

In Comradeship
Alan Freeman
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This volume was inspired by the work of the American Marxist Robert H. Langston, whose untimely death interrupted his path-breaking work on the labour theory of value. A unique collaborative effort between an international team of contributors from a broad range of disciplines has been brought together by ERNEST MANDEL, the foremost Marxist economist of today whose widely acclaimed works include *Marxist Economic Theory*, *The Second Slump* and *Late Capitalism*.

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Ricardo, Marx, Sraffa
The Langston Memorial Volume

Verso

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Edited by Ernest Mandel
and Alan Freeman*

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This book is dedicated to Robert H. Langston, revolutionary socialist, whose untimely death interrupted the pioneering work which inspired this volume. Its appearance testifies that his work and memory survive through the international socialist movement to which he dedicated his talents. It is our contribution to furthering his efforts towards the conquest of ignorance, the eradication of exploitation and the abolition of humanity's enslavement by outmoded economic forms.

Introduction

Ernest Mandel

Ever since the third volume of *Capital* appeared, a debate has been raging around Marx's solution to the so-called transformation problem: the transformation of values into prices of production and of surplus-value into profit. A critical balance sheet of this debate, which has gone on for more than forty years, would fill a book.

The first major turning point in the discussion came with the publication, in July 1907, by the Prussian statistician Ladislaus von Bortkiewicz, of an article entitled 'Zur Berichtigung der Grundlegenden Theoretischen Konstruktion von Marx im Dritten Band des Kapitals' (*Jahrbücher für Nationalökonomie und Statistik*). This drew attention to an alleged 'feedback' failure in Marx's presentation of the transformation of values into prices in the third volume of *Capital*. Here, inputs to production are represented by value magnitudes, while outputs are calculated in terms of prices of production.

Von Bortkiewicz used Marx's reproduction schemata in the second volume of *Capital* to establish a logical contradiction, pointing out that if the inputs to such a schema are represented by price of production magnitudes, a solution to the transformation problem can be derived which differs from Marx's. From this he inferred that Marx's own calculation should be corrected.

This approach has informed the great bulk of subsequent work on the transformation problem. Successive authors, by studying the distribution of the total product of society between different branches of the division of labour, have under various assumptions devised methods of calculating prices and values which produce results differing from Marx's to a greater or lesser degree.

Heinrich Dietzel, a now largely forgotten German author, tried to expand the debate in his book *Von Lehrwert der Wertlehre und vom Grundfehler der Marxschen Verteilungslehre*, 1921, by establishing a

dichotomy between Marx's alleged theory of distribution — the theory of wages, rent and profits — and his theory of value. Anticipating Sraffa, he tried to prove that the labour theory of value was unnecessary to sustain the theory of distribution.

He could achieve this, however, only by starting from the physical quantities of products and their interrelationships. He thus abstracted from the very problem Marx tried to tackle, namely the regulation of commodity production and circulation by private, unplanned exchange in the market.

I. Rubin, the most brilliant of the Russian Marxist economists, answered that if one does not start from the social relations of production that underlie commodity production, one will fail to understand why value analysis is needed. If the division of labour in society were regulated purely by the gross exchange of the total product of society between different branches of the division of labour, a completely different economic system would have to be involved, without private property and without commodity production. All labour would immediately be recognized as social labour, and one would no longer have a system in which private labour is recognized as social only through exchange. Behind value there is abstract labour, and behind abstract labour lie the specific social relationships which regulate the behaviour of private owners of the means of production exchanging the products of their labour under conditions of approximate equality, without which the social division of labour would collapse.¹

This argument has by and large not been followed up. The same cannot be said of von Bortkiewicz's critique, which was developed by Paul M. Sweezy in *The Theory of Capitalist Development* (1942), a book which triggered a long and detailed discussion, notably in articles by J. Winternitz in 1948 and F. Seton in 1957. This had two important consequences. The first was a generalization of von Bortkiewicz's analysis from three departments (Means of production, consumer goods, and 'luxury' goods) to an arbitrary number of industries, each producing a more or less homogeneous commodity, and each consuming the product of other industries in proportions which, it was soon to be argued, were 'technically' determined by the means of production employed in each industry. This treatment connected the study of the transformation problem to that of 'input-output' models of both capitalist and post-capitalist economies, developed by Wassily W. Leontief in his work *The Structure of the American Economy 1919–1921*, published in 1941, and in subsequent publications. Authors in the 1940s and 1950s were able

to apply the techniques of matrix algebra to study the properties of such input-output models.

