Foreword

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The essays in this book reflect an intensive process of critical reappraisal of neoclassical economics and its relation to Marx's theoretical work. They represent a radical departure from the almost universally accepted 'correct' representation of Marx's value theory first formulated by Ladislaw von Bortkiewicz at the beginning of this century. This introduction attempts to explain what is at stake in this process. The views expressed here are those of the editors and do not necessarily in whole or in part reflect the views of the contributors.

The Twentieth Century has been nothing if not innovative. Its technological miracles would have astonished the Victorians. Cosmology has reshaped space and time; physics has abandoned determinacy and biology defies the laws of evolution. There are, however, two exceptions to this pageant of revolutions: religion and economics. Adam Smith has been re-instated as prophet of the market, Ricardo as the oracle of trade, and economic gospel reduced to the following: the market satisfies all and wastes nothing; no-one could be better off without it, and no-one goes without work who takes the going wage.

The foundation of this catechism is a dogma: that supply equates itself to demand. Its formal basis, despite the beatification of the classicals, was laid in the 1870s and bears the name of General Competitive Equilibrium. Since then Arrow, Debreu, Hahn and others have added some rigour, time preferences have been tacked on, and the elastic distinction between short and long run has tied down some loose ends. But the basic instruments are as Walras, Jevons and Menger bequeathed them. Keynes's brief excursus has been assimilated into what Arestis (1992) calls the 'Grand Neoclassical Synthesis' and today's economics is a theory of supply curves, demand curves and simultaneous, instantaneous market clearing.

It is buttressed against threat by an important property: its internal consistency. It is hermetically sealed by the widespread view that the leading critique – that of Karl Marx – is inconsistent. This is not only endorsed, but energetically promoted, by the great bulk of writers in the Marxist tradition. Contemporary doctrine has thus been immunised against criticism; since the only serious alternative is on its own admission illogical, neoclassical theory is by definition the best.

This triumphalism is less appropriate by the criterion of normal science, namely, how well it explains observed reality. Orthodoxy's claim to success has a unique basis: its adoption by policy-makers. It is true, we are told, because communism has fallen, markets have opened, and the welfare state is in retreat and disarray. Yet though new fads come and go, and ever more sophisticated mathematics prove ever more implausible propositions, each actual outturn is a surprise. Black Wednesday, the economic collapse of Eastern Europe, unimaginable world poverty, famine on a scale approaching genocide; this is just so much unexplained data for a theory which is right for no other reason than that it rules. Small wonder its more thoughtful theorists are prophesying its death.

In a world out of balance the principle of equilibrium is neither a valid foundation nor a real result. Practising economists are driven to study change, time and disequilibrium. Cyclic crisis, unemployment, debt, underdevelopment, and financial chaos are the real phenomena which command attention, but they receive no explanation. Orthodoxy either defines them out of existence or labels them exceptions. Official economics is stuck with an unworkable paradigm – applying to an unstable world concepts derived from the assumption of stability.[1]

This presents a striking contrast with the theory which saw capitalism from its inception as *inherently* contradictory and self-disequilibriating, that of Karl Marx; a theory rooted in the understanding that economic movement, like all social forces, is driven by continual change and evolution, racked by violent storms and catastrophes, that inequality and uneven development are its very life force, and above all that these phenomena are not external to the market but generated by it, the outward expression of its internal law of motion.

That this system figures neither in official doctrine nor in digressions from it is itself a notable fact which should tell us something about the way professional economists go about their business. It is more notable still that Marx answers the very questions the official economics cannot deal with.

Of course in every field older thinkers are displaced from the textbooks to the histories as their discoveries are superseded and facts explained better. But Marx's discoveries have not been superseded and the observed facts have not been explained better. Maybe one day someone else will explain why the market does not clear, why there are periodic economic crises, why the profit rate falls when productivity is rising, or even why classes exist, why poverty and inequality is growing both within and between societies, and why there are wars and revolutions. But as yet they have not.

In any other science, where failures to explain observed reality are supposed to provoke root and branch examinations of concepts and principles, this would provoke a serious appraisal of Marx's thought. Yet twentieth century economics, for so long ridiculing his system as outmoded, has on the contrary disinterred the principles of his predecessors: the hidden hand, comparative advantage, the quantity theory of money and above all market clearing.

