate profit, we must admit that the sum of prices may deviate from the aggregate value of all products.

The individual and even the aggregate deviation of prices from values does *not* invalidate the labor theory of value, though it certainly modifies its simpler version. Given the labor expenditure, the rate of surplus-value, and the ratio of labor to used-up capital goods in each individual industry, the labor theory of value can still calculate all the individual prices and profits, as well as the aggregate amounts. If we are looking for a theory of relative individual prices, this qualification makes the labor theory vastly complicated and ridiculously clumsy for practical use. To the extent that we are concerned with Marx's aggregate economic conclusions, however, the whole issue is of such a small magnitude as to have no effect on the outcome.

(7) Constant Costs

Neoclassical theory considers three possible reactions of cost per unit to a rise in output in the long run: (1) rising costs, (2) constant costs, and (3) falling costs. Marx, in his first approximation to value theory, almost always assumed the simplest case, the case of constant costs (or infinite elasticity of supply). Suppose there is an increase in demand for a product, caused perhaps by a change in consumer preference. With constant costs, the only result of the increase in demand is an increase in output, because with the same cost per unit of output, there is no change in the long-run price. Only in this case would Marshall join Marx in declaring that long-run price is completely unaffected by changes in demand, and that it is governed solely by the "cost" of supply (including an average "profit").[47] Of course, the interpretation of "cost" and "profit" would differ greatly between Marx and Marshall.

It has been observed that *if* we assume constant costs, and *if* "cost" means the same as "labor expended," then we may say that Marxian economics reaches (in a very roundabout manner) the same conclusions about long-run price and output as Marshallian neoclassical economics. In a more general theory, however, it must be recognized that even in the long-run there may be falling costs per unit (associated with a rising marginal product per worker) *or* rising costs per unit (associated with a falling marginal product per worker).

In either case a shift in demand from other products to this one, even though fully balanced by a shift in supply from other products to this one, will "cause" a change in the price of this product as well as a rise in its output. (The change in price is due to the fact that at higher level of output it may be technologically necessary to use more or less labor per unit of output.) Yet Marx in his theory of individual prices always implicitly assumes constant costs, and makes no attempt to discuss these more general cases in his theory of value. The reason is that these issues, which are important

practical questions for management, have little or no relevance to the evaluation of capitalism versus socialism. Marx does consider problems of rising or falling costs, but only within the very different context of the aggregate and dynamic problems of changes in population and technology.

Neoclassical Economics as a Special Case of Marxist Economics

One modern American economist, Robert Campbell, contends that Marx made use of the Classical theories of value up to the time of Ricardo, but that Marxists have missed the generalization and unification of value theory that came "in the late nineteenth century with the concept of general equilibrium and the reduction of all explanations to the common denominator of utility. . . ."[48] Moreover, he believes, the "new basic insight" of the utility school, that economics is "the theory of allocation of scarce resources among competing ends,"[49] was never learned by Marxists. Therefore, he concludes, "the bondage of a Marxist heritage in economic theory is not so much that the Marxist view is simply wrong in one particular (i.e., that it assumes that value is created only by labor) as that it does not comprehend the basic problem of economic theory. . . ."[50]

Marx, of course, does *not* present a systematic theory of the allocation of scarce resources, though one may be *inferred* from his theory of value. He does often refer to the allocation of capital among industries according to the profitability of the different industries, which in turn would be a function of the given distribution of consumer demand. For the most part, though, it is true that Marx did not emphasize demand, let alone changes in demand; nor did he consider in detail the problems of production proportionate to that demand; nor did he consider at all the related problems of choice among scarce resources and capital. In fact, Marx never did discuss the marginal utility "revolution" of the 1870s, which occurred late in his lifetime. His scathing references to the utility theories of the "vulgar economists" concern the much earlier and superficial versions, and do not relate to *marginal* utility theory. Engels did mention marginal utility in a critical vein a few times in the voluminous letters of his later years.[51]

Neoclassical economics (after Ricardo, but before Keynes) has elaborated in great detail the theory of enterprise prices, inputs, and outputs. Progressive Marxists[52] concede that the neoclassical theory of resource allocation allows one to calculate, not only how capitalist managers should allocate their limited resources to maximize their profits, but also how socialist planners should allocate the limited resources of the whole society to maximize social welfare. Yet the allocation of scarce resources on the basis of micro price theory is not the whole of economics, and certainly far from the whole of political economy.

Marx would never have agreed that allocation of scarce resources is *the* basic problem of economics. In capitalism this problem appears mainly as a *technical*-economic problem for a single firm, a so-called micro-problem. Marx, however, was simply not interested in the technical micro-problems of the capitalist firm, such as where to invest, what technology to use, how

much to produce, or how many workers to hire. Marx was interested in the *political*-economic problems of the economy as a whole, so-called macro-problems of strategy for government or for whole economic classes.

Although Marx discusses at length the theory of the value of individual commodities, he does not use it to help the firm decide how much or what to produce. Marx uses value theory to set the analytic framework for an investigation of the macro-question of political economy, such as the distribution of national income between classes (or the question of "surplus value"), or the changes in aggregate value through depressions or inflation, and the long-run evolution of capitalist institutions (especially through concentration of capital ownership, and its expression in monopoly pricing).

Marx's concentration on macro-theory makes his analysis of little relevance for most of the problems of socialism. His theories have been extended to a "Marxist" analysis of the take-off from underdevelopment and the requirements of balanced growth, but the main problems of socialist planning, both at the level of the firm and the economy, concern the technical and micro-analysis of the most efficient allocation of resources. Here, it is true, Marx contributed little because he considered it futile and Utopian to spend time on the detailed problems of the future socialist economy. Marx, like Keynes in this respect, cannot be accused of neglecting the micro-problems of resource allocation, since he was interested in the analysis of the quite different problems of the evolution of capitalism as a whole.

Marxism may use a crude price theory, but the scope of its political economy is unbelievably broader than the abstract and narrow world of neoclassical economics. Leaving aside social and political struggles for the moment, Marxist economics long ago criticized neoclassical and Classical economics in the same way that Keynesians now do. Marx pointed out that capitalism faces a strange new problem unheard of in previous societies: not the scarcity of output and resources, but the excess of output and resources *relative* to the effective money demand for them. This problem opens up a whole new field of economics, the Alice-in-Wonderland economics of business cycles, general unemployment, depression and inflation, and aggregate lack of excess of demand. It is then apparent that the main body of neoclassical and Classical analysis is limited to the rare and accidental case of an exact full-employment equilibrium of aggregate supply and demand.

Furthermore, most neoclassical analysis limited itself to the activities of particular enterprises and their interactions. Very little neoclassical analysis is devoted to aggregate economic events, the area which Marx investigated in a very detailed and comprehensive manner. The few neoclassical concepts concerning aggregate economics, such as the celebrated Say's Law, have since been shown to be both superficial and inaccurate. These same concepts, as they existed in Classical economics, were sarcastically dissected by Marx a hundred years ago.

Moreover, neoclassical price theory usually limits itself to a static picture, disregarding time. At best, it compares two such static pictures.

Marx always concentrates on movement. He presents very detailed theories, both of short-run business cycle movements, and of the long-run evolution of capitalism.

Finally, neoclassical theory always remains at the level of *technical economics*, concerned with the price and production relationships between commodities. Marx wrote *political* economy, concerned with the social relationships between men. Marx explores the basic institutions of capitalism, asking which class of men own the means of production, and which class of men exert labor-power and do the productive work. What are the economic links binding the two classes together? What human relationships are reflected in the value of commodities?

Neoclassical economics has nothing to say about the role of government, except the common belief that the economy will work automatically and perfectly without any government (except to guard private property). Long before Keynes, Marx recognized the immense economic role played by governments in capitalism, in aiding the initial development of many industries as well as in measures to mitigate the business cycle.

Of course, modern Keynesian economics has a much more precise knowledge of the technical possibilities open to government intervention in capitalism. But Marx goes further to discuss an aspect of government in capitalism which Keynes never recognized. Marx discussed the determination of govenment policy and structure by the nature of the economic relationships. In other words, Marxists emphasize that the technical possibilities apparently open to government are in reality drastically limited by the political and economic self-interest of the ruling capitalist class.

Conflicting Views of Profits (or Surplus Value)

The main reason why so much heat has been generated in the academic-seeming arguments over price theory is that this theory provides the framework for differing views of the distribution of income between wages and profits.

Analytic Differences

The conflict between the Marxist labor theory and the neoclassical marginal utility theory is most clearly understood in relation to their interpretations of "costs." Both views agree that long-run price equals explicit costs plus an average profit. The question is whether profit is really a "cost" *or* a "residual" after payment of labor and material costs. To simplify the comparison, we ignore rent, and we assume that no capital is borrowed. Then all returns to capital are the interest on one's own capital, and may be called "profit" rather than interest; this definition is roughly equivalent to Marx's use of "surplus value" in Volume I of *Capital.*

In their views on profit theory we may, somewhat arbitrarily, portray four of the points of view along the continuous spectrum of views on profit. These are (1) some of the early marginal utility theorists, especially the Austrians, (2) Alfred Marshall and much of the Anglo-American school of

marginal utility, (3) the progressive Marxists, and (4) the orthodox or dogmatic Marxists.

The Austrian neoclassical theorists[53] reduce all costs to opportunity costs, that is, the sacrifice of other utilities such as leisure or consumer goods. All costs are subjective in the sense that labor gives up leisure for wages, while those who furnish capital "abstain" from present consumption in return for the receipt of profit.