A second turning point in the debate followed the appearance of Piero Sraffa's *Production of Commodities by Means of Commodities* in 1960. Unlike Leontief, whose pioneering work had a strong empirical and statistical component, Sraffa used input-output equation systems to construct a theoretical critique of neo-classical marginalism. In his models, however, the relation between prices and physical magnitudes was entirely independent of values — a result already indicated by Seton.

Though Sraffa himself made no explicit attack on Marxist analysis, the conclusions implicit in this work were rapidly drawn, and the debate moved away from a technical critique of Marx's value constructions towards an attempt to show the labour theory of value is unnecessary for economic analysis and should be discarded.

This in turn precipitated a long and rich debate, some of the main phases of which were articles by A. Medio, E. Wolfstetter, A. Garegnani, Benetti and others, and Michio Morishima's book *Marx's Economics*, the latter drawing also on linear programming techniques suggested by the cybernetician John von Neumann.² A watershed in the debate came with Ian Steedman's book *Marx After Sraffa*, which not only summarized and synthesised the preceding debate but forcefully asserted the thesis which now characterizes the post-Sraffian school: namely that the accumulated inconsistencies and problems revealed by this debate are now so great that Marxist value theory as a whole must now be scrapped.

Sraffa's book is thus important, not merely in its own right, but in the general history of economic theory. It marks the beginning of a current of economic thought widely referred to as neo-Ricardianism. This current has dealt neo-classical marginalism a staggering blow, especially in the field of capital theory. However, its mainstream authors question Marx's contribution to economic theory by reabsorbing him, so to speak, into a general theory in which — as in Ricardo — distribution is analysed in terms of the division of a surplus between and within classes. At the same time basic aspects of the labour theory of value — shared by Ricardo and Marx — are abandoned and prices explained purely as a function of so-called 'technical conditions of production' and the division of the surplus product between the two main classes in society.

Until now the response of Marxists to this challenge has been rather inefficient. It has either been dogmatic ('X is true because He said so') or purely ideological and political ('the neo-Ricardians are

wrong because objectively they undermine the proletariat’).

Before his untimely and deeply regretted death, our friend and comrade Robert H. Langston spoke to me and to our common friends Emmanuel Farjoun and Anwar Shaikh about a new approach which, he felt, should answer the neo-Ricardian challenge. He intended to settle down in Europe for a lengthy stay in order to work on this project with us. However, his sudden death left us with only preliminary notes. The opening article in this volume is based on these notes, as edited by Emmanuel Farjoun. Like the other contributors to this book, his intention was vigorously to defend Marxist economic theory against the onslaught directed against it in recent years.

Langston sought to break free of a crippling constraint imposed on the study of value-price transformation by von Bortkiewicz type models, as generalized by later authors, if used to model a real capitalist economy: namely that they abstract from economic movement in time.

Several authors have commented that despite neo-Ricardianism’s critique of the marginalist element in neo-classical theory, both schools share an equilibrium approach. They do not, therefore, furnish the tools to study one of capitalism’s most essential features: the uneven and combined character of capitalist development, distinguished by the constant movement of capital, the never-ending disequilibrium and re-equilibration of the prices, profits and differential rents of independent producers.

Langston’s attempt to develop the study of value-price relationships without falling into this neo-Ricardian trap connects up to Rubin’s earlier, and as yet unrefuted response to von Bortkiewicz and Dietzel. The uneven development of capitalism, its ceaseless and unplanned fluctuations, result precisely from the private character of production and exchange: from the fact that producers do not, and cannot plan. The neo-Ricardian approach is a profoundly unscientific starting point for the study of capitalism, because it abstracts from the very feature which distinguishes capitalism from all other economic systems.

The defence of classical Marxism undertaken by Langston and the other contributors to this book is not, therefore, merely a reaffirmation of a believer’s faith. Though combined with a moral and political dedication to the cause of the emancipation of the working class, the exploited and the oppressed, it is a scientific endeavour of a fully investigative nature.

