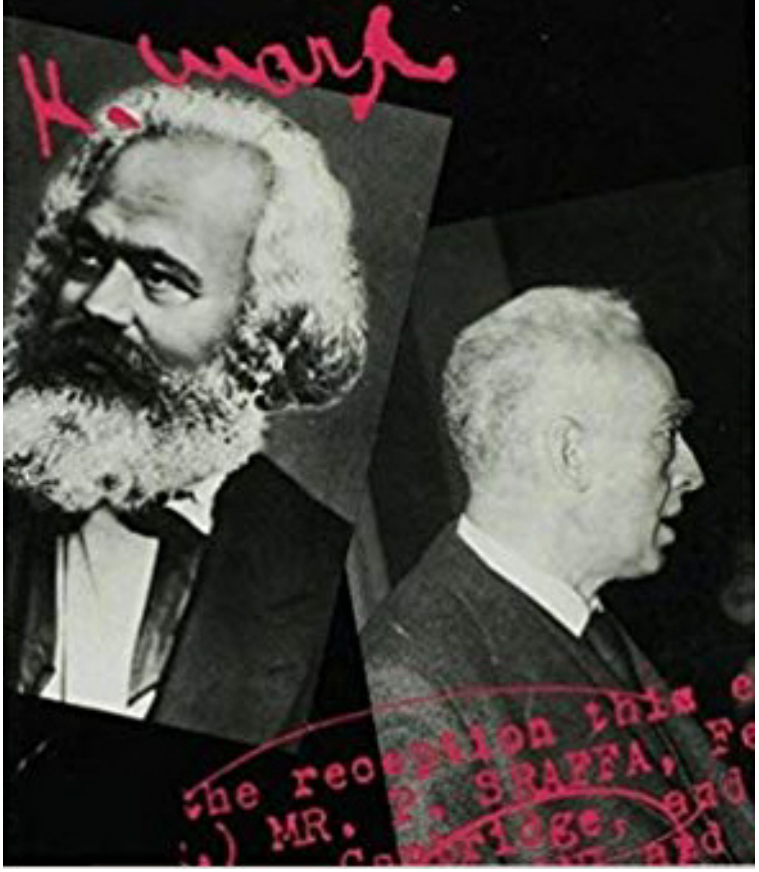
Geoffrey M. Hodgson

After Marx and Sraffa

Essays in Political Economy



After Marx and Sraffa

Essays in Political Economy

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Preface

The essays collected here trace an intellectual journey covering two decades. It is hoped that this journey will interest others and lead to more substantial work in the future. These items have been reproduced out of more than merely antiquarian interest. In every case they were written with a concern not to merely quote or echo the words of Karl Marx, Piero Sraffa or anyone else for that matter, but to build on positive elements in such neglected traditions of economic theory, and above all to attempt to enhance our knowledge and understanding of the real world.

The theoretical legacy of Marxism is enormous, and much of it is valuable and positive. On the other hand, rooted in Marxism are undemocratic and unacceptable political ideas and obsolete or misconceived theoretical constructs. For the author, the intellectual journey has been in part an attempt to escape from the constrictions of Marxian theory and politics, and to find an alternative economic analysis in which its worthwhile elements are retained.

These essays are being collected together at a time of great political change in Western and Eastern Europe. Economic transformation and political democracy are the order of the day, surpassing overcentralisation in the East with its legacy of stagnation and repression, and leading to modification and integration in the economies of the West. Hopefully, the intended focus on mixed economic systems and economic democracy that emerges in some of these essays will prove relevant for this exciting period of change.

Although these works point in new directions, the obvious starting-point is still a discussion of the economics of Marx. Further, the impact and relevance of the economics of Sraffa will be made more clear within the selected essays. The influence of several other economists, particularly John Maynard Keynes, Joan Robinson, George Shackle, Herbert Simon and Thorstein Veblen will also be detected.

I reached the conclusion in the early 1970s that parts of Marxist economic theory did not stand up to close and rigorous examination. These most obvious flaws included Marx's solution to the transformation problem and his theory of the falling rate of profit. At that time I held the rather naive view that Marxian economic theory could be amended and brought up to scratch in a relatively straightforward

manner, particularly with the employment of the type of rigorous analysis developed by Piero Sraffa in his famous (1960) book *Production of Commodities by Means of Commodities*.

Clearly, whatever its value, to take such a stance is to risk being fired upon from at least two sides, particularly from those who wish to preserve the doctrine in unamended form. Very quickly, in the early 1970s, Marxian economists became polarised into the 'fundamentalists' who were less willing to amend Marx, on the one hand, and 'neo-Ricardians' who were influenced by Sraffa, on the other; each tag being used by one side as a term of abuse against the other. Consequently, throughout the 1970s, much time and energy was taken up by this internal debate amongst the radicals, and the vital, critical dialogue with other more orthodox traditions in economic theory was neglected.

As a result a chance was missed. After enjoying a brief and limited vogue in the early 1970s, Marxian economic theory shifted even further away from the limelight of academic attention to be replaced by other debates. By the early 1980s, discussion of such radical ideas was confined to a few shrinking circles within the economics profession. Once again, the teaching of Marxian economics has become confined to a few lectures in the optional course, if indeed it remained on the curriculum, on the History of Economic Thought.

Whilst the study of Marxian economics has subsided, four distinct research programmes are descended from it. Together, these four schools amount to the main living heritage of the 1970s. The first school describes itself as 'Analytical Marxism' but as any old Marxism would want to claim such an epithet, Alan Carling's alternative title of 'Rational Choice Marxism' is more illuminating. In the main it is based on the work of Jon Elster and John Roemer. It employs 'standard tools of microeconomic analysis' including general equilibrium and game theory, and has links with kindred spirits such as Gerald A. Cohen. Rational Choice Marxism is discussed in Chapter 5 below.

The second group, known as the Régulation School, is led by Michel Aglietta, Robert Boyer, Pascal Petit and others, is based largely in France, but has a fairly wide international following. The work of the school is heterogeneous and diverse, and some of it has close affinities with Post Keynesian, evolutionary and institutionalist approaches with which the present author has sympathy. Much of their work incorporates the ideas of other important economists such as Keynes, but there is little uniformity within the school itself. On

the whole, the Régulation School represents the most important legacy of the radical economics movement of the 1960s and 1970s.

A third group, sometimes described as 'post-Marxists', is led by Samuel Bowles, Herbert Gintis, David Gordon, Thomas Weisskopf and others from the United States. Being influenced by the somewhat inconclusive 'labour process' debates of the 1970s, Bowles and his co-workers regard struggles between workers and employers within the workplace as being of central analytical importance. This has led to theoretical works on unemployment and the theory of the firm and the development of a 'social' model of productivity growth. They have links with the Régulation School, and in some respects their analyses are similar. Some of the ideas of Bowles *et al.* are discussed below in Chapters 6 and 13.

The fourth group has been heavily influenced by the work of Piero Sraffa and adopts a particular interpretation of Keynes. Led by Piero Garegnani, it is strong in Italy and is represented elsewhere by John Eatwell, Edward Nell and others. It is not Marxian in a foremost sense, as their primary concern has been to synthesise the formal theory of Sraffa with the central ideas in Keynes's *General Theory*. Although I adopted similar concerns in the 1970s, since then I have come to believe that the stationary state system of Sraffa is an inadequate basis for economic theory and is actually incompatible with the more dynamic economics of Keynes. Some reasons for this judgement are outlined in Chapter 11 of the present work. However, the work of Sraffa remains important in a negative and critical sense, in providing a critique of both the neoclassical aggregate production function (Chapter 3 below) and the labour theory of value (Steedman, 1977; Hodgson, 1982).

On the whole, however, the diversity created by these offshoots of Marxian economics is so great, and their distance from pure Marxism so substantial, that we cannot describe these living traditions as simply 'Marxian economics'.

As far as the present author is concerned, the additional influence of the Post Keynesians and the American institutionalists has also been substantial. In contrast to the stationary-state type of analysis which is illuminated by the Sraffians or the Rational Choice Marxists, institutionalism and Post Keynesianism offer a more evolutionary or dynamic approach, with scope for problems of information and uncertainty and for a theory of human action in its institutional context. It is hoped that these issues are evident in several of the chapters below.

There is an aspiration that this book will suggest a direction for theoretical advance. It is not intended to be a complete or even representative collection of the author's work. In the first place, essays of a more overtly polemical nature and narrower focus have been omitted. Also excluded are essays which have found their way into, or have been adequately covered by material in my other books, namely *Capitalism, Value and Exploitation* (1982), *The Democratic Economy* (1984), and *Economics and Institutions* (1988).