This is a double irony. Marx has been rejected for inconsistencies which are not, as the contributions to this volume show, present in his thinking. Yet these and many more inconsistencies *are* present in the writings of his predecessors, and were identified and overcome by Marx himself. Orthodoxy resolves this in a typically eclectic fashion, promoting what it finds attractive and ignoring the underlying conceptual structure of these writers – and hence the real problems they struggled with. It shows a shallow contempt for theory to embrace Smith's views of the market and Ricardo's ideas on trade and money, even founding institutes and banks to inflict them on people, while systematically ignoring either's writings on value.

There are material reasons for this conduct which will be assessed shortly. The theoretical basis, however, is an accusation repeated stridently and unremittingly in over four hundred papers since Volume III of *Capital* first appeared in print a century ago: that Marx's analysis is *logically* unsound. Moreover these charges are echoed and endorsed, and indeed most cases levelled, by the Marxists themselves. Marx's own supporters have announced the failure of his project, the premise of *Capital* itself: 'to reveal the economic law of motion of modern society'.[2]

This has had an incalculable impact on the perception of Marx by the nonspecialist, the militant, the partisan and the merely honest disinterested observer of his work. The received view among intellectuals is that whatever Marx's towering political and social insights, his economics is wrong.

The contributions to this book demonstrate these charges to be manifestly and profoundly false. Not only are the accusations of inconsistency unfounded, but it is not necessary to 'revise' or 'correct' Marx to show this. In this sense it constitutes the definitive answer to Ian Steedman's (1981:48) famous challenge:

> One can derive from the physical picture of the economy a coherent theory of profits and prices. In doing so, however, one finds that in general profits and prices *cannot* be derived from the ordinary value schema, that S/(C+V) is *not* the rate of profit and that total profit is *not* equal to total surplus value. Thus not only can one build the theory of profits and prices around the physical schema rather than the value schema but one is forced to do so ... [this is] the conclusion of an argument in logic; should anyone wish to challenge it, they must do so either by finding a logical flaw in the argument or by rejecting explicitly and coherently one or more of the assumptions on which it is based.

In this respect it differs from all other attempts to defend Marx's theory from the critics by modifying or 'correcting' this theory. None of the contributors claim Marx is immune from error or that further development of his thinking can be avoided; nevertheless he did not make the mistakes he has been accused of.

A further question is however posed by this conclusion. How, for nearly the whole of this century, could Marx have been systematically misrepresented even by those with every reason not to?

From orthodoxy, misrepresentation is to be expected for reasons Marx himself discussed.[3] Official economics, for deep material reasons, is an ideological endeavour. It sanctions what is; if it fails to do so then sooner or later it does not get paid. This lends it a deeply apologetic character. The search for truth rarely takes precedence over the pursuit of money; twentieth century economics does not even understand the difference.

The very fact that the triumph of neoliberalism in Eastern Europe is celebrated as 'proof' of Marx's errors shows what the profession has become. One might as well judge Socrates' logic by his survival skills. We witness the end product of a veritable Counter-Reformation, complete with its Inquisition and Torquemadas. It is a Jesuitical system, logical, consistent and intricate in its internal connections, furnishing irrefutable answers to all discrete questions but no coherent account of the world as it is. Like the actual Counter-Reformation, its function is to sustain patrons, not explain events.

But though official economics is intrinsically unable to endorse or apply analysis that contradicts its own existence, this does not on its own account for the parallel failure of 'unofficial' economics and above all the reaction of economists supposedly working in a Marxist framework. This is to be explained differently. *What has been understood as Marx's economics is in fact something else*. Academic economics has assimilated Marx to neoclassical General Equilibrium theory. His alleged inconsistencies are the crop from an unviable hybrid. This is not a maturation but a sickness of the theory, a perversion induced by its absorption into an alien system. To understand this sickness the editors sought to establish both how the accusations of error arise from a radically false understanding of a capitalist economy, and how a proper understanding of Marx's theory of value can liberate this body of theory from a century of captivity.