Marshall substituted the word "waiting" for "abstinence," in part as a direct result of the ridicule with which Marx treated the "abstinence" of the rich capitalist as an apologia for profit.[54] But the difference is perhaps more than a word. Those who speak of "abstinence" think of a real sacrifice of consumption in order to invest. Marshall emphasized the time factor involved in "waiting" for the return on investment, which meant that the availability from profits of more funds for future consumption must be balanced against less funds for present consumption. Marshall criticized Marx's labor theory on this basis, saying:

> It is not true that the spinning of yarn in a factory, after allowance has been made for the wear-and-tear of the machinery, is the product of the labour of the operatives. It is the product of their labour, together with that of the employer and subordinate managers, and of the capital employed; and that capital itself is the product of labour and waiting; and therefore the spinning is the product of labour of many kinds, and of waiting.[55]

Furthermore, Marshall himself and his followers up through Keynes gave the story much more of a pragmatic or operational twist: if we have the institution of private property, then a profit is a necessary cost to the society of inducing the capitalist to part with his liquidity while waiting for the return of his investment and the interest on it. This view is slightly more neutral with respect to class conflict than the earlier neoclassical dogma.

At the other end of the spectrum, the fundamentalist or dogmatic interpretation of Marx certainly offers a conflicting viewpoint.[56] The added value of the product is entirely due to the workers' expenditure of (socially necessary) labor upon it. The value of the workers' labor-power or their wages are determined by the amount of labor expended upon the maintenance and education of the workers. Surplus value (or profit) results from the difference between the value of the workers' product (net revenue) and the value of the workers' labor-power (wages).

The progressive (or "revisionist" or "creative") interpretation of Marx, which claims to follow the spirit if not always the letter of Marx, begins with a much more general or abstract view of the labor theory. These writers see the labor theory as an economic expression of historical materialism. In this context, the labor theory of value means only that the ultimate source of all production is the actual labor of mankind operating on nature.[57] In general terms, the theory is "objective" in its approach, contrary to a view that might begin with subjective desires or subjective sacrifice. This is *not* taken to mean a denial of any specific supply and

demand analysis; and certainly *not* a denial of the use under socialism of the analysis of consumers' desires as well as planners' desires.

The progressive Marxist interpretations of profit emphasize Marx's assumption that the "capitalist" class has a monopoly of the means of production, while the "worker" owns only his own labor power. *Assuming* these institutional conditions, the capitalists *must* be paid a profit or they will not invest their capital (or, if you wish, under these conditions they are able to extract or "exploit" this profit from the social product). This is not a quantitative economic theory of prices and wages, but primarily is a historical or political-economic statement of the qualitative relationships of "capitalism."[58]

Specifically, in the theory of wages the progressive Marxists do not merely state that the worker is paid the "value" of his labor-power, for this is an unproven postulate. The practical problem is to explain why long-run wages remain at a level that does not eat up the profits of capital. In empirical terms there was an amazing degree of agreement concerning the wage level among nineteenth-century economists. It is not Marx but Marshall who states in the passage previously quoted: "If the economic conditions of the country remain stationary sufficiently long ... human beings would earn generally an amount that corresponds fairly well with their cost of rearing and training, conventional necessaries as well as those things which are strictly necessary being reckoned for."[59]

Disagreement is centered on the causes of this long-run "conventional subsistence" wage level. Marshall, following the Classicals, thought in terms of the supply and demand of labor to firms, as determined on the one side by the level of population and on the other side by the level of output of the product. All other things remaining stationary, the two forces reach an equilibrium at the point where output just equals the total amount of "conventional subsistence" needed for the given population. Yet Marx decisively and derisively rejected population pressure as the reason for keeping wages down to the "value" of the workers' labor-power.[60]

What did Marx substitute for population pressure? The progressive Marxists, such as Lange or Sweezy in the 1930s, point to his emphasis on aggregate unemployment and the "reserve army of labor." This has led many Marxist-influenced economists, such as Nicholas Kaldor,[61] completely away from any micro-theory of wages; that is, away from any theory which treats wages as a summary of enterprise demands and supplies of laborers. Instead, they substitute a macro wage theory, with the level of employment or unemployment as the decisive factor. The level of employment is determined in turn by the whole model, but especially by the "widening" of investment, which requires more labor, versus the "intensification" of investment labor-saving innovations, which requires less labor. In this view, then, all micro value theory is left behind in favor of macro theories of income generation and distribution. It is claimed that this is in the spirit of Marx's Volume III of *Capital*, in which he points out that the labor theory of value and surplus value holds true only in the aggregate.

On these grounds, it may be claimed that some of the descendants of Marx and some of the descendants of Marshall are in practical agreement

on the analytic outlines of the picture of the actual determination of profits and wages in the macro economy as part of a whole system of dynamic relationships. Of course, even the neo-Marxists and neo-Marshallians *interpret* this picture very differently, not only in obvious semantic differences, but also in profoundly different ethical conclusions.

Ethical Differences

The Marxist and the neoclassical theories differ first of all with regard to terminology. Marx speaks of "value" where Marshall discusses long-run price. Marx discusses the value of the workers' labor-power or costs of "variable capital," rather than the long-run price of labor. Marx speaks of the value of material capital or costs of "constant capital," instead of the long-run price of depreciated capital and used-up raw materials. Most important, Marx speaks of "surplus value" or "exploitation" instead of the cost of "normal profit" or the reward for "waiting." Of course, semantic differences do not necessarily mean that there are real differences of analysis or opinion. In fact, we have seen that after the terms are translated into a common language, one can claim that there are no clear differences in the functional analysis of reality, though there remain some differences in emphasis and levels of abstraction.

Nevertheless, the semantic differences do point toward a *profound difference* in ethical evaluation of the economic facts for policy purposes. It is quite different to think of profit as an unearned surplus from "exploitation" of labor than as a reward to capital earned for its willingness to "wait" for consumption. Thus in Marshall's attack on Marx, he says: "If we admit that it [the added value of the final product] is the product of labour alone, and not of labour and waiting, we can no doubt be compelled by inexorable logic to admit that there is no justification for Interest, the reward of waiting; for the conclusion is implied in the premise."[62] The implication of the labor theory of value is that the capitalist has no moral right to any part of the product, while the "waiting" theory does imply some such right.

That the capitalist foregoes the present use of his money and must *wait* for a further return "justifies" his making a profit, according to Marshall (especially if the end result is an efficient allocation of resources and a growing total wealth for the whole society). That the capitalist takes part of the product produced by the workers *"condemns"* the making of profit, according to Marx (especially if the end result is large-scale unemployment and less growth than could be achieved in a better-organized economy). Their ethical disagreement is thus evidenced in their analysis largely in the terms they use and in the aspects of the process they choose to emphasize. Thus, Marshall emphasizes the necessary role of withholding of income from consumption to invest it as capital in production, while Marx emphasizes the necessary role of labor in production and the attempt to increase profits by lower wages and longer hours.

Marx would agree that the actual machines are a necessary or "productive" part of the physical productive process: he would even agree to the importance of managerial labor. He would argue, however, that this pro-

ductivity of physical capital goods (created by another labor process in the past) is quite different from the ability of financial capital to capture a certain portion of the product as interest or profit. Moreover, Marx would contend that the mere "waiting" of the capitalist (as opposed to any managerial labor he may or may not perform) for a return on his financial investment does not "justify" the return of his principal *plus* an interest or dividend.

Both sides of the "exploitation" argument are too restricted in scope for a final conclusion. The distribution of income is only one determinant of the overall welfare of the average worker-citizen. In the pragmatic approach of modern welfare economics, we must judge capitalism versus socialism on the basis of all the available criteria of an economy's functioning and its effects on the average individual. In other words, if we accept the argument that the profit on capital is an unearned and unethical burden on the worker, we have still not proved that capitalism is not as good as socialism *if* it is counterbalanced by other advantages of capitalism.

Capitalism is an economy in which capital is provided, allocated, and rewarded privately; while socialism is an economy in which capital is provided and allocated by the government (or collective groups of workers) and in which all returns go to the government (or collective groups of workers). The method of providing capital and distributing income cannot be separated from all other aspects of a system's functioning. An overall ethical evaluation of competing economic systems must also consider the amount of unemployment, the efficiency of allocation of employed men and resources, the rate of growth of total income, and all of the social and political effects of each system.

We may note that Marx analyzes economic processes in a factual, scientific manner, in spite of the fact that he always has an emotional or ethical overtone to his writings. The ethical element is important, since the socialist solution does not necessarily follow as the best way out of the factually described situation of "exploitation" until we add some ethical standard. One peculiar school of "revisionists," in fact, rejected the labor theory of value as an economic analysis, but accepted it as a correct ethical theory.[63] Marx, on the contrary, first gave a scientific analysis of the factual process of capitalist "exploitation," and only then added an (implied) ethical standard in order to advocate socialism.

Conclusions

Marx's labor theory of value states that individual prices are proportionate to the labor expended in the production of the product. This is a special case of neoclassical price theory in which:

(1) there is pure and perfect competition;
(2) prices are in long-run equilibrium;
(3) there is a demand for each commodity: specifically, the labor expended in each industry is only that which is "socially necessary" in the

sense that it is proportionate to the demand for that product (at its long-run price);

(4) the labor expended in each industry is also "socially necessary" in another sense, that the best available technology is employed;

(5) labor is homogeneous, or the labor employed in each industry (and firm) is of average quality;

(6) all industries have a uniform "organic composition of capital," that is, in all industries there is the same ratio of expenditure of capital for living labor-power to expenditure of capital on plant, equipment, and raw materials used up in production per unit of output;

(7) there is a constant level of cost per unit of output at any level of long-run output.