Two of the essays – Chapters 2 and 3 – date from the 1970s, and the others are of a later date. Particularly in regard to the earlier works, if these essays were written now they would not all have been written in the same way. However, to some extent I have restrained my editorial pen, allowing it to rectify errors of fact or typography, to make a few minor stylistic improvements, to standardise the bibliographical references, and to remove some extraneous, dated or over-repetitive material. Generally, however, all the republished essays are close to their original form, even at the cost of some inconsistencies in method and theoretical approach.

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Acknowledgements

I am grateful to John Pheby for suggesting to the publisher that this collection be published and to Keith Povey for his excellent editorial recommendations. The help of many others is acknowledged in the individual essays below. In particular, the name of Ian Steedman is prominent, and the chosen title of this collection is a tribute to him and his work. Once again, I wish to express my gratitude to those concerned at Newcastle upon Tyne Polytechnic, particularly Brian Roper, for their supportive attitude to research in the social sciences. The actual dedication of this book is an expression of deepest thanks to my family for tolerating a preoccupied economist in its midst.

In addition, the author and publisher are grateful to the publishers of *New Left Review*, the *British Review of Economic Issues*, the *Review of Radical Political Economics*, the *Review of Social Economy*, the *Journal of Post Keynesian Economics*, the *Journal of Economic Studies*, and the *Review of Political Economy* for permission to reprint material in Chapters 2, 3, 4, 5, 8, 10 and 12 respectively; to the *Cambridge Journal of Economics* for permission to reprint material in Chapters 7 and 13; and to the publishers M. E. Sharpe, JAI Press, and Edward Elgar Publishing for permission to reprint material in Chapters 6, 9 and 11 respectively.

G. M. H.

Part I
Marxian and Sraffian Economics

1 Marxian Economics: Value and Limitations*

> 'The orthodox economists have been much preoccupied with elegant elaborations of minor problems, which distract the attention of their pupils from the uncongenial realities of the modern world, and the development of abstract argument has run far ahead of any possibility of empirical verification. Marx's intellectual tools are far cruder, but his sense of reality is far stronger, and his argument towers above their intricate constructions in rough and gloomy grandeur.' (Joan Robinson, 1942, p. 2)

The year 1883 was an important one for economists. Karl Marx died at the age of 64, and both Joseph Schumpeter and John Maynard Keynes were born. Today, both Keynes and Schumpeter rank as great economic theorists, but Marx's primary contribution is often seen to be located elsewhere. Is this judgement valid?

Most of Marx's life was devoted to the study of the working of the economic system of his time. His *Contribution to the Critique of Political Economy* and the first volume of *Capital* – his most important work – were first published in 1859 and 1867 respectively. After his death he left behind many manuscripts concerned with what today we would loosely call 'economics'. They include the *Economic and Philosophic Manuscripts of 1844*, the weighty *Grundrisse*, and the even longer *Theories of Surplus Value*. Without doubt, Marx was an economic theorist, as Adam Smith and David Ricardo were before him. The volume of his written output in economics is greater than that of any of the preceding, classical economists, and few economists have matched him since. Whatever his faults and merits, Marx was a prolific economist.

* Much of the ensuing material in this essay derives from an unpublished paper presented on the Marx centenary year of 1983 to the Newcastle Polytechnic Conference for Teachers of Economics. For differing centenary assessments see John Gurley (1984) and David McLellan (1983). Some passages of the present essay were written more recently, after the events of 1989 in Eastern Europe. What other series of momentous spectacles could demonstrate to all but the most blinkered that the 'socialism' of the East was no route to utopia but a historical dead end?

But as we have noted, the customary assessment of Marx would place much less emphasis on the weight and value of his economic writings. Marx may be found somewhere on the syllabus in many institutions of higher learning, but only rarely on the curriculum of a bachelor's degree or of a graduate programme in economic science. His contribution to sociology is seldom omitted. Marxist historians are prominent in that discipline. Modern political science is unthinkable without a good chunk of Marxism. Yet quite normally economists obtain their degrees, even as high as a doctorate, without reading a single page of Marx. His work is unstudied and rejected by economists at the outset.

According to the conventional assessment of Marx, he is regarded as having made an enduring relevant contribution to history, politics and sociology. In contrast, his bequest to economists is generally regarded as being minimal and of little modern use. As Paul Samuelson (1962, p. 14) put it, Marx was a 'minor post-Ricardian', and his main economic arguments were based on the faulty and outdated labour theory of value. For this and other reasons, Marx the economist is rebutted and relegated to two lectures in the course on the History of Economic Thought.

It is interesting to note how the alleged obsolescence of the labour theory of value is often raised as the main reason for ditching Marx's economics. A prominent view is that this theory is the indispensable foundation stone for all his economic theories. Consequently, according to this opinion, the whole edifice falls down once the labour theory of value is removed.

Significantly, precisely the same view is held by orthodox Marxists, as well as by the hostile critics. Mainstream economists, whilst being critical of Marx, agree with the orthodox Marxists that the whole theoretical structure stands or falls with the labour theory of value. The mainstream economists then proceed to reject the labour theory of value, and turn away from Marx, imagining the sound of the collapse of the entire Marxian system in their ears.

This conventional assessment of Marx should be contested, in all its important assertions. Arguably, Marx was a great economist, comparable in stature to Adam Smith and John Maynard Keynes. Furthermore, his contribution to economics was more significant and enduring than his contribution to history, politics and sociology. In short, the conventional assessment of Marx is almost the reverse of the truth.

MARX'S ECONOMICS

The Labour Theory of Value

The standard presentation of the labour theory of value is found in the works of Dobb (1940), Meek (1956) and Sweezy (1942). Their argument is that relative prices are determined by what they call the 'values' of commodities. The 'value' of a commodity is defined by them as the amount of socially necessary labour time required directly and indirectly to produce it.

An earlier critic of this theory was Eugen von Böhm-Bawerk (1890). Some of his arguments were countered by Hilferding (Sweezy, 1949). More recently, criticisms of the labour theory have been based on Sraffa's famous *Production of Commodities by Means of Commodities*. The most important contribution in this vein is by Ian Steedman (1977).[1]

The Sraffian critique of the labour theory of value is along the following lines. First, it was clearly recognised by Marx that the technical input–output data, along with information about the real wage (all of which are an expression of social as well as technical relations) are necessary to calculate embodied labour 'values' and to determine the amount of 'surplus value'. 'Surplus value', according to Marx, is the amount of socially necessary labour time robbed from the workers by the capitalists, and it serves as the true origin of all profit in the capitalist system. The existence of 'surplus value', therefore, is clear evidence of exploitation.

Marx argued that embodied labour 'values' were the determinants of basic prices within the system. All monetary expressions of worth or exchange value owe their substance and origin to labour performed by the employed workers. However, Sraffa showed that embodied labour 'values' were not necessary to compute prices. Prices could be determined by the same technical input–output data, plus information about the real wage, as mentioned in the previous paragraph. Thus, as Steedman (1977) emphasised, embodied labour values were completely redundant as determinants of prices or profits.

Redundancy is one thing. The second argument against the use of embodied labour values, especially as 'demonstrations' of exploitation, is that they are illegitimate. Bob Rowthorn (1980, p. 38) writes: 'there is something rather circular in the argument which first defines *all* output as the product of labour, and then triumphantly

exclaims that it has shown surplus product to be a deduction from the product of labour'. This type of argument can be extended; it is also circular to define 'value' in embodied labour terms and then 'show' that the workers do not receive all the value their labour has created. Such a thesis assumes what it has to prove. It rests on the initial, unsubstantiated assumption that all value and surplus value is created by labour. It is not surprising that such arguments are unconvincing to those unpersuaded by Marxist theory.

As a result of these and other post-Sraffian criticisms, supporters of the labour value have been put in some disarray. Indeed, some have abandoned the Dobb–Meek–Sweezy version of the theory and the use of embodied labour values. Others have relapsed into even greater obscurantism. Very few have tried to present an alternative and rigorous approach.

If we remove the labour theory of value from Marxian economics then what is left? Contrary to both orthodox Marxists and blinkered anti-Marxists, there is a healthy body of theory in Marx's writings which survives the surgical removal of the labour theory of value. Although this contention is discussed further in regard to some particular aspects in Chapter 4 below, it is an aim of this present essay to concentrate on three topics: the theory of economic systems, the theory of production and the theory of money.