For the editors this book is therefore far from defensive. The goal of 'revealing the economic law of motion of modern society' remains on the agenda. Without it the basic premise of rationalism – that humans can understand their condition and thus become conscious agents of their own destiny – would have to be abandoned, and in the most cruel manner: we would have to conclude that we could understand any aspect of nature except ourselves.

What are the theoretical roots of the enterprise? The editors have attempted to bring together two lines of investigation, neither of which, we believe, can live without the other and each of which has hitherto been undertaken in isolation.

Their aim can be summed up as a twofold recognition of Marx's value theory as *sequential* and *nondualistic*. Sequential (chronological, successivist or historical)[4] because it rejects the simultaneous equation approach and its implicit assertion that economic movement consists of the simultaneous, rather than successive, determination of all variables. Non-dualistic (unitary, or redistributive) because it considers that prices and values *reciprocally determine* each other in a succession of periods of production and circulation. Prices are not determined independent of values but neither are values determined independent of prices. Against the idea that prices and values constitute two distinct systems of determination it seeks to understand their mutual relation.

The first line of investigation, as the title implies, is thus a thoroughgoing rejection of equilibrium. The traditional formulation of Marx's theory of value was initiated by Tugan Baranowsky (1905), popularised to the German-speaking world in 1906-7 by Bortkiewicz (1952, 1984) and approved for the English-speaking world in 1942 by Sweezy (1970). This tradition holds that his calculation of both value and price can be represented as a system of simultaneous equations. This implies that the values and prices of commodities serving as inputs at a given point in time are equal to the values and prices of the same commodities serving as outputs at a later point in time. But this in turn disregards both movement and time, the very stuff of which reality is made.

The work of Carchedi, Freeman, Giussani, de Haan, Kliman, McGlone and Naples demonstrates that this universally-accepted procedure is fundamentally flawed, incorporates the assumption of equilibrium and market-clearing, and has to be abandoned. This is the first conclusion which can be drawn from this book.

The second conclusion, however, is just as vital. All interpretations of Marx agree that both the value and the price of any commodity are made up of two components: the value of constant capital and the value-product, or the value added by living labour. But virtually all modern presentations further propose that the value transferred by constant capital is equal to the value of the elements which make it up, that is, the value of the consumed means of production and raw materials.

This view was not Marx's. Ramos and Rodríguez, and McGlone and Kliman argue and explain that this is not only incoherent but incompatible with Marx's own presentation. In fact the value transferred by constant capital is equal to the value as measured by the *money advanced to purchase* the elements of this capital. Likewise the value of variable capital is measured by the *money advanced to pay the labourer*, not the value of the products she or he consumes.[5]

These two conclusions, amply supported by Marx's own writings, utterly invalidate the traditional refutation of Marx's transformation of value into price. They also permit a further decisive development: a recuperation of *money* in Marx's analysis of value and price in particular, and economic movement in general. This is central to the rejection, emphasised by Rodríguez, of the 'dualistic' or two-system view which permeates twentieth century presentations in which prices are fixed independent of values, and values independent of prices. The relation between the two then violates either or both of Marx's famous 'two equalities'. In the framework presented here such a conception is impossible since values in each period depend both quantitatively and qualitatively on prices in the previous period.

Money therefore plays an altogether different role than in neoclassical thought; it is not a 'veil' introduced *post hoc* but an integral part of the analysis of the commodity and hence of the process of capitalist production itself.

Throughout Marx's writings he maintains a clear distinction, introduced in his earliest (1970, 1973) work, between two distinct measures of value, the form of appearance of socially necessary abstract labour. Its intrinsic or immanent measure, as he calls it, consists of hours of abstract labour time. But value can only be expressed in a universal equivalent, a commodity in which the value of all commodities is realised – money. Exchange itself presupposes what Marx terms the extrinsic measure of value, namely its money price.

Thus as Ramos, Rodríguez and Naples all explain, the *exchange value of money* – the quantity of money in which a given number of hours of socially necessary labour time are expressed – is not constant, is not given externally to the exchange relation, and is not determined by the conditions of production of the commodity which serves as money as assumed by the authors who founded and perpetuate official academic Marxism.