We conclude from this analysis that Marxist price theory and neoclassical price theory are perfectly compatible. To analyze one actual set of prices, however, the Marxist would have to go through at least seven highly complicated approximations to take account of each of the qualifications mentioned above. Therefore, as a workable theory of relative individual prices the Marxist theory is practically impossible to use, not because it is wrong, but because it is needlessly complex to a very high degree. The progressive Marxists conclude that the neoclassical price theory is a much more useful tool in practice for setting prices and allocating resources.[64]

Neoclassical price theory is useful both for capitalist management and socialist management and planning. But these are *technical* economic problems in which Marx had little interest at the time he wrote. Marx wrote on the vast problems of *political* economy, for which micro price theory is only a small and not too important tool. Marx's economics, let alone his political theory, went far beyond the restricted model of neoclassical theory to consider the economy in the aggregate, aggregate distribution of income between classes, dynamic situations of disequilibrium including growth, unemployment and inflation. The progressive Marxists conclude that in this sense neoclassical price theory is only a very special case of Marxist political economy, though it is useful within its narrow limits.

What about the Marxist labor theory of surplus value? Dogmatic Marxism argues that surplus value (or profit) is the 'exploited" difference between the total value of the labor expended and the market value of the worker's labor power. Neoclassical theory considers profit to be the return to the capitalist for "abstaining" or at least "waiting." Yet both describe exactly the same process of setting prices and wages. The progressive Marxists discuss profit as a necessary functional result of the operation of an economy based on the institution of private ownership. This institution provides the desire and power to take private profit from the economy by the monopoly owners of capital, or the ability to refuse to use any capital in production except with the expectation of profit. The precise quantification of this view is provided only in a complete macro model in which distribution of income between capital and labor appears as fully determined by all the factors governing the aggregate supply and demand for each.

Finally, there are the two profoundly opposed ethical views of profit.

The dogmatic Marxists see the evil of "exploitation" as deciding the issue of fitness against capitalism, while the dogmatic neoclassicals see its justification in the "waiting" of the capitalist as justifying the capitalist system. The progressive Marxists, like all Marxists, evaluate private profit as an evil to the extent that it takes part of his product from the worker and gives it to a non-working capitalist. They recognize, however, that it is only one of the criteria for judging capitalism in contrast to socialism. Capitalism must be judged as a whole functioning system, and its maldistribution of income might be overbalanced by other advantages or intensified by other disadvantages.

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Notes

1. Adam Smith, *The Wealth of Nations* (New York, 1937, first published in 1776), p. 30.
2. David Ricardo, *Principles of Political Economy and Taxation*, ed. by P. Sraffa and M. Dobb (Cambridge, 1953, first published in 1821), p. 5.
3. The best presentations of Marxist economic theory are in Paul M. Sweezy, *The Theory of Capitalist Development* (New York, 1942); and Maurice Dobb, *Political Economy and Capitalism* (New York, 1945).
4. See Karl Marx, *Capital* (Chicago, 1906, first published 1867), Vol. I, Part I. Whenever there is a reference hereafter to *Capital*, Volumes I, II, or III, it will be to this edition.
5. See *Capital*, Vol. I, Parts II and III.
6. See Marx, *Capital*, Vol. I, pp. 675-77.
7. See Marx, *Capital*, Vol. I, p. 707.
8. See Alfred Marshall, *Principles of Economics* (New York, 1953, first published 1890).
9. *Ibid.*, p. 330.
10. *Ibid.*, pp. 337-50, 503.
11. *Ibid.*, pp. 455-61.
12. *Ibid.*, pp. 348-49.
13. See, e.g., *ibid.*, p. 497.
14. *Ibid.*, pp. 573-77.
15. *Ibid.*, p. 577.
16. See, e.g.. *ibid.*, pp. 573-77.
17. *Ibid.*, pp. 509-628.
18. *Ibid.*, p. 233.
19. *Ibid.*, pp. 331-36.
20. *Ibid.*, pp. 337-50, 363-80.
21. See R. Meek, *Studies in the Labor Theory of Value* (New York, 1956), pp. 250-51.
22. Eugen Von Böhm-Bawerk, *Karl Marx and the Close of His System* (New York, 1949, first published 1897; edited and introduced by Paul Sweezy, with a criticism of Böhm-Bawerk by R. Hilferding).
23. See, e.g., Meek *op. cit.*, pp. 243-56.
24. See Edward Bernstein, *Evolutionary Socialism* (New York, 1961, first published 1899). Various revisionist trends are described in George Lichtheim, *Marxism* (New York, 1961).
25. See e.g., Edward H. Chamberlin, *The Theory of Monopolistic Competition, A Re-Orientation of the Theory of Value* (Cambridge, 1950, first published in 1933).
26. Oskar Lange, "Marxian Economics and Modern Economic Theory," *Review of Economic Studies*, Vol. 2 (June, 1935), pp. 189-201. Lange's views refer only to his position in the 1930s, and *not* necessarily in later years.
27. See, e.g., Robert W. Campbell, "Marx, Kantorovich, and Novozhilov," *Slavic*

Review, Vol. 20 (Oct. 1961), 403.

28. See, e.g., *Political Economy*, a textbook issued by the Institute of Economics of the Academy of Sciences of the U.S.S.R. (London, 1957), pp, 389-96.

29. See, e.g. Leif Johansen, "Labor Theory of Value and Marginal Utilities," *Economics of Planning*, Volume 3 (Sept. 1963), 89-100; also the brief but pithy comment on Johansen's article by R.D. Dickinson, *Economics of Planning*, Volume 3 (Dec. 1963), pp. 239-40.

30. See, e.g. Oskar Lange, "Marxian Economics and Modern Economic Theory," *Review of Economic Studies*, Vol. 2 (June 1935).

31. See Joseph Stalin, *Economic Problems of Socialism in the U.S.S.R.* (New York, 1952), pp, 31 ff.

32. E. Chamberlin, *The Theory of Monopolistic Competition* (1933); and J. Robinson, *The Economics of Imperfect Competition* (1933).

33. See, e.g., R. Meek, *Studies in the Labor Theory of Value* (New York, 1956), pp. 292-93.

34. Marx, *Capital*, Vol. III, p. 233.

35. See Marx, *Capital*, Vol. I, Part I.

36. For Marshall's view of the role of demand in this case, see Marshall, *op. cit.*, pp. 348-49, 455-61.

37. See, e.g., Wlodzimierz Brus, "Socialist Production and the Law of Value," translated in *International Economic Papers*, Number 7 (1957), 125-44.

38. Marx, *Capital*, Vol. III, pp. 745-46.

39. Paul M. Sweezy, *The Theory of Capitalist Development* (New York, 1942), p. 47.

40. See Marx, *Capital*, Vol. III, p. 214, 222-23.

41. See the summary of these views in Alec Nove, *The Soviet Economy* (New York, 1961), pp. 280-82.

42. *Ibid.*, p. 282.

43. Dickinson, *op. cit.*, p. 239.

44. See Marx, *Capital*, Vol. III, Parts I and II.

45. See E. von Böhm-Bawerk, *Karl Marx and the Close of His System*, edited by Paul Sweezy (New York, 1949, first published 1896).

46. See, e.g., Ronald Meek, "Some Notes on the 'Transformation Problem,'" *Economic Journal*, 66 (March 1956), 94-107.

47. "It is also to be recalled that Marshall tended to give primacy to the conditions of production as price determinants in the long run." Alec Nove, *op. cit.*, p. 278. Also see Marshall, *op. cit.*, pp. 337-50, 503.

48. Campbell, *op. cit.*, 403.

49. *Ibid.*, 404.

50. *Ibid.*, 404.

51. All of the scattered references of Marx and Engels to this subject are mentioned in P.J.D. Wiles, *The Political Economy of Communism* (Cambridge, Mass., 1964), pp. 50-51.

52. See, e.g. Oskar Lange, "Marxian Economics and Modern Economic Theory," *Review of Economic Studies*, 2 (June 1935), 189-201.

53. See, e.g. Eugen von Böhm-Bawerk, *Karl Marx and the Close of His System*, edited and introduction by Paul Sweezy (New York, 1949, first published in 1896).

54. See Marshall, *op. cit.*, p. 233.

55. *Ibid.*, p. 587.

56. Marx' own discussion of profit or "surplus value" is in *Capital*, Vol. I, Parts II and III.

57. See the "revisionist" theories explained and attacked in R. Meek, *Studies in the Labor Theory of Value* (New York, 1956), pp. 225-38.

58. See, e.g. Sweezy, *op. cit.*, pp. 23-40.

59. Marshall, *op. cit.*, p. 577.

60. See, e.g. Marx, *Capital*, Vol. I. pp. 675-77.

61. See the summary of these approaches in Paul Samuelson, "A Brief Survey of Post-Keynesian Developments," in Robert Lekachman, *Keynes' General Theory: Reports of Three Decades* (New York, 1964), pp. 343-45.

62. Marshall, *op. cit.*, p. 587.

63. See A.D. Lindsay, *Karl Marx's "Capital"* (London, 1925).

64. See, e.g. Sweezy, *op. cit.*, p. 219.

66

The Marxian Theory of International Value

K. Matsui*

Source: *Kyoto University Economic Review*, Vol. 40 (2), October 1970, pp. 1-17.

I Introduction

I have so far referred to Karl Marx's theory of international value on several occasions and the opinions which might as well be regarded as my conclusions have been summarized in the first Chapter of my "*System of the Theory of the World Economy*" published in 1963[1]. Although it is true that in those days some references to the Marxian theory of international value were found in the literature of Marxian economics in various socialist countries, it can fairly be said that practically none of them was found to treat the subject systematically. On the other hand, in Volume V of "*Probleme der politischen Oekonomie*", 1962 published by the German Academy of Sciences an essay of great importance covering over 100 pages was presented on the subject of the Marxian theory of international value[2]. The reasons for this, I should think, could well be found partly in the theoretical point that the study of the theory of value was obliged to develop from the domestic aspect to the world market aspect, and partly in the practical cause that a study of the problem of international value had to be made, as a result of the expansion of the socialist world market, to provide standard prices for this socialist world market. In fact the essay by G. Kohlmey was subtitled "Two or Three Conclusions relating to Price Formation in Foreign Trade carried on among Socialist Countries".