The Theory of Economic Systems

The most important distinguishing feature of Marxian economics is its concept of an economic system. In Marx's writings the terms 'mode of production' or 'economic structure' are used to refer to this key concept. Marx saw history as a succession of different economic systems. The starting point of economic analysis, he argued, should not be 'the individual' or even 'society' but the particular economic system chosen for investigation.

Thus there is an important difference between the economics of Marx and that of classical and neoclassical economists. In these schools of thought there may be the idea of the economy as a kind of interrelated system, but there is not full recognition of the possibility or implications of different types of system through history. The starting-point is universal rather than concrete. It is the general idea of human nature and 'moral sentiments' (Adam Smith), or an ahistorical conception of the individual with exogenously determined 'tastes and preferences' (neoclassical theory). Analysis is founded

upon these universals in the pursuit of general and ahistorical truths.

Orthodox economists are not inclined to base their categories and theories on the characteristic features of a given economic system. From the ahistorical starting-point of the abstract individual, axioms about human behaviour are plucked from the air, leading to the construction of general theories, impoverished in terms of their concreteness and relevance. The features and institutions which characterise a given economy are either forgotten, tacked on at the end as an afterthought, or relegated to the sphere of 'empirical' research.

Marx's approach is different, and still worth emulating today. As revealed in Marx's letter to Pavel Annenkov, written in 1846, the thrust of his criticism of Pierre Joseph Proudhon clearly applies to much of modern orthodox economics as well:

> Mr Proudhon, chiefly because he doesn't know history, fails to see that, in developing his productive faculties, i.e. in living, man develops certain inter-relations, and that the nature of these relations necessarily changes with the modification and the growth of the said productive faculties. He fails to see that *economic categories* are but *abstractions* of those real relations, that they are truths only in so far as those relations continue to exist. Thus he falls into the error of bourgeois economists who regard those economic categories as eternal laws and not as historical laws which are laws only for a given historical development, a specific development of the productive forces. Thus, instead of regarding politico-economic categories as abstractions of actual social relations that are transitory and historical, Mr Proudhon, by a mystical inversion, sees in real relations only the embodiment of those abstractions. Those abstractions are themselves formulas which have been slumbering in the bosom of God the Father since the beginning of the world. (Marx and Engels, 1982, p. 100)

In Marx's view, ahistorical categories such as 'utility', 'choice', 'scarcity' and the 'production function' cannot capture the essential features of a specific economic system. One reason, as suggested throughout his writings, is that Marx saw the individual as a product of circumstances as much as circumstances are the product of individuals. In consequence, for instance, the tastes and preferences of individuals have to be taken as endogenous, rather than given and exogenous as in orthodox economic theory.

Marx's primary aim is to analyse the type of economy emerging in Britain and Europe in the nineteenth century. Thus in the Preface to the first edition of *Capital* Marx made clear that the objective of that work is to examine not economies in general, nor even socialism, but 'the capitalist mode of production'. It is the 'ultimate aim' of that work 'to reveal the economic law of motion of modern society' (Marx, 1976, pp. 90, 92).

Unlike many orthodox textbooks, Marx's work does not start with the illustrative example of Robinson Crusoe alone on his island, as a means of illuminating a general and ahistorical 'economic problem'.[2] This procedure would ignore the social culture and institutions which mould the individual. Instead, Marx's economic analysis starts from the characteristic social relations of the capitalist mode of production. This is clear from the key words in the titles of the opening chapters of *Capital*: commodities, exchange, money, capital, and labour power. Marx did not aim to write a text on economics which would be applicable to all economic systems. No such work, in his view, is possible. It is necessary to focus on a particular economic system and the particular relations and laws which governed its operation and evolution.

It is notable that in *Capital* there is only brief discussion of the economic systems, such as feudalism and slavery, that preceded capitalism. Furthermore, contrary to popular myth, there is negligible discussion of socialism or communism. Instead of alleging the virtues of the latter systems, Marx aimed to show that capitalism had inner contradictions, leading to its breakdown and supersession by another mode of production. In this sense Marx was a scientist, rather than a mere propagandist.

Important consequences follow from Marx's initial focus on the concept of an economic system. If the aim of a theoretical economic analysis is to reveal the inner social relations and dynamics of a particular economic system, then certain questions are raised that are not given such priority in another approach. For instance: when and how did this particular economic system arise? How did it come to supersede preceding economic systems? What are its inner motive forces? What causes the system to grow, and what pattern of growth is likely? Do crises occur within this system, and if so why? Through what mechanisms does the system reproduce itself? Will it foster new technological and social developments, or will it be replaced by another system?

Marx tried to give answers to all these questions in *Capital*. Some

of his answers are illuminating, others barely adequate, still others unsatisfactory. Today, we may wish to answer these questions in different ways. The important thing to note, however, is that the concept of an economic system directs us to quite different questions from the orthodox and ahistorical approach. For instance, the accent on economic transformation and crises contrasts with the more static neoclassical preoccupation with economic equilibria and the theory of relative prices.

A brief discussion of the problem of unemployment will illustrate the point. When orthodox economists tackle this question they tend to presume that the market system 'works', and thus unemployment must result from institutions or actions which appear to interfere with this system. Thus much state intervention and labour market rigidities such as trade unions are seen to prevent the market working properly and are the potential 'cause' of unemployment. In contrast, if the market was regarded as part of an economic system which had inner conflicts and potential crises, then the source of unemployment would be located there. Whether or not unemployment could be reduced or ameliorated, it would be regarded as a consequence of systemic failure, not as the result of some alien and removable spanner in the works.

The use and development of the concept of an economic system is one of Marx's most important contributions to economics. Whilst it is neglected by orthodoxy, both institutionalist economists and post-Keynesians have revived a concern to examine the particular social relations and institutions of modern capitalism, thus reiterating a historical dimension to economic analysis.

In fact, the systemic character of Marx's economics makes it a precursor of Keynesian macroeconomic theory. Strikingly, Marx's analysis led him to some ideas and theories which are similar to those developed by Keynes. As Michal Kalecki showed, it is possible to derive the Keynesian principle of effective demand from a development of the reproduction schemes in *Capital*.[3] Indeed, Nobel prize-winner Lawrence Klein (1947) saw Marxian economics as 'probably the origin of macro-economics'. The famous modern growth theorist Evsey Domar (1957, p. 17) wrote: 'Of all the several schools of economics the Marxists have, I think, come closest to developing a substantial theory of economic growth.'

Such statements appear to conflict with the widespread verdict that Marxian economics has failed to yield valid predictions, and that perhaps it should be discarded for that reason. Whilst it is probably

true that Marx would be surprised by the survival and vitality of the capitalist system well over a hundred years after his death, some of the most important of his predictions have actually been fulfilled. From his perception of the dynamism and unprecedented productivity of capitalism he successfully anticipated the growth and territorial expansion of that system. He successfully predicted the worldwide spread of the capitalist employment relationship and the relative decline of self-employed and peasant labour. He successfully prophesied the widespread replacement of household and small-scale craft production by the modern factory system in which scores of workers are employed. He successfully foresaw the growth and supremacy of the large firm and the concentration of much economic power in the hands of a relatively small number of companies. Furthermore, Marx developed a theory of the business cycle[4] at a time when William Stanley Jevons was explaining fluctuations in trade in terms of outbreaks of sunspots. Marxian economics has a success in the field of prediction which, although imperfect, is at least as good as that of comparable orthodox theory. In part this success is due to Marx's efforts to ground economic theory in the concrete conditions of a particular economic system and historical period.

The Theory of Production

If there is a major lacuna in orthodox economics it is the theory of production. With a few recent exceptions (see Green, 1988) this is virtually unexplored in both neoclassical and Keynesian economics. Essentially, neoclassical economics is about costs, prices and exchange, not about the inner processes of production. These are traditionally subsumed within a 'black box' which converts inputs such as 'labour' and 'capital' into an output. Relatively little attention has been paid to what goes on inside the black box. Instead, an *ad hoc* relationship between inputs and outputs is assumed, summed up in the idea of a production function. This tells us nothing about what is actually going on in the process of production, and cannot explain variations in productivity which can occur with identical inputs and technology (Leibenstein, 1976).

Since the early 1970s, some orthodox economists have paid more attention to the internal organisation of the firm (Alchian and Demsetz, 1972; Fama, 1980; Jensen and Meckling, 1976; Williamson, 1975, 1985). However, the approach adopted is to examine different organisational structures in terms of comparative costs, taking the

individuals involved as given. Little attention is paid to the variable motivation of workers and managers, depending on the internal structures and culture of the firm, and of technology itself. Both technology and human goals are, once again, taken as exogenous.