This highlights an important issue. In the writings of Marx, as opposed to his correctors and detractors, money is not only pivotal but is introduced and defined without any presuppositions as to the conditions of production and reproduction. It appears in chapter I of *Capital* immediately after value. Like all Marx's key concepts it is developed independently of and prior to any discussion of social reproduction. It even precedes the discussion of exchange.[6]

Money thus plays an utterly distinct role in Marx, without parallel in any version of neoclassical economics, equilibrium or otherwise. It is not only independent of any requirement that supply and demand should balance, but in general rules it out, as Marx repeatedly stresses.[7] It is therefore completely logical and coherent to use it to analyse an economy which is not in equilibrium.

The same is not true of neoclassical systems which are constantly blocked in their attempts to escape the deadening effects of the equilibrium assumption by the fact that their basic concepts have already been derived from this assumption. It is a well known feature of General Equilibrium that money plays no necessary role in it.[8] Keynes' work is in effect a vain attempt to escape this. It leads to the distinctive feature of modern economics: money, eliminated by General Equilibrium, is reintroduced *post hoc* as the subject of a distinct branch of theory, monetary economics, so that the economy is neatly divided into two self-contained and allegedly self-determined sectors, the 'real' economy or 'goods' market and the 'nominal' economy or 'money' market.

The contributions to this book which relate to this question thus differentiate it from all non-Marxist attempts to depart from equilibrium, such as Kalecki's (1936, 1969) and more recently the Post-Keynesians. Precisely because equilibrium concepts cannot provide a theoretical foundation for non-equilibrium economics, a coherent break from General Equilibrium is impossible without a theory of value.

This becomes clear once one asks the simplest questions: for example if people buy and sell at non-equilibrium prices, *what* is it that they exchange? If people acquire stocks, *what* do they accumulate? The neoclassical answer, as is well known,[9] is circular. It must know the price of capital in order to define the concept of price on which the concept of capital is based. It cannot even pretend to escape this without the dual assumptions of market clearing and simultaneity, the cornerstones of the equilibrium dogma. But price is then defined as the hypothetical ratio at which goods exchange when supply equals demand. This tells us nothing about what happens when supply does *not* equal demand.

Marx's original answer has no trace of circularity. It consummates and supersedes the classical tradition. Whether or not supply equates to demand, capitals exchange and accumulate *value*: past labour. An economist who is not allowed to give this answer is like a physicist deprived of energy; she or he has no generic concept with which to explain interactions between heterogeneous systems. Everything has to be studied in isolation from everything else.[10]

Value, moreover, is not an ideal unknown but a known determinate quantity, created chronologically and logically prior to the act of exchange. This means that, whereas Kalecki assumes a markup but cannot say what determines its magnitude or indeed prevents the firm setting any arbitrary markup, as Kliman and Freeman argue Marx deals with a definite rate of profit determined prior to the circulation process, and explains the process of its determination.

In its style the book is necessarily exploratory, and in parts polemical, whether necessarily or not. The contributions express a wide variety of views which are inevitably and rightly not in full agreement. The authors are breaking from a century-old tradition and this involves groping for new ideas, settling accounts with the old ones, and understanding the historical evolution of both theory and ideology since Volume III of *Capital* appeared one hundred years ago.

However the editors believe that a strong common theme differentiates the contributions in this book decisively from previous attempts to recuperate Marx's thinking, some of great merit, which have concentrated on only one of the two weaknesses of official academic Marxism defined above. It is insufficient merely to break free of equilibrium or develop a nondualistic account of price and value. *Both* developments have to be integrated so that the dynamic relation of money and labour can be fully comprehended as a succession of determinations of price and value, both operating in the spheres of both production and circulation.

Any writer who sets out to outline the basis of a theoretical approach needs to explain her or his relation to the previous development of the theory both negative and positive. We found ourselves in a difficult position. A single work cannot trace a century's evolution of the subject, particularly when this subject has on the whole regressed rather than advancing.