First of all the authors consider, to apply the best of all scientific

tests, that the validity of Marx’s basic hypotheses and his analysis is confirmed — more dramatically in recent years than ever — by all the available empirical evidence and by the real history of the capitalist system. This is not to say that Marxism has closed the book of empirical study. On the contrary, the new statistical methods that have become available through the use of input-output models can be used to examine empirical issues within a Marxist theoretical framework in a degree of detail probably not previously possible. In this volume Anwar Shaikh in particular combines an exposition of the formal inconsistencies of neo-Ricardian methods with a practical demonstration that many of Marx’s central hypotheses are empirically confirmed by input-output data.

The authors approach the argument that Marxist theory is logically flawed in this light. Marxism’s (unchallenged) empirical superiority to neo-Ricardianism suggests that its theoretical conquests cannot be discarded cavalierly or arbitrarily. The authors maintain that any criticism of Marxist economic theory, as well as its defence, must understand its inner coherence and hence the key role played by the basic categories of social labour, abstract labour, value, exchange-value, money, capital and surplus-value in explaining how commodity production in general, and capitalist commodity production in particular, function, what their laws of motion are, how they came into being and why they are condemned to disappear. The book sets out to combine a defence of Marxism from its own vantage point — by demonstrating that the logical inconsistencies attributed to it by the neo-Ricardians do not exist — with a counter-attack exposing the inner contradictions, inconsistencies and evasions of neo-Ricardianism itself.

A thoroughgoing piece by Emmanuel Farjoun refutes the principal accusations of inconsistency made by the neo-Ricardians. He not only rebuts but inverts the charge that labour values cannot cope with ‘joint production’, bringing to light devastating contradictions in the Sraffian’s own solutions. Both he and Savran deal with the charge that Marxist analysis gives rise to negative values. They show it is the product, among other things, of a failure to understand the role of ‘individual values’ in Marx’s analysis, and its relation to value and to exchange value.

Pierre Salama concentrates on the interrelation between these three concepts, and both his piece and my own study the connection between value, exchange value and money (gold) in the emergence of prices and price problems — in other words, in the transformation problem and its solution.

Farjoun, Giussani and Albarracin take the charge of inconsistency into the camp of the neo-Ricardians, not only laying bare some of their more obvious contradictions but suggesting which of their underlying assumptions are responsible.

These studies of neo-Ricardianism's inconsistencies, finally, relate to a third aspect of our defence of Marxism. The inner coherence of Marxist theory means that you cannot arbitrarily remove this or that conceptual foundation from the system without making the rest of it meaningless and condemning it to collapse. We now have the benefit of more than sixty years of discussion and theoretical development to answer the question: can von Bortkiewicz's 'corrections' to Marx, and the neo-Ricardian approach in general, be assimilated within Marxist class analysis, as writers such as Sweezy and Meek argue, or does it presuppose a fundamentally different theoretical framework? In an overview which also serves as a useful introduction for the non-mathematical reader, Hector Guillen studies the relation between Sraffa's system and neoclassical theory on the one hand, and Marxism on the other. He systematically expounds the conclusion, formally demonstrated by several other contributors — notably Giussani — that the analytic weaknesses of the neo-Ricardian approach not only divorce it from Marxist theory but from class relations as they actually develop under capitalism. A summary piece by Alan Freeman, which also tries to develop Langston's approach, draws together the arguments shared by the contributors to try and show why the logical structure of Marx's labour value theory as a whole offers a far more coherent foundation for studying capitalist political economy.

While all contributions share a defence of Marxist economic theory, and therefore share most of the arguments in one way or another, even if approaching them from different analytical points of departure, there are some differences between the authors which have not been ironed out, despite several fruitful conferences made possible by the generous aid of the Robert M. Langston Foundation.

I would like to point out one of them, which I feel is the most important. Pierre Salama and I argue that the main theoretical purpose of Marx's solution of the transformation problem in the third volume of *Capital* was to uphold a combined identity which the neo-Ricardians have challenged, the identity of both the sum of values equalling the sum of prices of production, and the sum of surplus-value equalling the sum of profits. I feel that this double identity flows from the basic assumptions of Marxist economic theory: that no value can be created except by living labour in the process of

production; that the expenditure of living labour in that same process of production is the sole source of surplus-value; and that no profits can originate from anywhere else but from surplus-value. When the neo-Ricardians challenge this combined identity, I feel that they challenge the very essence of Marxist economic theory.