Like most economists, Keynes did not examine the sphere of production. His main concern was with macroeconomic issues, and he retained the basic neoclassical idea of a production function in his work. In general, Keynes did not address the question of how the level of productivity might respond to different circumstances, focusing on variable output and employment to the exclusion of variable productivity. Thus Joan Robinson's (1966, 1971) criticisms of neoclassical theory for concentrating on allocation rather than production apply also to Keynes himself.

Alone amongst the noted economists of the past, Marx paid considerable attention to the processes of manufacture and tried to develop a theory of production in the capitalist economy. In his theoretical writings there is an emphasis on production, accumulation and growth, in contrast to the notions of allocation and equilibrium which pervade neoclassical theory.

In the first few chapters of *Capital* Marx analyses the process of exchange. He argues, in particular, that the general source of profit must be in the sphere of production and not in the market-place. Objectively, the market can only redistribute existing goods and services; it cannot create them anew. All that can happen is that one trader can make a profit at the expense of another's loss. Thus the origin of profit or 'surplus value' must lie elsewhere.

Note that the above proposition is obscured in neoclassical theory by the emphasis on the 'consumer surplus'. This is an attempt to show that the exchange process does create something, i.e. greater subjective utility. What is largely ignored, however, is that this increase in consumer utility is with an existing and unaltered output. Greater overall production of real goods and services must come from outside the sphere of exchange. Yet neoclassical theory creates the illusion that the exchange process is just as creative as production. At best, production is viewed as simply an annex to the market.[5]

In the important Chapter 7 of Volume 1 of *Capital*, Marx (1976, p. 283) commences with a general analysis of production, as it is found in all economic systems throughout human history: 'Labour is . . . a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature.' The elements of the labour process that are found in all human productive

activity throughout history, are 'purposeful activity, that is work itself' and the objects and instruments of that work (p. 284).

In several pages, in Chapter 7 and elsewhere, Marx repeatedly emphasises the intentional and purposeful character of human labour. We do not have to enter into a philosophical discussion about the existence of human consciousness here; it is sufficient to point out a distinction between what may be termed active and passive elements of the labour process. According to Marx, the active element, or efficient cause, is labour; the passive elements are the objects and instruments of work.

This distinction between the active and passive components of production is in contrast to the neoclassical production function in which inputs of 'labour' and 'capital' lead mechanically to the output. In neoclassical theory the conceptual status of these two factors is similar and symmetrical. Note that Marx distinguished them conceptually at the outset, and this distinction is not based on the validity or otherwise of the labour theory of value. It is not about the alleged 'source' of value, or even of prices or anything pertaining to the market economy in particular; it is a matter of a quite general distinction between active and passive elements in production.

Interestingly, Keynes (1936, pp. 213–14) came close to this idea, despite the use of the neoclassical production function in his work. He wrote: 'It is preferable to regard labour, including, of course, the personal services of the entrepreneur and his assistants, as the sole factor of production, operating in a given environment of technique, natural resources, capital equipment and effective demand.'

Although Marx would have not approved of the inclusion of the 'entrepreneur and his assistants' in the same category as the labour of the ordinary worker, there is much in common here between Keynes and Marx. An even more striking expression of the distinction between the active and the passive elements of the labour process is found in the writings of Pope John Paul II (1981, p. 41). He asserts 'the principle of the priority of labour over capital'. This 'directly concerns the process of production: in this process labour is always a primary *efficient* cause, while capital, the whole collection of means of production, remains the mere *instrument* or instrumental cause'. This idea is very close to Marx. In contrast, in neoclassical economics the active elements are associated with consumption and demand, not labour, production and supply.

Marx goes on to consider the social and economic framework in which labour is performed under capitalism. After the purchase of

labour power, i.e. the capacity to work, and the conclusion of a labour contract between capitalist and worker, we enter the sphere of production where labour, i.e. the activity of work itself, is carried out. Whilst the labour process has general features in all forms of economy, under capitalism it is carried out under particular arrangements and with additional objectives. The capitalist production process exhibits two characteristic aspects: 'First, the worker works under the control of the capitalist to whom his labour belongs . . . Secondly, the product is the property of the capitalist and not that of the worker, its immediate producer' (Marx, 1976, pp. 291–2).

As a consequence of this superimposition of capitalist production relations upon the universal labour process,[6] the idea of production itself, according to Marx, has become mystified and distorted. From the point of view of the capitalist, the production process is little more than the consumption or use of purchased commodities, including labour power; it is the symmetrical interaction of 'things which belong to him' (p. 292). The distinction between active labour and its passive instruments is overshadowed. A misconception of production as a mechanical and asocial process then emerges: labour becomes a mere 'factor of production' alongside 'capital'. Clearly, such a misconception has crept into orthodox economics as well.

An important feature of Marx's analysis is his distinction between labour and labour power. When making an employment contract the worker does not agree to carry out a specific pattern of detailed tasks. The capacity to work, i.e. labour power, is put at the disposal of the capitalist, with the agreement to submit to legitimate managerial authority. The actual work performed, the activity of labour, is determined through the social interaction of human wills and routines in the workplace. In part, it depends upon factors which are extraneous to the letter of the formal employment contract. It depends upon contingencies which cannot be predicted in advance.

Thus Marx's distinction between labour and labour power, combined with his treatment of labour as an active agency, focuses on the processes and dynamics of production. It is argued in Chapter 6 below that this focus depends not only upon the idea of an imperfectly specified labour contract, as Marx suggested, but also a notion of indeterminacy in the production process.[7] Although the endless formal presentations of imaginary flows of embodied labour in subsequent Marxian theory are enough to put anyone off the scent, there are elements in his theory of production in *Capital* which point clearly in the right direction.

Furthermore, as outlined in Chapter 7 of the present work, some of Marx's ideas on the analysis of production, combined with some other more recent developments, can begin to explain a conundrum in modern economics: how are vast apparent differences in levels of productivity, even between similar firms and nations, to be explained, even when due compensation is made for differences in capital equipment and technology? The neoclassical, black box, production function approach is clearly in difficulty here. Marx's general idea of focusing on the dynamic consequences of social relations in production is potentially more fruitful. It leads us to identify organisational, institutional and cultural factors which mould production, in contrast to much economic theory which assumes them away.

The Theory of Money

As Keynes and others have emphasised, the theory of money is of vital importance, partly because it closely relates to the theory of the determination of the general level of employment. It has been traditional for economists to assume that the competitive and unrestrained market economy will automatically reach full employment.

Keynes countered this view by identifying its underlying arguments and the assumption of 'Say's Law'. According to this law, 'the aggregate demand price of output as a whole is equal to its aggregate supply price for all volumes of output' and it 'is equivalent to the proposition that there is no obstacle to full employment' (Keynes, 1936, p. 26). If, as Say seems to argue, 'supply creates its own demand' then unemployment, i.e. an excess supply of labour, will in time be stemmed by an increase in the demand for labour, through the workings of the market mechanism. To understand and criticise this argument it is necessary to raise some fundamental questions of monetary theory.

The true originator of 'Say's Law of markets' was James Mill, father of John Stuart Mill (see Dobb, 1940, p. 41n). Consider a barter economy in which, by definition, there is no money. What are meant by the terms 'demand' and 'supply', and how are they measured, in these circumstances? James Mill (1821, p. 190) wrote:

> A commodity which is supplied, is always, at the same time, a commodity which is the instrument of demand. A commodity which is the instrument of demand, is always, at the same time, a

> commodity added to the stock of supply. Every commodity is always at one and the same time matter of demand and matter of supply. Of two men who perform an exchange, the one does not come with only a supply, the other with only a demand; each of them comes with both a demand and a supply. The supply which he brings is the instrument of his demand; and his demand and supply are of course exactly equal to one another.

Thus, in a barter economy, supply and demand as distinct categories lose their meaning. This is because the only way to express a demand for a commodity in a barter economy is to actually supply another commodity in potential exchange for the item that is desired. A demand can be expressed only by means of a unit of supply, and a supply can only be realised by means of a demand.

It should thus be clear that in a barter economy 'the aggregate demand price of output as a whole is equal to its aggregate supply price for all volumes of output'. Also, in a competitive barter economy, unemployment will tend to disappear. This is because the only way that an excess supply of labour can be expressed is through the demand for other commodities. In these circumstances, such a demand would stimulate production of those commodities, thus creating more jobs, until full employment was reached.