Nevertheless some minimal account of the relation between these and previous writings is essential. As should be clear, we think the formalisation of Marx's theory of value which descends from Bortkiewicz is a dead end which has served primarily to assimilate Marx to General Competitive Equilibrium. Bortkiewicz himself did not disguise this aim. A lifelong admirer of Walras who corresponded with him from the age of nineteen,[11] he openly acknowledged this debt and his avowed aim was to formulate Marx's transformation procedure in Walrasian terms. He criticised Marx as 'successivist' (see Naples in this volume) for determining prices and values through a succession of phases of the circuit of reproduction, and substituted Walras' approach which simultaneously determines prices and/or values once for all. He was a part of the academic milieu emerging at the turn of the century which overturned the Ricardian legacy, creating neoclassical economics. This included Max Weber and Werner Sombart in whose journal Bortkiewicz's first (1952) article appeared in 1906; Böhm-Bawerk, who published Komorzynsky's (1897) article in which the 'inconsistency' charge was first laid, of course Walras, and Bortkiewicz himself.

The system found support among academics, partly because it permitted a dialogue on apparently common terms with non-Marxist theory, partly because many twentieth century writers saw linear equation systems as the theoretical basis for technocratic planning. The Bortkiewicz system appears to express a direct, immediate and apparently inviolable relation between technology and prices. If prices are no more than the expression of an underlying technical relation, then it appears to support an interpretation of Marx in which the 'forces of production' reduce to the technical coefficients of the production matrix and the 'relations of production' to the distributional struggle between wages and profits. And if equilibrium (that is, optimal) prices and quantities are given uniquely by technology and the socially-determined allocation of the net product then the effects of supply and demand are redundant. The whole cumbersome apparatus of the market is unnecessary and can be supplanted by a planned pricing system in which the application of the net product is determined by the government. The simultaneous linear equation representation thus provides an attractive and simple justification for state intervention.

Valuable insights may have been obtained from such systems. But the outcome has been to assimilate Marx's theory of value to General Equilibrium. Ninety years of work with them have not enriched, but impoverished and distorted, his original contribution and above all been responsible for the entirely unfounded view that his economics are wrong. The time has come to lay them to rest.

We are in a different relation to preceding partial attempts, many of which represent a marginalised and forgotten aspect of Marxist thinking in this century, to construct an alternative to this dualistic and simultaneous framework. Full acknowledgement is long overdue. We apologise where it is missing in this work.

This volume would not have appeared were it not for Robert Langston, whose pioneering work in the late 1970s was tragically ended by his death. The few writings he left were the basis for the collaboration which led to the *Marx, Ricardo and Sraffa* (Mandel and Freeman 1984) volume in which many early critiques of equilibrium were aired.

Despite differences with them we recognise the important contribution of 'iterative' solutions to the transformation problem, to our knowledge first set down in a little-known paper by Shibata (1933). His approach has been either knowingly or unknowingly reproduced in key subsequent contributions of which the best known are that of Bródy (1970), Okishio (1972), Shaikh (1973, 1977), and Morishima and Catephores (1978a). Less well known is the pioneering work of Panizza (1981) and Pala (1982). All these authors show that the passage from ‘values’ (as defined by them) to prices of production can be conceived not as a pure calculation outside of time but as a succession of transformations in logical time, converging on a magnitude interpreted either as the Marxian price of production or the neoclassical long-run equilibrium price (or both).

A further set of authors have explored non-dualistic accounts of price and value. Pioneering but widely-ignored articles by Wolff, Roberts and Callari (1982, 1984a) and by Roberts (1987) have been followed by a growing number of authors such as Moseley (1993a, b) who work in this tradition but in a simultaneous framework. Not the least achievement of this young tradition is that it sets the scene for empirical measurements of value magnitudes that are theoretically well grounded, not based on a simple naïve equality of price on value, but on a series of determinate calculations yielding values from prices.[12]

Indebted though we are to these two traditions, the editors consider that their weakness lies in the very fact that they have not been brought together.

First, we think static solutions in a nondualistic framework are insufficient. Not the least reason is that the economy itself is in motion, and the task of analysis is to uncover the law of this motion. More important still is the fact that many of the determinations of price and value which are purely qualitative in a static framework, can be seen to be quantitative in a non-equilibrium framework.

Thus as Freeman, McGlone and Kliman show, a sequential calculation yields *quantitatively different* magnitudes for values and, most significantly, for the profit rate. On this basis we believe we have furnished, for example, a fully general refutation of the theorem of Okishio, showing that just as Marx asserted, it is possible and in fact the general tendency for the profit rate to fall continuously, despite rising productivity and in the absence of a rise in real wages, as a result of the rising organic composition of capital. This result cannot be demonstrated in a static framework, although it happens, and is acknowledged to happen, in reality.