Anwar Shaikh's contribution to the present volume, while sharing the position that value and surplus-value can only be created by living labour in the process of production, and that profit originates in surplus-value, nevertheless concludes that the sum of profit can and generally does differ from the sum of surplus-value. He argues that prices and profits are the circulation forms taken by value and surplus-value respectively. As such, these forms of value are viewed by him as being more complex, as containing more determinations, than their corresponding value foundations. Since he accepts the proposition that by itself circulation neither creates nor destroys total value but merely transfers it from one hand to another, the question for him is to show how exactly these total value-preserving transfers can nonetheless give rise to a quantitative difference between profit and surplus-value.

He contends that overall social reproduction comprises not only the circuit of capital but also a distinct circuit of revenue, which he identifies with the circuit of capitalist consumption at the most basic level of abstraction. This latter circuit originates in the capital circuit in the form of that portion of surplus-value which the capitalists receive as income, but it ends in the personal consumption of the capitalists, so that value and price magnitudes associated with this revenue circuit do not feed back into the circuit of capital. It is precisely because there are two circuits, he argues, that the strictly limited transfer of value between one and the other can give the illusion that profit is independent of surplus-value, whereas it is in fact merely the slightly changed outward form of the latter. Shaikh's argument, it should be noted, is conducted primarily in terms of comparisons between money prices proportional to values (direct prices) and money prices of production. One should remember that for Marx, prices of production are the 'regulating averages' of market prices.

These disagreements should not obscure the great underlying similarities of approach. The important question is: what flows from these divergences and what does not? It is an important task for future investigation to pursue this question, and it is fitting and proper that the issues themselves are presented as clearly as possible. The debate around the transformation problem is certainly not over.

But the unity of the contributions to this volume is rather striking: all the more so given the differences in academic training and specialization of the authors, as well as their differences in nationality.

When I finished writing *Marxist Economic Theory* more than twenty years ago, I stressed the urgent need to internationalize Marxist theory not only by extending the empirical data and the problems with which it traditionally dealt beyond the all too narrow framework of Western capitalism and Western society, but also by involving thinkers from all over the world in the further development of the theory. The fact that the contributors to this volume come from countries as far apart as Belgium, Britain, France, Israel, Mexico, Italy, Pakistan, Spain, Turkey and the United States, is an encouraging sign that we are approaching that goal. But for the pressure of time, this volume would also have included contributions by Marxists from Brazil, Germany, Japan, and Scandinavia. And it will not take too long to extend the list to Eastern Europe, the People's Republic of China and the USSR. For, to the utter dismay of professional anti-Communists, Marxism is beginning to revive there too, albeit mainly among the younger 'dissidents' rather than among those who uphold the establishment. Let those who speculate about the crisis of Marxism get on with their wishful thinking. Creative, critical and open Marxism is alive and kicking, more alive than ever before. This volume is only one example among many of that essential fact of life.

A New Approach to the Relation Between Prices and Values

Robert H. Langston

The following piece is based on notes concerning the transformation problem left by the late Robert Langston. Just before his sudden and untimely death he was engaged in an attempt to break new ground on this question by discarding the traditional concept of price as a fixed numerical magnitude. At that time I was an interlocutor to his ideas while occasionally giving him technical mathematical advice. Unfortunately he did not have the time to pursue his work or to prepare his notes for publication—which end abruptly. Therefore in writing up this piece some degree of interpolation was inevitable. All the same I have tried to stay as close as possible to the original notes. (Emmanuel Farjoun)

The reality of prices has not yet found a satisfactory theoretical counterpart in any modern labour theory of values. The traditional concepts such as prices of production, while capturing part of that reality, are riddled with well-known theoretical difficulties. I view the famous transformation problem as the problem of formulating within the labour theory of value a concept which will strengthen our theoretical hold on the phenomenon of 'price' and its intrinsic relations to value. By considering critically neo-classical and Sraffian positions I am led to a concept of price which reflects the volatile, chaotic and ever-changing nature of observed market prices. In doing so, I attempt to show that the ceaseless movement of real market prices—while irreducible to a single, deterministic matrix of ideal prices—is limited within certain determinate bounds. Let me begin by comparing the concepts of price and value.

Sraffa's Distributive Prices

Prices in both the neo-classical theory and Sraffian framework are determined by a certain norm for the distribution of the net product:

the net product itself is assumed to emerge somehow out of the various social production processes. The physical composition of that product and of the processes themselves in terms of machines, raw material, type and amount of labour and technological make-up are assumed to be given. Once these are given each commodity that emerges out of these processes is assumed to acquire a certain ideal price or value—which is supposed to regulate the exchange of commodities against each other.