It would be misguided, however, to apply Say's Law – and the above argument – to an economy where there is monetary exchange, not barter. Consider, first, the introduction of money into an exchange economy. Assume initially, for expositional purposes, that money is simply a medium of exchange and the barter economy is otherwise unaltered. It is now possible to distinguish supply from demand. Supply is defined as the willingness to exchange a commodity *for money*. Demand is the presentation of *money* as the token of a desire to purchase another commodity.

Nevertheless, if money was simply a medium of exchange as above, then Say's Law could still apply. When one commodity was sold then the money obtained would be rapidly transformed into the expressed demand for other commodities. If this did not occur then money would be more than a medium of exchange; it would be acting as a store of value or wealth. The supposition that money is merely a means of exchange means that every supply is immediately transformed into a demand of equivalent monetary value, and every demand is promptly transformed into a supply. In these circumstances the supply of labour could be perceived as an actual or

potential demand for other commodities, signalling viable expansion and employment to various sectors of the economy. Thus Say's Law could remain valid, and unemployment could still disappear through the action of the exchange mechanism.

However, it would be a mistake to assume that the above argument applied to a real monetary economy. Such was the misconception of Ricardo, and many other economists of his time. He wrote: 'Productions are always bought by productions, or by services; money is only the medium by which the exchange is effected . . . there can never, for any length of time, be a surplus of any commodity' (Ricardo, 1971, p. 292).

Although Malthus did not believe in Say's Law and attempted to disprove it, Marx was the first economist to provide a logical refutation, and this was related to the development of his own monetary theory. First, and against Ricardo in particular, he argued that money was more than simply a means of exchange: 'Money is not only "the medium by which the exchange is effected", but at the same time the medium by which the exchange of product with product is divided into two acts, which are independent of each other and separate in time and space' (Marx, 1969, p. 504).

Note the similarity here with Robert Clower's (1967) distinction between the acts of purchase and sale in his famous essay on the 'microfoundations of monetary theory'. (For a critical discussion see Mirowski (1986, pp. 212–18).) Unknown to Clower, Marx had made the same point a century before. Further, Marx (1969, p. 505) considers the possibility of an excess demand for money:

> At a given moment, the supply of all commodities can be greater than the demand for all commodities, since the demand for the *general commodity*, money, exchange-value, is greater than the demand for all particular commodities, in other words the motive to turn the commodity into money, to realise its exchange-value, prevails over the motive to transform the commodity again into use-value.

This preference for money and liquidity creates a general excess demand for that commodity. Logically, this must involve an excess supply of non-monetary economies, including labour. Thus a monetary economy can suffer crises and unemployment:

> Crisis results from the impossibility to sell. The difficulty of transforming the *commodity* . . . into its opposite, money, . . . lies in

> the fact that . . . the person who has effected the sale, who therefore has commodities in the form of money, is not compelled to buy again at once . . . In barter this contradiction does not exist: no one can be a seller without being a buyer or a buyer without being a seller . . . The difficulty of converting the commodity into money, of selling it, only arises from the fact that the commodity must be turned into money but the money need not be immediately turned into commodity, and therefore *sale* and *purchase* can be separated. We have said that this *form* contains the *possibility of crisis* . . . Sale and purchase may fall apart. They thus represent potential *crises* and their coincidence always remains a critical factor for the commodity. (p. 509)[8]

As Peter Kenway (1980) and others have pointed out, Marx's arguments against Mill, Say and Ricardo are an important anticipation of key elements in Keynes's *General Theory*. In some respects Marx anticipated Keynes by about 70 years. Like Keynes, he understood that the fatal weakness of Say's Law derives from its misrepresentation of money, confidence and expectations (Lavoie, 1983). Marx's development of monetary theory constitutes a decisive break from the preceding classical approach, and it is one reason why Marx should not be regarded simply as a 'post-Ricardian' classical economist. Marx, like Keynes, understood the vulnerability of the capitalist economy to crisis. Marx, like Keynes, saw the connection between monetary theory and the theory of employment. And Marx developed similar arguments to Keynes to show that the system would not automatically reach full employment in the manner suggested by Say, Ricardo and other economists in the classical tradition. Marx's refutation of Say's Law is one of the great achievements in the history of economic thought.

Information and Knowledge

Clearly, despite these insights, Marx did not go so far as Keynes and other twentieth-century economists in recognising the importance of information and knowledge in the economic system – a fault shared by classical and neoclassical economists alike. Nevertheless, it became a crucial mistake for Marx because of his support for a system of central planning and rational, centralised economic administration.

In retrospect we may trace this error in part to his conception of value and other mechanistic trappings which he inherited from classi-

cal theory. It is a serious deficiency, but we should not entirely dismiss the economics of Marx for this reason. If we were to so do, we would have to dismiss the bulk of nineteenth- and twentieth-century economic theorists as well, including Ricardo, Walras and many others of the greats.

To illustrate this, consider the planning debate initiated by von Mises in the inter-war period. Ironically, the socialist reply, by Oskar Lange, Fred Taylor and others in the 1930s, was made with the use of neoclassical theoretical tools. Ironically, once again, as Fabrizio Coricelli and Giovanni Dosi (1988) have shown, modern neoclassical theory more properly represents a mythical centralised system than the true decentralisation of the market, despite the common rhetoric to the contrary. Here, neoclassical theory is also deficient.

HISTORY, SOCIOLOGY AND POLITICS

In this section a brief – and certainly over-ambitious – attempt is made to compare the dimensions of the bequest of Marx to history, sociology and politics to those of his contribution to economic theory. Clearly, Marx's contributions to other social sciences have been of great significance; he has indeed transformed our view of history, society and the political system. As Joan Robinson (1965, p. 149) put it:

> Marx's teachings were only one element in a wide stream of thought – the growing self-consciousness of modern man as a social being, and of man in society as a potential object of scientific investigation – which would in any case have borne many ideas like his in its course. At the same time, Marx's contribution to that stream was so important and has had so great an influence on the habits of thought of his opponents as well as his supporters, that it is as difficult nowadays to find a really pure non-Marxist amongst historians and sociologists as it is to find a flat-earthist amongst geographers.

History

Marx's contribution to history is perhaps the most significant and widely recognised. Its most important general feature is the post-Hegelian view of history as a succession of different economic sys-

tems, each with its own characteristics, prevailing ideology and social relations. Marx, unlike many historians before him, saw the prime motor of history not merely as ideas and ideology, but as developments in the economy and class structure.

However, two points have to be made in assessing Marx's contribution to our understanding of history. First, the keystone of his contribution is his idea of an economic system to which due credit has already been given in this essay. Whilst this fundamental idea is important, beyond it Marx's insights into historiography are less enduring. Thus, for example, Marx's use of the metaphor of 'economic base' and the 'legal superstructure' presents insuperable problems for the modern, sophisticated historian, even if he or she may have Marxist leanings. Thus Perry Anderson (1974a) and Edward Thompson (1978) are both keen to push it aside.

Second, Marx and Engels repeatedly assumed, in the *Communist Manifesto* and elsewhere, that there was a direct, one-to-one relationship between the configuration of class power in society and the prevailing type of economic system. Thus it is presumed that, for example, a slave society is marked both by the dominance of slave labour as a socioeconomic relation and the existence of the slave-owners as a 'ruling class'; feudalism is characterised by serfdom as a form of work organisation and land tenure, and by a 'ruling class' consisting of the nobility; capitalism features private ownership and markets, and is apparently surmounted by the employers as a 'ruling class'; and finally, under socialism there is common ownership, and it is supposed that the working class is therefore in a position of ascendancy as the 'ruling class'.

However, there are many problems with this historical schema. Consider, for example, the actual transition to capitalism as it occurred in several important countries. In Britain the Industrial Revolution got under way in the eighteenth century, yet the state and politics were dominated not by the capitalists and industrialists but by the landowners and the old aristocracy. The latter group remained politically and culturally dominant through most of the nineteenth century as well. It was not until the twentieth century that the business community rivalled the aristocracy in political life in Britain. Yet, according to Marxian analysis, the capitalists became a 'ruling class' when Britain became a capitalist society. In terms of the predominance of markets, wage labour and private property, this occurred as early as the seventeenth century, and well before the Industrial Revolution. However, the idea that a capitalist class came

to power during the English Civil War of the 1640s or the Glorious Revolution of 1688 is untenable. These important upheavals were conflicts between sections of the landed aristocracy. They were not rebellions of capitalists against the old feudal nobility, as the Marxist schema would imply. Capitalism had indeed become dominant as an economic system in Britain by the eighteenth century, but it difficult to regard the capitalists of the time as directly or indirectly a 'ruling class', if by ruling we mean having a control or predominant influence over government or state power. Marx's historical schema does not fit the facts.