These quantitative differences refute the second logical accusation against Marx: that of redundancy. The allegation that values are redundant because prices can be calculated directly from technology is based on a universal assumption of the Surplus Approach school, the foundation of Sraffa’s critique of marginal theory, that to a single technology there necessarily corresponds a single set of prices. This requires that one set of prices correspond to each set of physical magnitudes, provided these include the real wage. But as McGlone/Kliman and Freeman show, there is no necessary correspondence between technology and prices once the time dimension is introduced – and as Naples shows there is not even any necessary process of convergence.

As Freeman’s final chapter shows, once the assumption of equal profit rates is dropped *any* arbitrary sequence of prices (and values) is compatible with a given technology. Trying to understand the movement of an economy as if it were a robot, driven only by its machines, is theoretically without any basis.

In a purely static framework, in which profit rates are equal and prices do not change, such distinctions cannot be made. The process of determination is not visible because quantitative changes in prices from one period to the next cannot be demonstrated. This has robbed static contributions of much of their potential impact, since it is extremely difficult to grasp qualitative distinctions which never give rise to quantitative differences.

In a genuinely non-equilibrium framework, when 'simplifying' assumptions are dropped – equal rate of profit, invariant and uniform technology, no fixed capital, fixed turnover period, homogenous labour, an equal rate of exploitation, constant value of money (it is a long list) – the mind is freed of the deadening impact of these ideologically-motivated and arbitrary assumptions, and the often abstruse distinctions made by Marxists working in a static framework become obviously necessary practical differences. Freeman further argues that if the break is not made with the simultaneous equation framework, 'simplifying' assumptions make their way into the higher cerebral processes where they mutate into postulates. Since they are in fact the only way to get any solutions out of such systems, they become fetishised and appear as if they were an aspect of external reality; as if, because equal profit rates are needed to solve our equations, profit rates in the world can never diverge.

But if static solutions with a nondualistic price calculation are inherently limited, 'iterative' approaches with a dualistic price calculation are also crucially flawed. First, they are proposed as a sequence of approximations or 'logical contributions' to the prices or values which would hold for an economy in equilibrium. But as Naples, Carchedi, Freeman and Giussani all point out, this equilibrium is never achieved. It is a hypothetical construction which has misled generations into believing that Marx's concept of price of production is nothing but the neoclassical long-run equilibrium price.

Second, in such iterative models the sequence of values and prices which lead to equilibrium are not perceived as an attempt to model actual prices and values, but a 'hidden' or 'logical' movement behind the actual prices. This perpetuates the false idea that there are two worlds in the economy, the hidden world of values and the exposed world of prices. This is rightly perceived by those new to Marxist analysis as a mystificatory philosophical game. Value may be an abstraction but it is not a secret. The concept of a woman, a man, or food is an abstraction but every day real men and women eat real food or really die for lack of it. This is apparent[13] without knowing their names. Value may differ quantitatively from price but the difference is observable and in principle measurable. The task is to explain the *actually observed* movement of society; our perception of these iterative models is therefore that they are a first step in this direction, but cannot complete their journey because of their dualistic vision. The focus of this work, like that of Marx, is not on how equilibrium comes about but on why it cannot exist. We cannot rest content, therefore, with a purely logical account of 'what happens in between'.

A further recent development in economic theory is the important work generically known as the 'New Approach' or the 'New Solution'. Diverse workers in this framework, notably Duménil, Lévy, Foley, Lipietz, Glick and Ehrbar have reraised vital issues such as the value of money, and in certain cases have begun experimenting with non-equilibrium models. Saad-Filho's chapter is dedicated to an evaluation of this school.

The difficulty with the approach is twofold. First of all, although there are several different emphases, the concept of value usually remains separate from and prior to the concept of price and is calculated using equilibrium assumptions, that is, using a simultaneous equation formulation. This starting point can be dispensed with but the approach then loses of much of its force.