In both frameworks the basic concept behind the formation of these prices is that of appropriate rewards or appropriate distribution of the net product. It is taken for granted that the two main factors of production, capital and labour, must be rewarded according to their real contribution in order for the equilibrium to be maintained. In neo-classical theory capital is rewarded for its abstention from consumption, as a function of the amount of capital it has dedicated to the specific process. Labour is rewarded for the labour-time given up by the worker for the sake of production. In the Sraffian framework, moreover, rewards are exactly proportional to the capital invested, in order to guarantee that there will be no flow of capital from one branch to the other so that, in the words of Sraffa, 'day after day, production continues unchanged.'

Up to this point Sraffa travels together with neo-classical theory in formulating what I shall call *distributive prices*, prices which are so formed as to guarantee a certain mode of distribution of the net product as rewards to the factors of production. From here their ways part, for neo-classical theory goes on to make a much stronger claim than Sraffa. It claims that in addition to prices of commodities, theoretically it can also capture the rate of profit, or the exact size of the rewards themselves, and not only the mode of distribution between capital and labour. The neo-classical concept of an ideal equilibrium attempts to reflect the inner logic of free market competition. This concept of equilibrium allows for the assessment of rewards from the contribution of each factor. Once the contribution of capital is assessed, profits can be derived from the so-called production function of the particular process.

It is here that Sraffa raises a basic question. How can one measure the contribution of capital? He points out that capital as a huge collection of physical goods has no natural economic measure except as prices. But capital itself must be regarded not as abstract money but as a concrete collection of physical commodities—for example, machines, energy, raw materials. When this is taken into account, the rather strict framework that Sraffa shares with the neo-classical

theory does not allow for the complete determination of prices independently of that of wages and profit. Thus the assumption that the contribution of capital as a numerical measure can somehow be assessed before a precise mode of distribution is assumed is shown to be inconsistent with the basic tenets of distributive prices which, as I said, neo-classical theory shares with Sraffa. Under Sraffa's assumptions, the size of capital itself depends crucially on the exact proportion of the division of the value of net product between the providers of labour services and providers of capital services. Thus it is impossible to assess objectively even under ideal equilibrium conditions the economic contribution of capital to the process of production. The whole theory of profits and prices built carefully by neo-classical theory to account for the size of profit falls to the ground.

The algebraic equations and theorems used by Sraffa serve mostly to show that the value of capital cannot be assessed even from a very detailed knowledge of capital's physical composition and the production conditions under which this physical capital is reproduced. On the contrary, economic value under equilibrium can move quite freely within a wide margin. Sraffa shows that distributive prices can also move freely without any change in the actual material production process, and hence without any change in the physical inputs of capital or labour.

The upshot is that one cannot assess the contribution of each factor deductively, and thus the claim of the neo-classical theory to be able to determine theoretically the level of profits is shown to be unfounded. Moreover Sraffa shows that within the above concept of prices and profit, the level of the rewards themselves, say the rate of profit, can vary enormously without any change in the technology and method of production, that is without any visible change in the production processes themselves. This is a decisive blow to the neo-classical theory of prices and profits. Its two central concepts of the level of contribution and the appropriate level of reward are shown to be without any objective economic foundations. All this is done without any change of framework, simply by regarding capital as a physical object composed of the very commodities that it produces with the help of labour.

Values in the Sphere of Production

In the framework of the labour theory of value, values as distinct from prices arise exclusively in the sphere of production. They are

determined by the level of development of the forces of production and the social organization of labour. In turn they determine the general parameters of both distribution and exchange. But the exact proportion of the distribution of the net value or net product has no direct influence on the values of commodities themselves. Moreover, both in theory and practice, a knowledge of the values of all commodities produced for profit in socially-organized production-lines does not by itself allow the exact determination of the proportions of distribution. A given system of labour values is consistent with a whole range of possible distribution methods and outlets of the net product. This property of labour values, namely their relative independence from distribution, is unique to them as values which depend on the sphere of production.