An even more graphic illustration comes from Japan. In 1868 the Meiji dynasty was restored, abolishing the power of the Shogunate. Consequently, feudalism was formally abolished and the legal and institutional foundations of capitalism were established. However, contrary to the Marxist schema, the Meiji restoration was a revolution from above carried out by the old aristocracy. On the whole, the peasants, merchants and business community played a relatively subdued role. The power of the aristocracy was not overturned; on the contrary it was consolidated. Thus capitalism became dominant in Japan with the creation of a new 'ruling class', initially without the political ascendancy of the capitalists, and without the removal of the feudal aristocracy.

Additional problems arise with the Marxian view of history when post-capitalist societies are considered. How is a socialist system to be identified? Is it by (a) the organisation of the working class as a 'ruling class', or (b) the existence of widespread common ownership of the means of production, or (c) the existence of central planning? Marx implied that all three of these features are inseparable. In the Stalinist systems that have dominated China, the Soviet Union and Eastern Europe there has been clear evidence of (b) and (c), but without effective democracy and independent trade unions the working class has had much less political and social power than it has in the capitalist West. Stalinism has meant the negation of condition (a).

The erroneous Marxist assumption that (a), (b) and (c) are inseparable has led to intellectual anguish and endless disputes amongst Marxists. If, for example, it is proposed that the Soviet Union under Stalin was 'socialist', or even, as suggested by Leon Trotsky, a 'degenerated workers' state', then in both cases orthodox Marxists are forced to admit that there was a 'dictatorship of the proletariat', i.e. the workers formed a 'ruling class'. Yet in fact the workers were ground down by one of the most oppressive regimes in history.

The events in Eastern Europe in 1989 add further irony to this tale. With the mass support of the working class, Solidarity came to power in Poland and proceeded to institute democratic reforms and to transform the economy to one of a mixed but predominantly capitalist type. A substantial increase in working-class influence and power has thus coincided with a reversion to capitalism. A similar process is under way elsewhere in the Eastern bloc. Such events occurred in countries which were supposed to be originally under the 'dictatorship of the proletariat'. The supposedly 'ruling' proletariat then proceeded to dismantle the planned economy and to build a capitalist system.

Of course, the orthodox Marxists can explain this all away. They can assume that the Eastern bloc under Stalinism was not a 'dictatorship of the proletariat' in the first place but 'state capitalist', and that instead of a fundamental transformation the system has simply changed from one type of capitalism to another. Or they may say that the working class has been duped by reactionary, clerical or nationalist leaders, and these reformers do not 'really' represent the workers at all. Marxism, like any other system of analysis, has a protective belt. But for the unblinkered, there is a supreme irony in the working class acting in reverse of its supposed Marxist destiny.

In short, the Marxist historical schema in which there is a one-to-one correspondence between the existence of a particular type of economic system and an associated configuration of class power has to be abandoned. We can retain the important idea of history as a series of dominant economic systems, but this does not imply an associated pattern of class struggle and supremacy. Thus the emergence of a particular type of economic system is not necessarily connected with the political triumph of members of a particular social class.

The account of history in the *Communist Manifesto* has a definite appeal, based on an intellectually pleasing correspondence between class power and economic system, in which each class has a historical destiny, eventually culminating in the proletarian and socialist revolution. But history is much more messy and complicated than such a pattern implies.

Sociology

The above remarks raise questions concerning Marx's contribution to modern sociology. The account in the *Communist Manifesto* treats

social classes as if they were the prime elements of both historical and sociological analysis. Classes emerge, grow, struggle and contest power. On reflection, however, classes can only be defined by reference to underlying social and economic relations. For example, the capitalist class is defined by its private ownership of the means of production, and its employment of labour power in a market system. In other words, the existence of a capitalist class *presupposes* a set of economic, social and legal relations.

Consequently, whatever their overall significance, classes as such are not primary objects of analysis. In short, classes are not things but definitionally the expression of socioeconomic processes and relations, whilst from a given configuration of the latter we cannot presume a given structure of class or political power.

It is perhaps significant that Marx never elaborated his views on the concept of social class. The fifty-second and final chapter of the third volume of *Capital* is entitled 'Classes'. Significantly, the chapter is unfinished. In its third paragraph Marx asks the question: 'what makes a class?'. But he does not provide an answer. A few lines later the manuscript breaks off. *Capital* ends without an analysis of the essential notion of social class.

Politics

Since the Russian Revolution of 1917, Marx's political theories have been associated with movements that have shaken the world. Yet it is in the area of political theory that Marx's contribution to social science is most weak. This is for five main reasons. First, Marx never elaborated a comprehensive theory of politics and state power. He left us with mere jottings and suggestions as to how political and state power were constituted and transformed. There is no single theory of the state in Marx's work. As the eminent Marxist theorist Anderson (1976, p. 114) admits: 'Marx never produced any coherent or comparative account of the political structures of bourgeois class power at all.'

Second, again to use Anderson's (1976, p. 115) words, Marx left a 'central theoretical silence on the character of nations and nationalism'. He thus underestimated the weight and significance of nationalism in Europe and elsewhere. In fact, the major revolutions of his time, and the subsequent Russian, Chinese, Cuban, Vietnamese and many other revolutions which used his name, were primarily nationalist in

character, and only secondly socialist. Furthermore, Marx seemed to be over-optimistic about the possibility of the working class breaking free of its nationalist integument and ideology, and of recognising its own supposed worldwide interests 'as a class'.

The wars of the nineteenth and twentieth centuries stand as testimony against this romantic delusion. As Tom Nairn (1975, p. 20) has argued with eloquence, Marxists have believed that: 'Class struggle was the motor of historical advance, not nationality. Hence it was literally inconceivable that the former should be eclipsed by the latter. Exceptions to the rule demanded explanations – conspiracy theories about rulers, and "rotten minority" speculations about the ruled. Finally, these exceptions blotted out the sun in August 1914.'

Third, there is a failure in Marx's writings to elaborate either a clear feasible objective or a realistic political strategy for the socialist movement. Instead, the emphasis is on the 'inevitability' of socialism and the evasive assertion that 'the emancipation of the working class must be conquered by the working classes themselves', leaving it to others to define what such emancipation means in concrete terms, and to determine how it should be attained.

Marx had rather a deterministic view of capitalist development in which the system progresses relentlessly towards a final crisis, thus creating at some stage the circumstances for proletarian revolution. Consequently, Marxists have tended to reject Keynesianism and other interventionist economic strategies, with the concern that they may prevent the emergence of the awaited revolutionary situation. Often, Marxist politics consists mainly in organising the party machine in preparation for the crash, rather than collaboration with the system as it stands. Hope is pinned on the idea that the economic crisis will create fertile conditions for the radicalisation of the working class. However, the experiences of mass unemployment in both the 1930s and the 1980s suggest quite different outcomes: Nazism in one case and in the other the triumph of the New Right.

Fourth, Marx gave us no detailed picture of the nature and structure of a future socialist society. His tendency was to eschew such discussions as 'utopian'. Consequently, he gave little guidance as to how planning and administration could be carried out in a post-capitalist society, as Lenin and Mao quickly became aware after coming to power.[9] As noted above, Marx's view that administrative affairs could be ordered easily and on a fair and rational basis after the seizure of power has connections with his underestimation of problems of information and knowledge in his economic theory. This

underestimation was universal amongst nineteenth-century economists, yet a number of political theorists, from Edmund Burke onwards, had cast doubts on the possibility of a fully rational administrative order.

Finally, Marxism faces a central political problem. The socialist transformation has eluded the advanced capitalist countries, where Marx thought it would occur first of all. In none of these countries has there been a successful proletarian revolution, and the notion of widespread planning and common ownership, let alone revolution, has rarely been popular in the capitalist West. This is the central, crucial failure of Marxism, putting its politics in a deep crisis of its own. All the political movements that take their cue from Marx are thus in a deep impasse, with no sign or prospect of recovery. As a political force, Marxism has lost its way.

Clearly, however, in many ways Marx's political ideas have been very influential. They have seeped almost imperceptibly into our culture and our way of thinking about politics, just as the ideas of Copernicus, Darwin and Freud have affected us elsewhere. This influence has been important on the non-Marxist parties of the Left, from democratic socialism to social democracy, even if there is no adherence to several of Marx's key ideas. But influence is not the same thing as success. The goal of Marxism was to change the world. This indeed has changed, but it has surpassed Marxism in the process.