Most contributors also disagree with the interpretation of 'double counting' introduced by Duménil's reading of Marx, according to which the equality of total price and value applies to the net, and not the gross output of society. We do not agree that the net product alone participates in the redistribution of value brought about by changes in the value of money. Constant capital figures in the goods which are exchanged against money, and its value and price are altered as a result. The exchange value of money in our view is given by the value of all goods which are measured in money in each period, that is, the whole stock of social capital. A detailed critique of the 'double-counting' interpretation of the New Approach is offered by Ramos and Rodríguez as part of their article on Bortkiewicz.

Finally, a few words may clarify the function of the second part of the work which deals with some important unsettled issues in Marx's relation to modern economics, above all economic dynamics. Carchedi, de Haan, Giussani and Freeman demonstrate that the central category of Marx's concept of price is not, as widely believed, the concept of price of production but of *market* price, the actual price goods are sold at. The neoclassical assimilation of Marx rests, to a degree, on one false idea: that prices of production are the real essence, and market prices the accidental form of appearance, of Marx's concept of price. According to this view, market prices are a random short-term fluctuation about a long-run equilibrium which comes into being independently of them.

To reduce Marx's thinking to the idea that prices of production are the *cause* of market prices, or that prices of production are real and market prices unreal, is as absurd as it is false. As Carchedi and de Haan argue, prices of production are a tendency produced by the actual movement of market prices. It is an inversion of reality to treat the tendency as if it produced the actual. Bees tend to be found in swarms, but no-one has yet found a swarm with no bees in it. Marx describes the process by which the price of production is formed as follows:

> Between these spheres that approximate more or less to the social average, there is again a tendency to equalization, which seeks the 'ideal' mean position, i.e. a mean position which *does not exist in reality*. (Marx 1981:273, our emphasis)

The question for him is then posed thus:

> The really difficult question here is this: how does this equalization lead to a general rate of profit, since this is *evidently a result and cannot be a point of departure?* (Marx 1981:274, our emphasis)

It is the movement of market prices which gives rise to price of production, not the other way round. This is the reverse of the neoclassical conception according to which long-run equilibrium prices are the real and causal phenomenon. The dynamic character of Marx's analysis results because market prices and their fluctuations, in pursuit of surplus profit, are for him the real motor force of the economy. The forces that drive them together are the very forces that drive them apart. The interaction between prices, investment, and the movement of both sectoral and average profits, is the core of Marx's understanding of the economy.

The second issue concerns the most important modern deduction in static analysis: the Okishio theorem. This theorem, through which, we understand, Okishio hoped to prove that there was no practical limit to the wage rises that workers could secure provided these rises were matched by improvements in technology, establishes (in a static framework) that continuous improvements in technology must necessarily give rise to a rising profit rate unless offset by rising real wages. This result was widely held in countries less often visited by rising productivity – such as Britain and America – to reinforce the view, politically expedient for the governments of the day, that falling profits were caused by rising wages. It also apparently confirmed the often-made accusation that Marx failed to understand how cheapening of constant capital could indefinitely offset the rise in its volume.

Kliman's chapter decisively refutes this theorem and furnishes a simple illustration in which productivity rises continuously but profits fall. Freeman's final chapter establishes the general form of the result first advanced by Marx.

The final chapter confronts the question: is there an alternative *general* formalisation of Marx's theory of value – that is, a different paradigm for economics in Marx's framework? It concludes that on the basis of Marx's own analysis of individual and market value, of fixed and circulating capital, and money and the succession of periods of production and circulation, such a formalisation is indeed possible using the mathematical techniques of difference and differential equations. It can explain the basis of some of the most permanent and pervasive features of the capitalist economy since the industrial revolution: unequal exchange and the alternating cycle of booms and slumps.

This formalisation not only proves in completely general form the propositions which Marx has been accused of getting wrong, but shows that static analysis is in fact a *special case* of this more general form, in which the necessary distinctions between concepts such as money-price and relative price, or stocks and flows, are annihilated, and in which the concepts necessary for analysing dynamic behaviour are excised.