In the first part of this essay Kohlmey made the following references, rather with indignation, with respect to the fact that the problem of the Marxian theory of international value had never even been taken up before at all in bourgeois literature; to the effect that the name of Marx was not quoted even once in Haberler's "*Der internationale Handel*", which should be regarded as an authentic book on international trade in the German language, that A. Metzler, the contributor of the essay entitled "International Trade" to the well-known editions of Collected Essays, "*A Survey of Contemporary Economics*", did not even touch on the name of Marx,

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that the same is the case with B. Ohlin's painstaking work "*Interregional Trade & International Trade*", and that Marx was also completely disregarded in the "*Readings in the Theories of International Trade*", in which most of the outstanding essays relating to the problems of international trade in the post-war era are collected. According to Kohlmey, "these are only a few examples of hundreds of cases where Marx himself and his achievements have been disregarded in the history of the capitalistic theories of the bourgeois."[3]

What is intended by Kohlmey in this connection is the systematization of the theory of international value from the standpoint of Marxian economics in opposition to the tendency of bourgeois economics. "Various views held by Marx with respect to international value, world market price, etc. could be perused here and there in "*Capital*", "*Grundrisse*", "*Theories of Surplus Value*" and other painstaking works. As is commonly known, Marx intended to describe a specific capitalistic law relating to foreign trade and the world market while pursuing a general study of the capitalist means of production."[4] Kohlmey's elaborate works, indeed, could well be appreciated as the first systematic study of the Marxian theory of international value which came to be made known in the literature of socialist countries after World War II. On the other hand in this country studies relating to this problem are found to have made steady headway from pre-war or wartime days. Among them can be listed the studies carried on by Professors Toichi Nawa and Puk Ku Che, and the present writer. Why, then, is it that these particular studies of the Marxian theory of international value are found to have made early headway in this country? The first thing to be accounted for is, I should think, that studies on Japanese capitalism had already reached a considerably high level in those days and that further development could only be made in studies on international relationships, and secondly that the high ratio of dependency of Japanese capitalism upon foreign trade made it essential to study the field of international relationships. In this connection it may be added that the results of studies of this kind in this country are well summarized to the purpose in "*Controversy — The Theory of International Value*" compiled by Professor Etsuji Kinoshita.[5]

The aim of this present essay is to examine the studies I have pursued so far, by making references to Kohlmey's latest study. For this reason the present writer owes the readers an apology for some repetitions of what has already been published.

II Modifications of the Law of Value

A particular term similar to 'international value' was also made use of by Mill, but what was meant by him is found to be different from what was meant by Marx. Now, let us firstly take up the arguments on international value given by Marx himself in his "*Critique of Political Economy*", "*Capital*", "*Theories of Surplus Value*", etc., and secondly proceed to give some considerations from various aspects, such as the assumption of

production of a simple commodity, the introduction of money and the theory of production price respectively. Marx made the following statement in the "*Theories of Surplus Value*". "When viewed even in the light of Ricardian theory, three working days in one country can be interchangeable with one working day in another country. The law of value in this case brings about an essential modification." Putting it in other words, labour in different countries is mutually related together, just as in the relationship of what skilled labour or complex labour is to unskilled labour or simple labour in one country. What takes place under these circumstances is the exploitation of a poorer country by a richer country and this fact holds true even when the said poorer country makes some gains as the result of such exchange as stated also by John Stuart Mill in his writings entitled "*Some Unsettled Questions, etc.*"[6] In this connection Marx made the following reference to Ricardian theory. Ricardo originally advanced a theory which was later called the "Theory of Comparative Cost" by his followers, which was succeeded by Mill and others and came to be advocated by Haberler at present. For this reason we shall now take up here the Ricardian theory before further proceeding to Marx. According to Ricardo the problem at issue can be explained by the following demonstrative example:[7]

Country	Labour Time Required to Produce 1 Unit of Wine	Labour Time Required to Produce 1 Unit of Woolen Cloth
Portugal	80	90
England	120	100

These figures indicate that Portugal holds an absolute dominance of productive power in each field over England, and that Portugal also holds a relative dominance in the production of wine. Nevertheless, to satisfy such a hypothetical assumption it is necessary that following conditions should be satisfactorily met. That is, while on the one hand there is free movement of capital and labour within one country, so that the conditions of production can be unified, on the other hand there is no free movement of capital and labour internationally, so that unified conditions of production do not exist, thus leading to the absence of difference in productive power, not merely in the absolute sense of the word but also in the relative sense of the word. In this case it is held by Ricardo that a certain commodity is exchanged between two countries, and yet that each country gains something by such foreign trade. Now, it is quite understandable that Portuguese wine which requires 80 hours of labour for its production is exported to England where 120 hours of labour are required, but it apparently seems odd that British woolen cloth which requires 100 hours of labour for its production is exported to Portugal where only 90 hours of labour are required. What is pointed out as the reason for this [by] Ricardo lies not only in the fact that it would be more profitable for Portugal to concentrate all her labour and capital on the production of wine, in which Portugal holds a relative advantage, and to export a portion of it to England and to import British woolen cloth in exchange, but in the fact that it would also be

profitable for England to concentrate all her labour and capital on the production of woolen cloth, in which England holds a relative advantage and to export a portion of it to Portugal and to import Portuguese wine in exchange. However, in this case if foreign trade is to be opened between the two countries mentioned, and Portugal is to specialize in the production of wine and England in the production of woolen cloth, then the specific quantity of labour included in the specific hours of labour in Portugal must be internationally evaluated at a higher value (price), and at the same time the quantity of labour included in the same hours of labour in England must be internationally evaluated at a lower value (price). Supposing that the quantity of labour respectively included in the same hours of labour in the two countries has an identical value and that each of them is to be expressed by the same price, it would be inconceivable that a commodity having a value of 100 in one country would be exported to another country where a value of 90 holds. Needless to say, the division of labour in a capitalist society is to be materialized through the instrumentality of commodity prices, and it is impossible to know whether specialization in a specific type of production would be profitable or not unless commodity prices are taken into account. Moreover, the quantity of social labour included in the same hours of labour within one country always has the same value and is expressed by the same price. Yet the same idea is not applicable to the present international problem at issue, i.e. foreign trade. This is the very problem originally designated as a modification of the law of value by Marx. Since the law of value is obliged to be modified in the world market in this way, the problem at issue becomes more and more complicated. Ricardo, indeed, made a very close approach to the problem and went through no small pains, but he failed to find the correct solution to the problem, because of his inaccurate concept of the labour value theory. As is generally known, Ricardo only thought about labour in a concrete form, taking it up as problematical because of the lack in the concept of human labour in an abstract form and average labour in a simple form. Ricardo failed to take note of the truth discovered by Marx that labour is homogenized through the exchange of commodities and that human labour thus homogenized should be none other than the very substance of value. For that reason Ricardo gave up the international comparison of value and tried to explain foreign trade from the difference in the exchange ratio in two different countries (comparative cost). By giving up the international comparison of value in this way, he maintained that foreign trade carried on between one country with higher productivity and another country with lower productivity would bring forth relative gains to the respective countries, and in this way the fact of the absolute sweating exploitation of the poorer country by the richer country thus caused was completely ignored.

III Marxian Theory of International Value

What raises a question relating to the passage from Marx quoted before is concerned with the question why the idea that three working days in one

country are interchangeable with one working day in another country should be regarded as a modification of the law of value. If Ricardo's illustration is taken up, what is meant here is the case in which one unit of Portuguese wine (80 hours of labour) is exchanged for one unit of British woolen cloth (100 hours of labour). Marx gave the following statements with regard to the relationships within one country between skilled labour and unskilled labour, and between simple labour and complicated labour: "Skilled labour counts only as simple labour intensified, or rather, as multiplied simple labour, a given quantity of skilled being considered equal to a greater quantity of simple labour. Experience shows that this reduction is constantly being made. A commodity may be the product of the most skilled labour, but its value, by equating it to the product of simple unskilled labour, represents a definite quantity of the latter labour alone. The different proportions in which different sorts of labour are reduced to unskilled labour as their standard, are established by a social process that goes on behind the backs of the producers, and consequently, appear to be fixed by custom."[8] As is evident enough from this quotation, even when three days of simple labour are converted into one day of complex labour, as far as this is done within one country, the very fact of such practice would rather mean the penetration of the law of value and it would by no means imply a modification of the law of value. So why is it that the same thing between the two countries mentioned should call for modification?