CONCLUSION

We thus reach an unorthodox assessment of Marx's contribution to social science. His enduring merits are not in the analysis of history, nor in sociology, nor in political science. They lie, contrary to the view of most economists, in economic theory. Marx developed the concept of an economic system, and gave us the clearest single picture of how the capitalist economy actually works. In this he stands head and shoulders above his contemporaries and most other economists until the arrival of Keynes.

To this day, Marx alone gives us a developed theory of the production process – a topic which orthodox economics continues to belittle at its cost. With the uncritical enthusiasm of some economists for market-based solutions to all economic problems, Marx's refutation of Say's Law is highly relevant. These achievements alone

should rank Marx as among the greatest of economists. The tragedy of our science is that the ideological blinkers (even of those who claim to be 'positive economists') still prevent the award of due credit and recognition.

Marx's economics is not fatally flawed by its incorrect predictions. On the contrary, he had a number of unique insights, predicting for instance the growth of capitalist monopolies and the spread of the capitalist system throughout the world. In fact his predictive record, whilst imperfect, was arguably as good as that of neoclassical theory.

This does not mean that Marxian economics is without serious flaws. The labour theory of value is untenable. Marx's understanding of the role of expectations in the economy is inferior to that of Keynes. Marx's treatment of problems of information and knowledge is inferior, and the Austrian School have much greater insight in this particular area.

The most serious defects in Marx's whole theoretical system relate primarily to his belief that economies could be administered and planned on a complete and comprehensive scale. According to this naive and rationalistic outlook, all the information necessary for such a task can in principle be gathered together and processed 'as if in a single head'. Marx's economics largely reflects the mechanistic outlook of nineteenth-century physical and social science, without due regard to problems of information. In these important respects the economics of Keynes is in advance of that of Marx.

These theoretical flaws offer no scope for complacency on behalf of the orthodox. Whilst the labour theory of value must be discarded, the prevailing neoclassical theory based on marginal utility offers no substantial advance. In fact the neoclassical theory and the labour theory share some common defects, which make them both ill-suited to the analysis of a capitalist and market economy.

To a large degree, modern neoclassical economics still neglects the same issues, for instance excluding the concept of uncertainty in Keynes's sense – involving no calculable probabilities – and reproduces the same, now much more outdated, mechanistic outlook. Neoclassical theory likewise conceives of no impediment to the gathering of all relevant knowledge as if in a single head.

Just as Marx did not understand all the roles and functions of capitalist markets, mistakenly advancing the possibility of their complete abolition, neoclassical theory is limited for similar reasons, failing to capture their informational and dynamic functions.

Although neoclassical theory is nowadays most often associated

with pro-market policies, this stems largely from ideological fashion and not from the inner substance of the theory. In fact, neoclassical theory does not describe a truly decentralised economic system with dispersed information; it can just as well be put forward in defence of centralised planning on a total scale.

Whilst Marxian economics has many limitations, these should not allow some of the important insights to remain ignored. A sign of maturity in any scientist is the ability to push prejudice and popular misconception aside, in an effort to grasp the argument and its morsels of truth. As long as Marx is regarded at best as an irrelevance and at worst as a demon then there is no hope of progress in economic science. It is necessary that Marx should be discussed and understood, before, hopefully, he is transcended.

1. See also Bradley and Howard (1982), Gintis and Bowles (1981), Hodgson (1982), Steedman *et al.*(1981) and Wolff (1981, 1984).
2. As well as Marx's frequent caustic remarks against the 'Robinsonades', it is worth reading Stephen Hymer's satirical examination of the actual text of the famous novel. In the economics textbooks the castaway 'is pictured as a rugged individual – diligent, intelligent, and above all frugal – who masters nature through reason. But the actual story of Robinson Crusoe, as told by Defoe, is also one of conquest, slavery, robbery, murder and force' (Hymer, 1980, p. 29).
3. For discussions of Kalecki's theories see Feiwel (1975), Kriesler (1987), Reynolds (1988), Sawyer (1985) and Sebastiani (1989).
4. An elegant formal version of Marx's business cycle theory has been developed by Goodwin (1972).
5. See Chapter 6 below, and Chapter 4 for a further elaboration of Marx's views on production.
6. The term almost universally employed by Marxists to describe the nature, organisation and processes of work under capitalism is the 'labour process'. As I note briefly in Chapter 4 below, this is a misnomer. The term 'labour process', according to Marx's (1976, pp. 283–90) clear account, refers to production in general, in all possible modes of production, and thus cannot refer to the particular historical phenomena of capitalists, wages, Taylorism, trade unions, monopolies, or whatever. Although there is much of value in the so-called labour process literature, a better title would be 'the literature on the capitalist production process'. Not only is this more descriptive but it conforms to the usage of Marx in *Capital*. Unfortunately, probably too much has now been written to change this fundamental but misleading term.
7. To illustrate this, note the arguments of Giancarlo De Vivo (1982) and Ian Steedman (1982) to the effect that the distinction between labour and labour power does not have much analytical utility. In both cases this conclusion overlooks the possibilities of imperfect contracts and performance indeterminacy, and if these are inserted then the arguments of De

Vivo and Steedman are much weakened. However, Marx was saddled with nineteenth-century, mechanistic conceptions of science and did not develop his theory of production in this way.

8. Note that Marx's exposition includes some redundant labour-theoretic terminology and this has been removed here to enhance the clarity of his central argument. Compare with the similar passage in *Capital* (Marx, 1976, pp. 208–9).
9. This point is made forcefully by Nove (1983). See also Moore (1980) and Hodgson (1984).

2 The Theory of the Falling Rate of Profit*

> 'Others apart sat on a hill retired,
> In thoughts more elevate, and reasoned high
> Of providence, foreknowledge, will, and fate,
> Fixed fate, free will, foreknowledge absolute,
> And found no end, in wandering mazes lost.'
> (Milton, *Paradise Lost*)

Marx uncovered many causes of capitalist economic crisis. It has been traditional, however, to place his theory of the tendency of the rate of profit to fall in the centre of the Marxian analysis and critique of capitalism. Marx's main exposition appears in the first and third volumes of *Capital*.[1] The theory attempts to show that there is an inbuilt tendency for the capitalist system to stagnate or fall into crisis, as a result of the falling rate of profit. But Marx did not expect the rate of profit to decline in a persistent and uninterrupted manner; certain 'counteracting influences' would periodically halt the downward slide. Despite this qualification, the theory has been regarded, by most Marxists, as the backbone of revolutionary Marxism. According to this view its refutation or removal would lead to reformism in theory and practice. In this regrettable context we shall attempt to refute the theory of the falling rate of profit. In addition we shall argue that revolutionary Marxism is not damaged by the surgical removal of the theory from the theoretical system. On the contrary, it becomes possible to extricate the fatalistic and mechanistic interpretations of Marxism that have gained prevalence amongst both its supporters and its hostile critics.

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THE THEORY

The General Rate of Profit

The existence of separate capitalist firms creates a tendency for the rate of profit to be equalised between firms. The more competitive the situation the more pronounced is this tendency. Capitalist competition, therefore, leads to the formation of a general rate of profit in the economy. This tendency is even present under monopoly capitalism, as capitalism is inconceivable without some degree of competition and separation between firms.[2] With increasing competition and interdependence we have no reason to suppose that this tendency is dead today.

Marx's analysis of the falling rate of profit proceeds from this essential feature of capitalist production. At a given level of abstraction it is justified to ignore the various frictions and barriers that prevent the rapid formation of an equilibrium general rate of profit. Marx starts from the rate of profit in value terms in each firm, i.e. surplus value divided by the value of the total capital invested. He then treats the whole economy as a 'single capital'[3] and equates the general with the *average* rate of profit. Hence, in Marx's view, the general rate of profit is the total surplus value in the economy divided by the total value of capital invested.

Two points are evident here. First, no reason is given to identify the general with the average rate of profit. Second, Marx's general rate of profit is a ratio between value amounts, i.e. amounts of socially necessary labour time. It is not a ratio between prices. Some Marxists and non-Marxists, such as Ladislaus von Bortkiewicz, have criticised this formulation of the general rate of profit on the grounds that there is no reason to assume that the rate of profit in *value* terms will tend to be equalised. The rate of return on capital advanced is calculated in terms of *prices*, as capitalists are not aware of, or disposed towards, any embodied labour calculation. The general rate of profit is the ratio between profit and the price of capital invested, as this is the actual rate of profit that is equalised between firms in the real world. This point of contention relates to the well-known transformation problem. Several articles exist on this topic and it is not appropriate to discuss it here.[4]

Despite this connection between the transformation problem and the question of the falling rate of profit it is possible to deal with the latter without invoking a rejection of Marx's solution. Our critique of

the falling rate of profit theory in the second section is directed at Marx's formula for the general rate of profit, as in certain circumstances this coincides with the correct formula adduced by Bortkiewicz and others – when prices are proportional to values, for instance. Hence we can avoid the intricacies of the transformation problem, at the cost of a lack of completeness in our argument.