The editors would not claim that the results of this book are a final answer to any question, let alone the criticisms of Marx. Nor do we believe the results to be complete or perfected. Nevertheless we believe three not unimportant things can be shown, if the lines of our suggestions are followed. First, that the most essential phenomena of a market economy cannot be understood in an equilibrium framework, and are therefore impenetrable both to neoclassical economics and to equilibrium Marxism; second that within the theories of Marx himself a superior basis exists for understanding these phenomena, and finally, that a century of sophisticated reasons for ignoring these theories have produced precisely and exactly nothing. All we can now do is invite those of an unprejudiced mind to tread with us the road along which we have tentatively set out.

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NOTES

1 'The problems of achieving equilibrium within [the Grand Neoclassical Synthesis] are bypassed by the method of comparative statics ... it normally begins with an equilibrium position and then assumes a change in an exogenous variable or parameter to arrive at a new stable equilibrium; it then merely compares the equilibrium points before and after the change ... Keynes was very categorical on the notion of equilibrium which he described, in a very well known passage as "one of those pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future"' (Arestis 1992:70).

2 Marx 1976a:92

3 'In the domain of political economy, free scientific inquiry does not merely meet the same enemies as in all other domains. The peculiar nature of the material it deals with summons into the fray on the opposing side the most violent, sordid and malignant passions of the human breast, the Furies of private interest' (Marx 1976a:92).

4 The authors are not fully agreed on terminology. The terms in brackets are offered as alternatives.

5 In the same vein, Carchedi and de Haan argue that, due to technological competition, the value transferred by the means of production to the product and the value newly created by labour power is not the original value but the value they have at the moment the product is sold. Tendentially, this value converges towards the constant and the variable capital actually invested by those capitals operating under conditions of average productivity as measured at the moment of the product's sale.

6 Incidentally it does not depend on the assumption of a capitalist economy, which is important since money and prices existed before capitalism. The transformation of values into prices in general, not prices of production, is introduced in chapter 3 of Volume I (Marx 1976a:196) before capitalist production on the basis of the commodity labour power.

7 'The conception (which really belongs to Mill) adopted by Ricardo from the tedious Say (and to which we shall return when we discuss that miserable individual) that *overproduction* is not possible or at least that no *general glut of the market* is possible, is based on the proposition that *products* are exchanged *against products*, or as Mill puts it, on the "metaphysical equilibrium of sellers and buyers", and this led to [the conclusion] that demand is determined only by production, or that demand and supply are identical' (Marx 1969b:493, emphasis and insertions in original). 'In actual fact, supply and

demand never coincide, or if they do so, it is only by chance and not to be taken into account for scientific purposes: it should be considered as not having happened' (Marx 1981:291).

8 'Any commodity [in a Walrasian system – eds], whether a good or money, can be offered directly in trade for every other commodity. But an economy that admits of this possibility clearly constitutes what any classical economist would regard as barter rather than a money economy. The fact that fiat money is included amongst the set of tradable commodities is utterly irrelevant; the role of money in economic activity is analytically indistinguishable from that of any other commodity' (Clower 1967:204).

9 See for example Harcourt (1972), Eichner (1979), Arestis (1992).

10 'It is one of the chief failings of classical political economy that it has never succeeded, by means of its analysis of commodities, and in particular of their value, in discovering the form of value which in fact turns value into exchange-value … We therefore find that economists who are entirely agreed that labour-time is the measure of the magnitude of value, have the strangest and most contradictory ideas about money, that is, about the universal equivalent in its finished form ... Let me point out once and for all that by classical political economy I mean all the economists who, since the time of W. Petty, have investigated the real internal framework [*Zusammenhang*] of bourgeois relations of production, as opposed to the vulgar economists who only flounder around within the apparent framework of these relations, ceaselessly ruminate on the materials long since provided by scientific political economy, and seek there plausible explanations for the domestic purposes of the bourgeoisie' (Marx 1976a:174).

11 Gattei (1982) chronicles aspects of the Bortkiewicz-Walras correspondence. Bortkiewicz's first letter to Walras on 9 November 1887 ends with the following words: 'Your writings, sir, have awakened in me a lively interest in the application of mathematics to political economy, and has pointed out to me the road to travel in my researches into the methodology of economic science.' This letter is reproduced in Jaffé (1965 Vol II p230).

12 Carchedi, who like Freeman has already worked on the measurement problem, expands its theoretical basis with de Haan in their chapter in this work.

13 To all but economists.