To begin with, the point we must take into special consideration is concerned with the expression "3 days' labour versus 1 day's labour" which was referred to by Marx as an international problem, which was originally concerned not with labour in a concrete or individual form but with labour in a social or average form. As to such social labour, Marx made the following assertion: "Some people might think that if the value of a commodity is determined by the quantity of labour spent on it, the more idle and unskilful the labourer, the more valuable would his commodity be, because more time would be required in its production. The labour, however, that forms the substance of value, is homogeneous human labour, expenditure of one uniform labour-power. The total labour-power of society, which is embodied in the sum total of the values of all commodities produced by that society, counts here as one homogeneous mass of human labour-power, composed though it be of innumerable individual units. Each of these units is the same as any other, so far as it has the character of the average labour-power of society, and takes effect as such: that is, so far as it requires for producing a commodity, no more time than is needed on an average, no more than is socially necessary. The labour time socially necessary is that required to produce an article under normal conditions of production, and with the average degree of skill and intensity prevalent at the time."[9] Marx used the term "national average labour" to express social average labour as formed within one country. As discussed before, when the interchangeability of 3 working days in one country with 1 working day in another country was mentioned, it must be considered that Marx intended to mean such national average labour. Then, what can be meant by the expression that national labour in more than two countries was

mutually interrelated in a similar manner as in the case of complex labour and simple labour within one country? What is meant by national average labour, in short, is human labour in an abstract form and it seems rather strange to think that human labour, which primarily should be homogeneous in nature, exists in plurality. However, if further consideration is given, the following fact ought to be brought to light. According to Marx's assertion, "Simple average labour, it is true, varies in character in different countries and at different times, but in a particular society it is given"[10]. From this specific reason, it follows that national average labour in one country, which should be homogeneous human labour on equal terms comes to be interrelated with national average labour in another country in a similar manner as if one of them were complex labour and the other were simple labour within one country. This relationship will gradually keep developing as the international exchange of commodities keeps growing. Then, in this way the type of human labour in an abstract form conceived on a world-wide scale which was expressed by Marx as universal average labour is to be formed. However, contrary to the formation of universal average labour in this manner, the development of exchange of commodities in the world market is not universalized in a similar manner as in the case of the domestic market owing to various reasons. Boundary lines between nations are still in existence as they used to be and for that reason it must be said that the formation of universal labour is still far from being formed. It is primarily because of this that the problem of national average labour as well as that of universal average labour gives rise to a highly complicated discussion. About this point Marx made the following assertion. "In every country there is a certain average intensity of labour, below which the labour for the production of a commodity requires more than the socially necessary time, and therefore does not reckon as labour of normal quality. Only a degree of intensity above the national average effects, in a given country, the measure of value by the duration of the working time. This is not the case on the universal market, whose integral parts are the individual countries. The average intensity of labour changes from country to country; here it is greater, there less. These national averages form a scale, whose unit of measure is the average unit of universal labour. The more intense national labour, therefore, as compared with the less intense, produces in the same time more value, which expresses itself in more money"[11]. On the assumption that the world market operates as perfectly as if it were a domestic market, when a certain labour intensity of medium degree is firmly established, if the labour intensity to be expended in the production of a commodity is found to be lower than the said standard level, such a commodity is therefore consuming more time than the socially required time and correspondingly it follows that such a type of labour can not be counted as labour of standard quality. Yet it must be admitted that the world market in reality does not yet operate in such a perfect manner. Although universal average labour has already been formed, national average labour in each country is still in existence and it is found to exist in different forms at various stages. Here lies, indeed, the very ground why the Marxian theories of market value and individual value advanced in

Volume III of "*Capital*" should be applied to the world market. What was called the modification of the law of value by Marx, in short, is concerned with the estrangement of the domestic value from the international value caused by unbalanced international productive power, and it can be concluded that it is not until it is examined in the light of this law that the theory of comparative cost advanced by Ricardo can be grasped in a correct manner.

IV Introduction of Money

As the international exchange of commodities makes gradual increases, one particular commodity=money tends to be excluded from all other kinds of commodities and, taking the form of equivalent value, it turns into money. This is universal money. Now, when this is introduced, what will happen to the law of foreign trade we have discussed so far? Let us now see about this problem.

What is applicable to national differences in productive power, needless to say, is also applicable to the production of gold. Supposing that a country with higher productive power needs 1 day labour power to produce a given quantity of gold and another country with lower productive power requires 3 day labour power. In this case, what is meant by 1 day labour power or 3 day labour power is, needless to say, the duration of the time of engagement of social average labour in each country. If this is expressed in other words, it means that a greater amount of gold is produced in the same labour time in the country with higher productive power, and a smaller amount of gold in the country with lower productive power. Now, let us make the following modifications to the demonstrative examples used by Ricardo:

Country	Kind of Value	Labour Time Required to Produce 1 Unit of Wine	Labour Time Required to Produce 1 Unit of Woolen Cloth	Labour Time Required to Produce 1 Unit of Gold
Portugal	Domestic Value	80	90	90
	International Value	88.8	100	$100\left(90 \times \frac{10}{9}\right)$
England	Domestic Value	120	100	110
	International Value	109	90.9	$100\left(110 \times \frac{10}{11}\right)$

Now, as a result of the fact that universal money has come to have the same international value in the two countries mentioned, irrespective of difference in the productive power of wine and woolen cloth, the difference

arising in each field of products is to be expressed by the difference in the production of gold. The reason is because the value (price) of each commodity can be expressed in the terms of exchange for gold on an equal footing.

As a result, the international value of Portuguese wine is 88.8 and that of Portuguese woolen cloth 100, while the international value of British wine is 109 and that of British woolen cloth 90.9; which state of affairs indicates the export of wine from Portugal and that of woolen cloth from England.

According to Marx, the transition from domestic value to international value was to be explained as follows: "But the law of value in its international application is yet more modified by this, that on the world market the more productive national labour reckons also as the more intense, so long as the more productive nation is not compelled by competition to lower the selling price of its commodities to the level of their value." "In proportion as capitalist production is developed in a country, in the same proportion do the national intensity and productivity of labour there rise above the international level. The different quantities of commodities of the same kind, produced in different countries in the same working-time, have, therefore unequal international values, which are expressed in different prices, i.e., in sums of money varying according to international values. The relative value of money, will therefore, be less in the nation with more developed capitalist mode of production than in the nation with less developed. It follows, then, that the nominal wages, the equivalent of labour power expressed in money, will also be higher in the first nation than in the second; which does not at all prove that this holds also for the real wages, i.e., for the means of subsistence placed at the disposal of the labourer."[12] In this case Marx explained the international difference in the relative value of money from the difference in the productive power of labour. Needless to say, the process mentioned above comes to be materialized in a roundabout way in a country where no gold is produced. With respect to this point Marx made the following statement: — "So much, however, is clear, that in countries producing gold and silver, certain quantities of labour time are directly embodied in definite quantities of gold and silver, while in countries which does [sic] not produce gold and silver the same result is reached in a round-about way, by direct or indirect exchange of the commodities of those countries".[13]

V Market Value and International Market Value

According to Marx commodities in each country come to have different international values of their own owing to the difference in the conditions of production. Therefore, when it is held that international value should be made a standard for the world market price, it must by all means be the international market value which should be the average of the different international values. The prescription of market value by Marx runs as follows: — "On the one hand, market value is to be viewed as the average

value of commodities produced in a single sphere and, on the other, as the individual value of the commodities produced under average conditions of their respective sphere and forming the bulk of the products of that sphere."[14] So long as a commodity is brought into international business dealings and a world market for that particular commodity comes into existence, it is seen that we have an international market value in the sense that it represents the mean value of all commodities of this particular kind produced by many different countries. However, it is impossible to form a concept of international market value in the sense of the individual value of such commodities which are produced under average conditions to present a greater part of all products in that particular field of industry, because no free movement of capital and labour is possible in the world market. There is no doubt about the point that the progress of capitalism tends to expedite gradual movement of capital and labour but at the same time there is a strong tendency to check such movements. For that reason, even when the conditions of production in one country may be found to match the average conditions of production, it might be more adequate to consider that it is a mere coincidence. The conditions of production for each country, taking the form of varied stages, so to speak, are mutually interrelated with each other without being unified. One peculiar feature of international market value is seen in the following fact. While on the one hand there is always an individual value to match the domestic market value, on the contrary, in the case of international market value, the same does not necessarily hold good. The individual value of each country is found to be estranged from the international market value (price).

The mere fact that the individual value is estranged from the market value carries no implication whatsoever of any modification of the law of value, instead it rather gives an assurance of the fulfilment of the law of value by demonstrating that the individual value above or under the market value does exist, and that the total value squares with the total price. Now, why is it that the estrangement of the individual value of each country in the world market from the market value gives rise to the idea of the modification of the law of value? This can be accounted for in the following way. The international market price fluctuates on the basis of international value. Then, once the international price is formed, it concurrently is taken to be domestic market price for each country, too. Since producers in a country with productive power can carry on production at a lower value as a whole than the international market price, a yield of surplus profit is realized. On the other hand, producers in a country with lower productive power can not effectuate the value of a certain portion of the labour in their own country to its fullest extent since production is being carried on at a lower value as a whole than the international price. Under these circumstances it is seen that the total value and the total price are no longer balanced between these two countries. However, in this connection one point which we should make special note of is that even under such circumstances, if viewed from the aspect of the world market as a whole, the total value does fit in well with the total price. Consequently, it will lead to the conclusion that the idea of the modification of the law of value is by no

means a denial of the fulfilment of the law of value.

Now, keeping the foregoing discussion in mind, let us proceed to make a comparative study of the theory of international value advanced by Mill. Supposing that the international value of two commodities came to be fixed owing to competition as follows: wine — 95 and woolen cloth — 95, which can be expressed if based on the Ricardian demonstrative examples as shown below:

Country	Kind of Value	Wine	Woolen Cloth
Portugal	Domestic Value International Value	80 88.8	90 100
	International Market Value	95	95
England	International Value Domestic Value	109 120	90.9 100

In this case wine is exported from Portugal and woolen cloth from England. If the way of expression used by Mill is to be used, the exchange ratio is 1 : 1. As far as international market value is concerned, the demand for the two above commodities in the two above countries is balanced. Now, if it is assumed that demand in England for wine, which is a staple export-product of Portugal, decreases, then international demand also gets out of equilibrium and so Portugal is obliged to decrease the price of wine in order to restore the balance. Supposing that the price is 90 as an example, since the exchange ratio of these two commodities stands at

$1 : \frac{90}{95}$, this international market value just formed afresh, relatively

speaking, turns out to be favourable for England. Under these specific circumstances wine which is supplied from Portugal and clothing which is supplied from England come to be well balanced with each other in total value. Conversely, in the event of decreased demand in Portugal for clothing, which is a staple export-product of England, the reverse result takes place. Now, it is England that is obliged to decrease the price in order to secure sufficient demand. Supposing that the price is 93 as an example, since the exchange ratio of the two commodities in the new international

market stands at $1 : \frac{95}{93}$, this international market value turns out to be

favourable for Portugal, relatively speaking. International demand is then in a well balanced state: wine supplied from Portugal and clothing supplied from England are well balanced with each other in total value.