How do changes in value, due to development of new production techniques, new products and better labour organization, influence distribution? This is elementary. For example, real wages, considered as a bundle of physical commodities or use-values, can be significantly raised when certain productive conditions are met. In this case, the value of the formerly inaccessible bundle of goods is reduced, and can thereby be incorporated into the socially recognized workers' standard of life. It is here that the difference between labour values and Sraffa's prices become clear. In the latter, the price of a given commodity, say a car or a computer, may undergo huge reductions simply because for some reason the general level of profit has changed. This may suffice to reduce the prices of machines so much as to allow every worker to buy the most sophisticated machine, without any change in the material production of these commodities. In the framework of the labour theory of value, on the other hand, a formerly expensive commodity can, in general, become accessible to the average worker only when the total amount of social labour-time devoted to its production falls to a certain rather well defined level. Such a reduction is not a result of changes in the distribution of the net product, although it may in consequence bring about such changes.

These initial observations do not imply that the detailed relations between values and exchange ratios of commodities are already understood. This question is still an open one. At the root of the difficulty lies the duality of the capitalist mode of production. One of the main features of the present mode of production is the duality that on the one hand, chaos and fierce competition prevail in the market and regulate relations between the various producers, while on the other hand, strict rationalization of the division of labour and utmost collaboration and coordination among various direct producers

prevails within each production unit. Labour values arise out of this rationalization process and they acquire their importance precisely because the amount of labour used up in production is the subject of huge downward pressures. Constant efforts are made to reduce it to the necessary minimum. Out of these processes of production, commodities emerge with a well-defined labour value, the amount of abstract labour-time which is socially necessary for their production under the technologically prevailing methods.

Once these values are shaped, the variations in the ratios of distribution are severely restricted. But the precise ratios of exchange are not yet given, as they are further determined by the various forces of competition and in the chaos of the market. Thus if the value of capital employed for each worker increases, that is, if there is an increase in the organic composition of capital, great pressure downwards will be exerted on the average rate of profit. This pressure may cause the money rate of profit to fall. But it may also be transmitted forward towards a reduction of the value of wages, or even further towards changes in the methods of production which will reduce the value of capital and bring the organic composition back to a more realistic level.

The Transition to Prices of Production

One of the main inferences to be drawn from the above discussion is that one cannot compute or deduce, directly or indirectly, the distributive price of a given commodity from the value of that commodity. There is no formula which gives the natural market price of a product in terms of its value. The reason is simple. I have shown how Sraffa deduces that the price of any commodity depends crucially on the precise ratio according to which the total net surplus is divided between the classes of capital and labour. Values, however, do not depend on the ratios of distribution. Had the prices depended functionally on those ratios, then they would also be indifferent to the mode of distribution. In other words, if prices could have been directly computed exclusively from values, they would not change unless values changed. But values do not change whenever there is a change of distribution, while prices do. Thus prices cannot be computed algebraically or in any other way from values. It follows that the traditional search for some formula that somehow transforms values

into prices of production has been misguided.

Ceaseless Motion and Variation

With all its achievements in demolishing the marginalist concept of prices, the decisive weakness of the Sraffian notion of prices is the fact that it depends crucially on a very rigid and unrealistic concept of distribution, namely the uniform rate of profit. There seems to be no way to modify that notion so as to reconstruct it without rigid distributive assumptions. Therefore its real pertinence is in analysing and criticizing other neo-classical theorems which depend on the same axioms of distribution.

But as far as the reality of the market is concerned, and the social and economic logic of that reality, Sraffa's prices have a very limited theoretical salience. The problem is of course that rates of profits are never uniform and never guaranteed, and prices cannot be taken as fixed magnitudes associated with given commodities. Furthermore, one must reject the notion that any essential feature of the system can be understood by considering a hypothetical model 'in which', according to Sraffa, 'day after day, production continues unchanged in those respects . . .' and in which 'no change in output and no change in the proportions in which different means of production are used by an industry are considered . . .'

There is an additional crucial assumption which is common to all input-output models and which must also be rejected. This indispensable assumption is that the same commodities which are used as raw material and machinery inputs in the production process emerge at the end of the production period as outputs. A fixed set of commodities is assumed to reproduce itself, possibly with the help of labour (hence the title *The Production of Commodities by Means of Commodities*). Everyone admits that this is a simplified case. But the following question has rarely been raised: Is it possible to capture the reality in which prices of commodities are in permanent flux, and in which the very nature of commodities changes from one period to the next, and where no complete equalization of rates of profits ever takes place, by assuming the exact opposite: that prices never change, that the same commodities are produced over and over again, and that each and every one of them realize the same uniform rate of profit?