So far as the foregoing discussion is concerned, it appears to me that it does not make much difference whether the view of the Marxian theory of the value of labour or of Mill's interpretation is held. However, upon think-

ing the matter over, it is found that Mill failed to make due recognition of two important features. That is, firstly, any commodity in international business dealings is to be bought or sold in exchange for money without exception and the act of sale or purchase is separable in the sense of time, place and person, being quite different from what was in the mind of Mill. Consequently, even if international demand is properly balanced all the time by the price movement of commodities, its equilibrium is constantly exposed to continuous fluctuations. The unbalanced development now being made by various countries, caused by the high growth rate of a capitalist economy, is further tending to aggravate such international unbalance in such a worsening tendency that the present situation has been driven into a serious stage where there is no longer any room for the possibility of balancing trade only through the instrumentality of the automatic mechanism that Mill had in his mind.

The second point is concerned with his recognition of the advantage of foreign trade. As pointed out before, Mill thought that foreign trade was a kind of barter. As a natural result of such a concept, he had the idea that profits coming from foreign trade mean increase of social products, which in other words means a rise of the level of substantial [sic] income. However, the immediate advantage coming from foreign trade in any capitalist society should in reality be nothing else but the acquisition of profit. Even under circumstances where the level of real income may be raised indirectly by foreign trade, it is only made possible through the direct search for and acquisition of profit. There is no need to say that the aim of any capitalist is to make gains by importing at a lower price and exporting at a higher price. In the meantime, referring to the figures quoted previously again, it is true that on such occasions England may get more gain and on some occasions Portugal may get more returns on account of fluctuations in international prices, but such events are strictly concerned only with the aspect of relative advantage, and if viewed from the absolute aspect, it leads to the conclusion that it is Portugal, having higher productive power, that is acquiring the advantage from foreign trade in either one of the two cases at the sacrifice of England, which has lower productive power. In particular the international market value of wine is 90 or 95, both of which are fixed at a rate above Portuguese domestic value and under British domestic value. The international market value of woolen cloth is 95 or 93, both of which are above Portuguese domestic value and under British domestic value. Moreover, these gains are not advantages for consumers, as Ricardo and Mill thought; they are returns for capitalists in the country with higher productive power gained in the form of surplus profits accruing from foreign trade. It is possible that a portion of such surplus profits may be distributed to the labourers, causing the level of their real income to rise, but this is a matter to be determined by the ratio of distribution between capital and labour. Although a country with lower productive power, relatively speaking, may be getting gains, if viewed absolutely, such a country is always suffering losses, and these losses demand sacrifices on the part of the working class. The fact that only a handful of people are born to become wealthy comprador capitalists on the [one] hand, and that a multitude of

people are left to live at starvation level on the other, in a country still in the process of developing nothing but a good expression of these realities. Ricardo and Mill overlooked this important reality by giving up the international comparison of the problem of value and wages.

As to the concept of international market value, there are some scholars who do not accept such a concept. In this country Professor Nawa is one [of] them[15], and a similar view is also found even in a certain socialist country. According to this kind of view the concept of international value is being used in a vague form without making the distinction between international value and international market value. An attempt to seek a basic standard for the world market price in international value is found among scholars of socialist countries, but seeing that Marx made a definite use of the term 'unequal international value', it is evident that it can not be made a basic standard of the world market price, if it is meant to be such unequal international value. International value in this case should by all means be the international market price. From this aspect it must be concluded that the view of denying the concept of international market value and of trying to deal with everything else through the mere concept of international value is incorrect, if not wrong.

G. Kohlmey is one of those who accepts the concept of international market value. "In the international market any expenditure of individual national labour in a nation is reduced to international value. Just as individual value is convertible into market value, so national value is convertible into international value. There exist national market value and international market value."[16]

VI Production Price and World Market Price

International market value constitutes the centre of fluctuation of the international market price. About this no explanation is required. What calls for an explanation is when the problem of the production price is taken up in place of market value. In this connection Marx's own passages are quoted as follows. "What has been said here of market value applies to the price of production as soon as it takes the place of market value. The price of production is regulated in each sphere, and likewise regulated by special circumstances. And this price of production is, in its turn, the centre around which the daily market prices fluctuate and tend to equalise one another within definite periods."[17] However, because our view is maintained for the time being on the assumption of there being no international capital movement in the world market, it must be assumed that the conversion of international market value into production price is impeded. "What competition, first in a single sphere, achieves in a single market value and market price derived from the various individual values of commodities. And it is competition of capitals in different spheres which first brings out the price of production equalising the rates of profits in different spheres. The latter process requires a higher development of capitalist production than previous one."[18]

In the world market no movement of capital is made, but in the domestic market the competition of capital is carried on and market value is converted into production price. What kind of change is to be given to this production price by foreign trade and what effect is enhanced by the profit rate of a nation by this production price? These questions are exactly what we are going to discuss here. So long as the field of production of commodities to be exported operates with a capital of average organic composition in one country, the value is in perfect accord with the price during the period prior to the opening of foreign trade. However, since the product to be exported from a country with higher productive power can obtain a higher price in the world market owing to the opening of foreign trade, it follows that the profit rate of that particular field is increased by so much. For that reason capital in other fields of production begins to flow to this field to produce such export-products, thus resulting in an increased average profit rate of such a country as a whole. Under these circumstances it is seen that this field of production operating with a capital of average organic composition enjoys a higher production price than the value. The point is, generally speaking, exactly as explained by Marx. What is problematical is concerned with the case of a country with lower productive power. The price of the said commodity in such a country comes to be decreased due to the opening of foreign trade and the production price falls to a lower level than its value even in the field of production operating with a capital of average composition. As a result, the possibility of exporting is furthered in favour of a field of production that has a relative advantage if an example is taken from the demonstrative examples used by Ricardo, it becomes possible for England to export her woolen cloth.

Thus, things caused by the formation of international market value are (1) a rise in the production price in a country with higher productive power, (2) a rise in the average profit rate, (3) a decline in the production price in a country with lower productive power and (4) a decline in the average profit rate, and it is seen that international market value does not cause the formation of a unified production price. The reason is because our argument is based on the assumption that capital makes no international movements. It is impossible to think that the world market price fluctuates above or below the level of the production price as it does in the domestic market. About this point Kohlmey gives an almost similar explanation. "It is true that there is every indication in the capitalistic system of the world economy that the profit rates of various nations are tending to be equilibrated toward the average profit rate of the world economy, but such a tendency is not so influential."[19] "The first ground is self-explanatory from the fact that the capitalist world economy has been broken up into so many minor groups, such as mechanical manufacturing countries of commanding influence, subsidiary countries to them, colonial or agricultural countries, zones of raw materials supply, countries still in process of developing, or unilaterally developed countries."[20] "The second ground is deducible from the fact that the international capital movement is in general barricaded to a greater extent in comparison with its domestic movement."[21]

Again, seen from the angle of the production price, it can also be concluded that a gratuitous transfer of value or exchange of unequal value is practiced through the instrumentality of foreign trade, because a commodity from a country with higher productive power is transacted at a higher production price than its original value in the world market, and a commodity from a country with lower productive power is transacted at a lower production price than its original value. About this point Marx made the following statement:— "Capital invested in foreign trade can yield a higher rate of profit, because, in the first place, there is competition with commodities produced in other countries with inferior production facilities, so that the more advanced country sells its goods above their value even though cheaper than the competing countries. In so far as the labour of the more advanced country is here realised as labour of a higher specific weight, the rate of profit rises, because labour which has not been paid as being a higher quality is sold as such. The same may obtain in relation to the country, to which commodities are exported and to that from which commodities are imported; namely the latter may offer more materialised labour in kind than it receives, and yet thereby receive commodities cheaper than it could produce them. Just as a manufacturer who employs a new invention before it becomes generally used, undersells his competitors and yet sells his commodity above its individual value, that is, realises the specifically higher productiveness of the labour he employs as surplus labour. He thus secures a surplus profit."[22]

Needless to say, this does not imply a denial of the fact that even a country with lower productive power gets some gains, relatively speaking. Be it a country with higher or lower productive power, some gains are definitely made through foreign trade, as clearly pointed out by the theory of comparative cost. The theory of comparative cost has a grasping of such gains as an increase of social products because of its assumption that foreign trade is a kind of barter. However, so far as foreign trade is an exchange of capitalistic commodities, such gains should be grasped not as an increase of social products but as a rise of profit rates. About this problem Marx wrote the following suggestive passages:— "Since foreign trade partly cheapens the elements of constant capital, and partly the necessities of life for which the variable capital is exchanged, it tends to raise the rate of profit by increasing the rate of surplus value and lowering the value of constant capital. It generally acts in this direction by permitting an expansion of the scale of production. It thereby hastens the process of accumulation, on the one hand, but causes the variable capital to shrink in relation to the constant capital, on the other, and thus hastens a fall in the rate of profit. In the same way, the expansion of foreign trade, although the basis of the capitalist mode of production in its infancy, has become its own product, however, with the further progress of the capitalist mode of production through the innate necessity of this mode of production, its need for an even-expanding [sic] market. Here we see once more the dual nature of this effect. (Ricardo has entirely overlooked this side of foreign trade)".[23]

Simply because Ricardo thought that foreign trade was a kind of barter and did not think of the act of exchange of commodities, particularly

capitalistic commodities, he could not make it clear that the increase of social products should result in accumulated capital in capitalist societies. That is why he could not clarify the interacting relationships between accumulation of capital and foreign trade, which should have been seen through the facts that foreign trade enhances the effects such as increase of profit rates, decrease of unemployment, acceleration of accumulation of capital on the one hand, while on the other it becomes a cause of unemployment and bringing about a decline of profit rates to a greater extent primarily owing to the expanded scale of production.

VII Conclusion

As already mentioned before, I have so far devoted this discussion on many occasions to the subject of the 'Theory of International Value' and I am afraid that it contains some repetitions of many points, but some of the new points advanced in this brief essay may be summarized as follows:—

In the first place, the study of international value is mainly composed of what was pursued in this country, as is self-explanatory from "*Controversy — The Theory of International Value*" written by Prof. Kinoshita, and it is, so to speak, of a "closed-door" nature. Making references to Kohlmey's essay in this essay, I tried to make it clear that this problem is not merely of concern for this country, but is also an international problem. Seeing that views held by a number of scholars in socialist countries are taken up in Kohlmey's essay, I have firm confidence in saying that the theory of international value holds an indisputable position in Marxian economics. Among the economists of our country there are some who venture to deny the importance of this theory, maintaining that such a theory is nothing but one variety of the ordinary theory of value, but their lack of sagacity should by this time call for their grave self-reflection.

In the second place, in preparing this essay I have introduced the instrumentality of money to the theory of comparative cost which was advanced on the assumption of barter. Of course such an attempt at introducing money was tried on many occasions before, but none of them was found to have a clear relationship with the Ricardian theory of comparative cost. The specific feature of this essay is the smooth way the problem of money is introduced by applying the demonstrative examples used by Ricardo as they were. The introduction of money to the theory of comparative cost ought to carry inestimably important significance. The possibility of a crisis of an international money crisis at the present moment can be deduced from it.

In the third place, the importance of the concept of international market value is pointed out through due consideration of international value. Even among scholars in socialist countries, not a few of them are found to refer to international value as a standard for determining international market value, but such a view is incorrect, if not wrong. When it is meant to say that international value can be made a standard for the world market price, it should be the market value.

In the fourth place, it is clearly explained that the tendency in the world market to form an international production price is very feeble. The reason is because the movement of capital in the world market is not so active as in the domestic market. Seen from this angle, the standard of the world market price should be sought in the world market value.

Notes

1. Kiyoshi Matsui, *The System of the Theory of the World Economy*, Nippon Hyoron-Sha, 1963.
2. G. Kohlmey, Karl Marx' Theorie von den internationalen Werten mit einigen Schluß folgerungen für die Preisbildung im Aussenhandel zwischen den sozialistischen Staaten, in *Probleme der politischen Oekonomie*, 1962.
3. Kohlmey, *a. a. O.*, S. 19.
4. Kohlmey, *a. a. O.*, S. 20.
5. Etsuji Kinoshita, *Controversy — The Theory of International Value*, Kobun-Do, 1960.
6. K. Marx, *Theories of Surplus Value*, Vol III (Moscow ed. not yet published).
7. D. Ricardo, *Principles of Political Economy and Taxation*, (Gonner's ed.), p. 115.
8. Marx, *Capital*, (Moscow ed.), Vol. I, p. 44.
9. *Ibid.*, p. 39.
10. *Ibid.*, p. 44.
11. *Ibid.*, pp. 559-560.
12. *Ibid.*, p. 560.
13. Marx, *Critique of Political Economy*, (ed. by V.I. Stone), p. 77.
14. Marx, *Capital*, (Moscow ed.), Vol III, p. 178.
15. Toichi Nawa, *Studies on Theory of International Value*, Nippon Hyoron-Sha.
16. Kohlmey, *a. a. O.*, S. 37.
17. Marx, *Capital*, (Moscow ed.), Vol III, p. 179.
18. *Ibid.*, p. 180.
19. Kohlmey, *a. a. O.*, S. 56.
20. *a. a. O.*, S. 57.
21. *a. a. O.*, S. 57.
22. Marx, *Capital*, (Moscow ed.), Vol III, p. 238.
23. *Ibid.*, p. 237.

67

Marxist Models of Cyclical Growth

H.J. Sherman*

Source: *History of Political Economy*, Vol. 3 (1), Spring 1971, pp. 28-55.

The object of this article is to review the previous models and offer some new ones based on Marx's theories of national income, capital accumulation, growth, cycles, and cyclical growth. Marx did not anywhere put together his various discussions of these points in a systematic manner, let alone in formal models; so these are not direct translations, but derivations and extrapolations from his discussions and hints. It is suggested only that, by using Marx's insights, combined with the later technical developments of academic economics, one can imagine some consistent models and can say that these may be very fruitful even for modern theorists.

Simple Reproduction

Marx begins with a very simple, abstract model of capitalism.[1] He assumes pure competition, no government economic activity, and no foreign economic relations — all assumptions to be removed at later points. In accordance with the usual Marxist terminology, W is the value of the national product, W_1 is the value of investment goods, W_2 is the value of consumed goods, S is the surplus value, V is variable capital, and C is constant capital. For Marx, the total value of the national product from the supply side is composed of the constant and variable capital plus the surplus value:

$$W = C + V + S \tag{1}$$

Marx defines "value" to be the amount of labor put into the production of a commodity. In his aggregate analysis, however, value may be translated into a constant (or deflated) money unit without changing the con-

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clusions. In his microanalysis Marx also shifted back and forth from stock to flow analysis without warning the reader. He was concerned mainly with the flow of wages and profits in relation to the stock of capital. In his aggregate analysis he retains some of the earlier terminology about stocks of things, but a close inspection of the context shows that he always treats equation 1 in terms of flows. In other words, W is the national product produced in a given period, S is the sum of profit, rent, and interest paid in that same period, and V is the amount of wages and salaries earned in that same period. C is likewise a flow; it is not the total stock of existing plant, equipment, and inventory, but is the amount of depreciation of plant and equipment and using up of intermediate materials in that same period.

If the model is disaggregated into investment and consumer sectors, then this value composition is repeated in each of the sectors:

$$W_1 = C_1 + V_1 + S_1 \tag{2}$$

$$W_2 = C_2 + V_2 + S_2 \tag{3}$$

Here, the subscript numeral 1 refers to supply costs and surplus in the investment sector, and 2 refers to the supply costs and surplus in the consumer-goods sector.

Under simple reproduction or long-run equilibrium, it is assumed that there is only replacement of capital, no net expansion of capital (or output). Therefore, the demand for the investment goods of department 1 is simply for replacement investment in both departments:

$$W_1 = C_1 + C_2 \tag{4}$$

The demand for the consumer goods of department 2 is, then, equal to all of the income received by both workers and capitalists in both departments (since it is assumed here that both workers and capitalists spend all of their income on consumer goods):

$$W_2 = V_1 + V_2 + S_1 + S_2 \tag{5}$$

At this point the analysis can go in two different directions. One way is to examine the equilibrium relations between departments; this way leads toward an input-output analysis of the kind developed by Leontief. All that is necessary is an extension of the model from two to a large number of departments or industries.[2] With two departments only, the equations of supply (2 and 3 above) are set equal to the equations of demand (4 and 5 above):

$$C_1 + V_1 + S_1 = C_1 + C_2 \tag{6}$$

and

$$C_2 + V_2 + S_2 = V_1 + V_2 + S_1 + S_2 \tag{7}$$

These equations show all of the conditions for equilibirum exchange within and between the departments.

The next step pursued by Marx is the elimination of all exchanges that are purely *within* one department (that is, canceling out like terms). Using either equation 6 or 7, the result is the same:

$$C_2 = V_1 + S_1 \tag{8}$$

This equation describes the necessary exchanges between the two departments in simple reproduction. Department 1 must supply and department 2 must demand the amount of constant capital necessary to replace the depreciated capital of department 2; this is the amount C_2. On the other side the workers and capitalists of department 1 must demand from department 2 a supply of consumer goods equal to their whole income; these are the amounts V_1 and S_1.

The other direction in which Marx's schemas may be used is as a framework for consideration of the aggregate problems of cycles and growth (see Leontief, "Significance"). If the supply and demand equations are aggregated so as to combine the demands of the two departments, then the equilibrium conditions for consumer goods (W_2) and investment goods (W_1) are as follows:

$$W_2 = V + S \tag{9}$$

and

$$W_1 = C \tag{10}$$

Adding these together gives the equation of aggregate demand or gross national product:

$$W = W_1 + W_2 = C + V + S \tag{11}$$

which differs from Keynes only in that Marx's C includes intermediate purchases as well as replacement.

Expanded Reproduction

Far more complex is the Marxist view of expanded reproduction or economic growth. Marx himself used only arithmetic examples, which may be represented and interpreted in various ways. Most of the earlier Marxist models continued to use arithmetic. Even later, Marxists tended to use a simple sort of algebra, devoid of functional notation.

The Sweezy-Tsuru Model

One of the best Marxist models of the pre-World War II period is that by Sweezy-Tsuru[3] but it is still unnecessarily complex, confusing, and confused. For Sweezy, supply of producer goods is

$$W_1 = C_1 + V_1 + S_{c1} + S_{\Delta c1} + S_{av1} + S_{ac1} \tag{12}$$

Supply of consumer goods is

$$W_2 = C_2 + V_2 + S_{c2} + S_{\Delta c2} + S_{av2} + S_{ac2} \tag{13}$$

where S_c is the part of S going to capitalist consumption, $S_{\Delta c}$ is the *increase* of the part of S going to capitalist consumption, S_{av} is the part of S used for investment in variable capital, and S_{ac} is the part of S used for investment in constant capital. On this basis, consumer demand is

$$W_2 = V_1 + V_2 + S_{c1} + S_{c2} + S_{\Delta c1} + S_{\Delta c2} + S_{av1} + S_{av2} \tag{14}$$

Investment demand is

$$W_1 = C_1 + C_2 + S_{ac1} + S_{ac2} \tag{15}$$

Finally, Sweezy sets supply equal to demand and finds the dynamic equilibrium condition for interdepartment or input-output relations:

$$C_2 + S_{ac2} = V_1 + S_{c1} + S_{\Delta c1} + S_{av1} \tag{16}$$

Tsuru finds[4] aggregate consumer demand to be

$$W_2 = V + S_c + S_{\Delta c} + S_{av} \tag{17}$$

Tsuru finds[5] aggregate investment demand to be

$$W_1 = S_{ac} + S_{av} + C \tag{18}$$

This equation is based on an aggregate of Sweezy's equation 15, but Tsuru adds a new term S_{av} for "investment" in variable capital — a very dubious procedure, as we shall see.