To my knowledge no argument, either economic or mathematical, has ever been presented in support of the view that such an

abstraction from the real movement preserves any interesting property of it. In the recent debates around the transformation problem it has been proven time and again (for example by Ian Steedman) that the labour theory of value is incompatible with the above set of rigid idealizations. This was taken by many as a refutation of the labour theory of value. But in truth this incompatibility only shows that the traditional search for some perfect transformation formula was misguided. It does not imply that the basic tenets of the labour theory of value are wrong or incapable of further development. On the contrary, it actually shows that the labour theory of value has an enormous advantage over distributive price theories. This is precisely because the latter are based on a notion of prices and profit which are logically incompatible with the inner nature of the present mode of production. If one could show that the rigid assumptions on price and profit are unable to capture or even approximate to the oscillating and ever-changing magnitudes of real prices and profits, then the labour theory of value could be credited with the early detection of these problems.

Of course it is not enough to be inconsistent with a false theory in order to be right. Far from it. The task of clarifying the formation of prices is still a vast one. But I draw from Sraffa's work the conclusion that one cannot advance one step in this direction by assuming a fixed set of prices and a uniform rate of profit. As I have said I will not address here the difficult question of the precise definition of labour values. It suffices to say the following: within any of the existing input-output models, labour values are well defined. They can be constructed without using any assumptions about prices and profits, for they arise simply out of the presentation of the production process as a physical input-output system. Furthermore one can easily conceive of a labour value under much weaker assumptions. One does not have to assume that the same commodities are produced and reproduced endlessly. Commodities can change from one period to the next, and still labour values will be well defined.

Time-Dependent Prices

I now want to construct a system of prices of production (or prices, for short) which does not depend on the usual set of rigid assumptions and thus can better reflect the volatile nature of the formation of prices and the realization of profit. Let us take the following steps: First, assume social production is accomplished over a period of time

called the period of production, over which inputs are used in the social labour process and turned into outputs whose price is then determined. This is a common assumption to all input-output models. Now divide our economy into branches. Since the nature of commodities within each branch is subject to changes, group them by their value. At each period of production denoted by t the totality of commodities coming out of a given branch B_i were sold for a certain price which depends on the particular period, and may change. This total price is denoted by $P_i(t)$ and we assume that $P_i(t)$ is in general different from $P_i(t+1)$. Being total price, it depends on the volume of production in the branch B_i .

In order to get a unit price we divide $P_i(t)$ by the total value of all commodities belonging to B_i . We get the price per unit value of a typical commodity of the branch B_i denoted by $\tau_i(t)$:

$$\tau_i(t) = \frac{P_i(t)}{\Lambda_i(t)}$$

where Λ_i is the labour value of the output of the branch B_i .

We do not assume that the unit price τ_i , which is the price per unit value of B_i , remains the same at all times. If one denotes by $t+1$ the production period immediately following, then in general:

$$\tau_i(t) \neq \tau_i(t+1)$$

This inequality means that price is not a numerical magnitude attached to any commodity or a group of commodities (say commercial vehicles). Rather it is a whole series of magnitudes. This series has neither a first element nor a last one:

$$\dots \tau_i(t), \tau_i(t+1), \tau_i(t+2), \dots$$

so that no member of the series is more significant than any other member. The most interesting feature of this series is its oscillation and the most important information carried by it is its mode of oscillation.

Notice that the series takes care of both changes of prices or commodities from one period to the next and changes in the very nature of commodities. I do not attach price to specific commodities but rather to the average unit value emerging from a given branch. I am not trying to follow the price of each and every new product that emerges from B_i , but rather the general trend of the realization of

values in a given branch at a given time T . Since the absolute level of price of a unit value is of little importance at this stage it is advisable to refer all prices to a standard commodity, of which gold is the most natural candidate for the role. Let B_g denote the gold-producing sector. We have the following expression for prices in terms of gold:

$$m_i(t) = \frac{\tau_i(t)}{\tau_g(t)} = \frac{P_i(t) \cdot \Lambda_g(t)}{P_g(t) \cdot \Lambda_i(t)}$$

Now of course many factors account for the variation in price from one period to the next. The transformation problem attempts to understand only those influences which arise from the equilization of the rate of profits. I will not assume that at the current prices the rates of profit are in fact uniform or equal in all branches. This is in my view contrary to the very nature of the system and, as argued above, leads to a price theory which has very little, if anything, to do with labour values.