Finally, Tsuru adds together to find gross national product:

$$W = V + S_c + S_{\Delta c} + S_{ac} + S_{av} + S_{av} + C \tag{19}$$

Equation 19 contains three kinds of errors. First, there is awkwardness due to the use of a separate symbol for each separate part of S, rather than the use of different parameters times S (as is the modern procedure).

Second, there is the substantive error of the inclusion of $S_{\Delta c}$ in the equation. Since it is merely the increment of S_c, that is, the change from this period to the next, it should not be included in an equation limited to this period. Georgescu-Roegen (p. 404) comments that in this equation Sweezy and Tsuru violate the principle of "dimensional homogeneity," and he adds that "once the principle of time homogeneity is rejected, there is no reason for not continuing to add the increments of increments of increments."

The third error, for which Tsuru is solely responsible, is seen in the

strange inclusion of the term S_{av} two times in the same equation. This happens because Tsuru looks at it in two ways, both as the amount of *investment* by capitalists in variable capital and the amount of *consumer demand* generated by the payment of that variable capital to workers.[6] One way to explain the error is to say that it results from another confusion over periods. Wages are paid out in one period, at which point they are a cost to capitalists and income to workers, and are spent at a later period or later point in time, no matter how short the time lag may be.

The problem of how to handle S_{av}, however, has deeper roots than a mere confusion over time periods. Marx's whole concept of "investment" in variable capital — presumably a stock of consumer goods with which to pay workers — appears to derive from the erroneous classical notion of a "wages fund." The Marxist writer Steindl argues correctly that the "weird old monster, the wages fund doctrine, which Marx killed in a brilliant attack [was nevertheless permitted as a] ghost to muddle up his terminology" (Steindl, p. 243, n. 3).

In an attack on Marx, Georgescu-Roegen claims that the wages fund doctrine is essential to Marxist economics. He writes (p. 400, n. 6), "I confess I cannot see how we can preserve the notion of variable capital — as conceived and used by Marx — and throw 'that fossil' out of Marxist economics." Following this precept, Georgescu-Roegen's own "Marxist" model contains several peculiar equations, carrying the concept of "investment" in a stock of variable capital to a much further extreme than even Sweezy and Tsuru ever did. Thus, his equation 6 has the "stock of variable capital" equal to a multiple of wages. His equation 5 includes variable capital *twice* in the estimation of consumer demand, apparently perpetuating Tsuru's error in a new form. It is no surprise when Georgescu-Roegen later (pp. 414-15) finds that this inconsistent accounting system leads to an inadequate cycle theory.

In the meantime, since Marx himself violently and explicitly attacked the wages fund doctrine, it would seem that we could best preserve the spirit of his own doctrine by agreeing with Steindl to rid it of any lingering traces of that fossilized monster. The notion of variable capital must certainly be clarified, though it is not necessary to eliminate it. We must simply state that variable capital never refers to a *stock*, for that is quiet meaningless or misleading, at least in the modern world. Rather, variable capital must always refer to the *flow* of wages and salaries in a given period. In these terms, a perfectly consistent Marxist model can be stated and applied to all important problems.

A Modern Model

The whole Marxist reproduction system[7] can be presented in a manner that is simpler, more consistent, and more useful than the models of Sweezy and Tsuru or Georgescu-Roegen. No further reference is made to the Sweezy-Tsuru symbols. Therefore, *for the rest of this article the reader must remember only five symbols* for the variables: W, the value of the gross national product; S, surplus value; V, variable capital; C, constant capital; and X, the value of the net national product (used in a later section). In

addition, the subscript 1 always refers to department 1, which produces investment goods; while the subscript 2 always refers to department 2, which produces consumer goods (for example, W_1 and X_1 refer to gross or net investment, while W_2 and X_2 refer to consumption).

In the modern model of expanded reproduction, the supply equations in the aggregate and in each department can be represented exactly as in simple reproduction (as in equations 1, 2, and 3). The difference comes on the demand side, where the spending of surplus value is divided solely into capitalist consumption and capitalist investment, assuming for the moment that all saving is invested. If b is the proportion of surplus consumed by capitalists (and $1 - b$ is the saving or investment proportion), then

$$\text{Consumer demand } W_2 = V_1 + V_2 + b(S_1 + S_2) \tag{20}$$

$$\text{Investment demand } W_1 = C_1 + C_2 + (1-b)(S_1 + S_2) \tag{21}$$

As Marx emphasized, the difference from equilibrium to growth is determined simply by the change in the composition of demand or use of the surplus (since in simple reproduction, $1 - b = 0$).

It follows that the equilibrium input-output relation between the two departments (obtained by setting demand equal to supply and simplifying the answer by the elimination of intradepartment exchange) is

$$V_1 + bS_1 = C_2 + (1-b)S_2 \tag{22}$$

As is appropriate, this equation includes the result under simple reproduction (equation 8) as a special case in which $b = 1$ and $1 - b = 0$.

It also follows that aggregate consumer demand is

$$W_2 = V + bS \tag{23}$$

Furthermore, it follows that gross investment demand is

$$W_1 = C + (1-b)S \tag{24}$$

Finally, by addition of consumer demand and gross investment, the value of the gross national product (including intermediate goods) is

$$W = V + C + bS + (1-b)S = V + C + S \tag{25}$$

Equation 25 is the only consistent way of stating Marx's view; its logical consistency is guaranteed by the fact that $b + (1 - b) = 1$, or 100 percent of S. Moreover, with this streamlined presentation of the reproduction schemas, it is very easy to state Marxist growth theory (which is implicit in the schemas).

Growth Model

One of the founders of modern Western growth theory, Evsey D. Domar, explicitly acknowledges the priority of the Soviet economist G.A. Feldman, who in turn explicitly derives his model from Marx's reproduction schema (see Domar, Feldman).

In order to move from Marx's expanded reproduction schema (or national-product accounting) to an explicit growth theory, it is necessary to date the variables, using t as a given time period, $t-1$ as the previous time period, and so forth. This model leaves aside the unnecessary complications of depreciation and intermediate goods; it deals solely in terms of the *net* national product (X) and *net* investment (X_1).[8] In terms of the above model, net investment demand is

$$X_1 = (1-b)S \tag{26}$$

and net national product is

$$X = V + bS + (1-b)S = V + S \tag{27}$$

Any growth model must determine the increase in national product. Marx saw the increase in net national product at any given time in a strict relationship to the amount of investment or increase in productive capacity. This proportional relation is represented here by the constant k (small letters being used as constants throughout this article). The amount of investment in turn is the whole national income minus the workers' consumption (V) and the capitalists' consumption from surplus value (where b is the proportion of surplus value spent for consumption). Finally, it is assumed for the growth model that there is a given rate of exploitation (represented by the constant $w = V/X$ or $w = V/V+S$), though Marx in his discussions of income distribution predicted a long-run rising rate of exploitation under capitalism (or a declining w).

Thus, the Marxist growth model in its simplest form has five basic relations (Table 1).

Table 1: Marxist Growth Model

Capacity growth	$X_t - X_{t-1} = kX_{1_{t-1}}$	(28)
Investment	$X_{1_t} = X_t - V_t - bS_t$	(29)
Consumption	$X_{2_t} = V_t + bS_t$	(30)
Income equilibrium	$S_t = X_t - V_t$	(31)
Income distribution	$V_t = wX_t$	(32)

Notice that equation 29 says that investment is assumed equal to non-consumed income or to the saved proportion of surplus value, that is, $(1-b)S$. Marx, of course, only assumed this version of Say's law as a first approximation. He clearly believes it to be untrue for capitalism, though valid for socialist growth.

The model may be reduced to one equation in the one variable, net national product:

$$X_t = [1 + k(1-b)(1-w)]\, X_{t-1} \tag{28b}$$

This equation may be solved to show the path of net national product over time (in terms of an initial level X_0):

$$X_t = [1 + k(1-b)(1-w)]^t\, X_0 \tag{28c}$$

It is emphasized here that the rate of growth under capitalism may be increased if the marginal output of capital k is increased, if the wage share w is lowered, or if the capitalist consumption ratio b is lowered. This rule is true provided that all saving continues to be invested, as will not generally be the case under capitalism, but will generally be the case under socialism (so that this is really a normative rule for socialist growth plans).

The question of Marx's "nonproductive labor" can also be examined in the equation to a limited degree. The equation could then include sales expenses of business, such as advertising (which could be shown by adding $1-u$, where u is sales expense). This would be mostly advertising, style changes, and excess sales force, but, for Marx, would not include purely informational advertising or pure transport and distribution costs. Of more quantitative significance for the modern capitalist world would be a subtraction for all non-growth government spending (which could be shown by $1-n$, where n is nongrowth government spending). Clearly, the largest nongrowth government spending item is military spending.

Cyclical Crises

This section sets out three business-cycle models (Tables 2, 3, and 4 below) which Marx *might* have produced if he had used a modern mathematical approach.[9] It is strictly limited to the possible relationships producing a short-run cycle model. For lack of space, it does not include Marx's theory of capitalist long-run declining rate of profit. Nor are Marx's predictions of increasingly violent cycles considered here (the problem of explosive or damped cycles).

Karl Marx wrote much interesting material about business cycles, but he never finished a complete synthesis. As a consequence, there has been considerable writing concerning his exact position (see H. Smith, Wilson, Winternitz). Among the followers of Marx, the underconsumption theory was emphasized and presented in formal models by Sweezy (*Theory*, pp. 186-89), and Kalecki (pp. 119-31). Kalecki's model is especially note-