Let us assume however that prices are readjusted from one period to the next so as to try and achieve the general rate of profit. In general these attempts fail, leading sometimes to lower rates, sometimes to higher. Let us denote by $r_i(t)$ the rate of profit realized in the i -th branch at the end of the period. The general rate of profit for the economy as a whole will then be:

$$r = \sum_i \left(\frac{K_i(t)}{K} \cdot r_i(t) \right)$$

during the period and $K = \sum_i K_i(t)$. Assume that r is determined by surplus-value, namely that $r = s/c + v$. For a large economy that is surplus-value, namely that $r = s/(c + v)$. For a large economy this is not a bad assumption since the deviation of prices from value in various branches will tend to cancel each other out, so that the average money rate of profit will be very close to the average value rate.

One can now write the appropriate algebraic expression for the oscillating unit prices. One reason for doing so is to examine the mode of oscillation of these prices. My main contention is that in each branch, so long as production conditions remain approximately stable, prices will oscillate within a rather limited range. Any other behaviour will indicate that something is wrong in the present

framework. On the other hand, a series of bounded oscillations of unit price, within a given technological horizon, can very well serve as a theoretical counterpart to the phenomena of market prices within the framework of labour values.

Let (a_{ij}) be the technical coefficients in value terms. That is, given i and j , let a_{ij} be the amount of value needed in branch B_i from branch B_j for its output. Thus the total amount of value used in branch B_i is $\sum_j a_{ij}$. If the price of a unit value at the period is, as above, $\tau_j(t)$, then the total prices of inputs in B_i is given by

$$K_i(t) = \sum_j \tau_j(t) a_{ij}.$$

Therefore the price in the next period is set so as to try and equalize the rate of profit:

$$\tau_i(t+1) = (1+r) \cdot \frac{\sum_j a_{ij} \tau_j(t)}{\sum_j a_{ij}} = (1+r) \frac{K_i(t)}{\sum_j a_{ij}}.$$

Of course, if branch B_i calculates its monetary rate of profit in terms of current price it will in general be different from r . But the average of all the rates will still be r , since the various deviations will cancel each other out.

The prices in terms of gold are:

$$m_i(t+1) = \frac{\tau_i(t+1)}{\tau_g(t+1)} = \frac{1+r}{1+r_g} \frac{\sum_j a_{ij}(t) \tau_j(t)}{\sum_j a_{gj}(t) \tau_g(t)} \cdot \frac{\sum_j a_{ij}}{\sum_j a_{gj}}.$$

Even assuming that the rate of profit in the gold industry is different from the general rate, we find that the above expression leads to bounded oscillation of all prices in terms of gold.

To conclude, the above system of prices shows that once it is agreed that prices need not remain the same from one period to the next, a reasonable system of prices based on the average, value rate of profit can be worked out. This system demonstrates that there is no contradiction between the law of value and the equalization of the rates of profits, an equalization which does not occur simultaneously but over a few periods of production, and is always only tentative.

The Production of Commodities by Means of What?

Emmanuel Farjoun

The neo-Ricardian economic school, influenced by Piero Sraffa's clear and relatively tight formalism, appears to have exposed fundamental weaknesses in the traditional labour theory of value. On this basis some argue that the very notion of labour value should be rejected outright. They claim to have shown that even when it can be unambiguously defined, it is worthless in any conceivable formulation of a precise model for generalized commodity production.

Ian Steedman's statement of this challenge is the clearest and most forceful. In this piece I therefore discuss his challenge, mostly on his own ground. My main aim is to show how the traditional concept of labour value can be understood in the most general input-output framework, namely joint production. Careful mathematical analysis reveals that the neo-Ricardian school has missed the most important ingredient for understand both labour values and prices in Sraffa's framework.

Somewhat surprisingly it turns out that precisely in this most general context the advantages of labour values emerge most clearly while neo-Ricardian formulations lose most of their validity and clarity. Sraffa freely admits these problems but his followers seem to have ignored his warnings.

However, neo-Ricardian criticisms are not without a rational kernel. Only by addressing them can some of the real difficulties with traditional labour value theory be overcome. Though Steedman's arguments rest on a narrow foundation, their merit is that the central part of this foundation is shared by all economic schools including, it would appear, traditional Marxism. This is the view that under perfect competition one must assume that the same rate of profit prevails in all production processes. Of course, no one asserts that a uniform rate actually exists. Yet it is claimed that the most