The following mathematical symbols shall be adopted:

y = net output in value terms

This is the magnitude of the socially necessary living labour time expended in the economy in one year. It is part of the value of the output.

v = variable capital

The working class receives a number of wage goods in a year. The amount of socially necessary labour time embodied in these goods is the variable capital.

s = surplus value

The workers are compelled to work for the capitalists and produce an amount of extra or surplus value over and above the value of the wage goods they receive in return. In other words s is expropriated by the capitalist class. Obviously, by definition: $v + s = y$.

c = constant capital flow

This is the value of the raw materials used up, plus the depreciation of the means of production, in value terms. Like v and s, c is a flow variable.

k = constant capital stock (i.e. fixed capital)

Normally certain means of production will remain at the end of a production or turnover period, and these will have a value k. This value is not part of the value of the social product that is exchanged on the market, unless the capitalists sell their machinery. The value of the goods that are produced in one year is $c + v + s$.

t = time period of production (i.e. turnover period)

The above variable is not familiar in Marxian literature. It refers to the length of the period of time that is required to produce, transport and sell a particular good. In order to simplify our presentation we shall assume that t is the same for all goods, and that wages are paid at the start of the time period of production. These may seem to be extreme assumptions, but our arguments are not invalidated if t is different for all commodities. On the contrary, our position is reinforced in the heterogeneous case.

The capitalist spends his investment funds on three basic types of commodity: first labour power, second raw materials and expenditure to cover depreciation, and third fixed capital goods. Their respective values are v, c and k. Now it is important to note that c and v are *flows*, i.e. they refer to an amount of labour time *per year*, whereas k is a *stock* item, i.e. it is just a congealed aggregate of labour time, it is not a rate or flow. The amount k corresponds to the fixed capital that is required to set up production. But the whole of c and v need not be advanced at first, if t is less than unity. It is necessary to set up production for only one time period of production t. At the end of this period the extra funds that are realised can be thrown into circulation.

If we assume that the rate of growth in the economy is small then the amount of c and v advanced will be $t(c + v)$. Otherwise this will be the average amount of c and v advanced in a year. Hence the total capital invested has at least an approximate value of

$$k + t(c + v)$$

This appears reasonable if the units of the amounts k, c and v are inspected. As c and v are amounts of labour time *per year* they have to be multiplied by an amount of time, in this case t years, to make their addition to the stock variable k sensible. Hence the general rate of profit, according to Marx's definition, is given by the equation:

$$p = \frac{s}{k + t\,(c + v)} \tag{2.1}$$

where p is the rate of profit in value terms. This expression is so unfamiliar that its basis in Marx's writings may be contested. In

particular it has been traditional for Marxists to ignore k in their formulation. However, apart from the occasional assumption that k is zero, Marx repeatedly asserts that the rate of profit must include k.[5] In the real world the capitalists calculate the rate of profit in terms of *total* capital invested. It is quite inadmissible for Marxists to continue to ignore constant capital stock. The introduction of t is novel. A close inspection of *Capital*, however, will indicate that the above formula corresponds to the one implied by Marx and Engels.[6] The formula will appear more familiar if t is assumed to be unity:

$$p = \frac{s}{k + c + v} \tag{2.2}$$

Marx's Formulation of the Theory

Marx's exposition of the theory of the falling rate of profit in the third volume of *Capital* commences with a numerical example.[7] He assumes that

$$s = v = 100$$

Also Marx implicitly assumes that t is unity. He examines the effect of a gradual increase in that total amount of constant capital $(k + c)$. Using equation (2.2) we get the following table:

$k + c$	$k + c + v$	p(percent)
50	150	$66\frac{2}{3}$
100	200	50
200	300	$33\frac{1}{3}$
300	400	25
400	500	20

These numerical examples can be generalised in the following manner. Dividing top and bottom of the fraction in equation (2.2) by v we get

$$p = \frac{\frac{s}{v}}{\frac{k + c}{v} + 1}$$

Marx calls the fraction s/v the rate of surplus value. Now if the latter is constant and the fraction

$$\frac{k + c}{v}$$

increases, as in the above example, then the rate of profit will fall. Or, in Marx's words: 'this gradual growth in the constant capital, in relation to the variable, must necessarily result in a *gradual fall in the general rate of profit*, given that the rate of surplus value, or the level of exploitation of labour by capital, remains the same'.[8]

Marx's justification for assuming that the fraction $(k + c)/v$ increases is supposedly based on a number of related arguments that appear in various parts of *Capital*. In one place he sees the increase as a result of the decrease of v, due to productivity increases.[9] Elsewhere he sees the increase as resulting from the accumulation of capital.[10] We shall discuss these arguments at a later stage.

Critics often attack the assumption of a constant rate of surplus value (s/v).[11] It is argued that rises in productivity, causing a fall in v, will also lead to a rise in the rate of surplus value. This may compensate for any rise in $(k + c)/v$ and the rate of profit may not fall. It has been pointed out that Marx was aware of this difficulty and he attempted to deal with it.[12] Marx suggested that surplus value per worker per day could rise, but up to a certain limit only.[13] This limit is provided by the number of hours in a day. But that does not define a limit for s/v. Increases in productivity may still bring down v, and there is no theoretical upper limit for the rate of surplus value. As it turns out, Marx had a valid but somewhat latent point, which must be extracted by a reformulation of the theory.

To complete the exposition of the theory of the falling rate of profit it remains to show that the theory can be reduced to the hypothesis of a tendency for the organic composition of capital to rise. Marx failed to give a formal demonstration of this point. This partly stems from a slight clumsiness in the definition of the basic mathematical ratios in *Capital*. A simple demonstration can be derived from a convenient redefinition of the basic Marxian ratios. It is possible to abstract from changes in the degree of exploitation by expressing each ratio in terms of the net output (y). This does not mean that any variable is assumed constant, or that any variable is regarded as an exclusive function of net output. It is simply a method of focusing attention on the determinants of the rate of profit that do not directly relate to changes in the degree of exploitation, using Marx's formula for the rate of profit. Evidently Marx attempted to abstract from the degree

of exploitation in his exposition of the theory in *Capital.*

By means of simple algebra it is easy to show that the rate of profit cannot exceed an upper bound. This upper bound, or maximum rate of profit, is equal to the value of net output (y) divided by the value of the constant capital stock (k). Hence, *whatever the degree of exploitation*, the rate of profit cannot exceed the magnitude of y/k. The fraction k/y is dubbed the organic composition of capital, as it is argued that it is quite close to Marx's category, and it best displays the essential meaning. So if q is the organic composition of capital then

$$\text{maximum rate of profit} = \frac{1}{q} = \frac{y}{k}$$

The theory of the falling rate of profit is thus reduced to the question of the rise or fall in the organic composition of capital. For if q rises then the maximum rate of profit will fall with it, and the *actual* rate of profit will fall if all other variables, including the degree of exploitation, remain constant.

A CRITIQUE

Technical Change and the Organic Composition of Capital

Our attention must now shift to the validity of the supposition that the organic composition of capital will rise. Paul Sweezy has made the following point:

> In *physical* terms it is certainly true that the amount of machinery and materials per worker has tended to grow at a very rapid rate for at least a century and a half. But the organic composition of capital is a *value* expression; and because of steadily rising labour productivity, the growth in the volume of machinery and materials per worker must not be regarded as an index of the change in the organic composition of capital. Actually the general impression of the rapidity of the growth of the organic composition of capital seems to be considerably exaggerated. (Sweezy, 1942, p. 103).

Elsewhere, Sweezy (1973, pp. 28–9) argues that Marx's insistence on an increasing organic composition of capital stems from the fact that Marx was witnessing the transition from hand labour to mechan-

ised production. Today we have an already mechanised economy where the problem for the capitalist is to minimise his expenditure *both* on means of production and labour power, whilst increasing his productivity. We have no reason to suppose that the fall in the organic composition of capital has continued after the transition from extensive to intensive mechanisation.

Mark Blaug (1960) and others have focused attention on the possibility of 'capital saving' innovations, and their role in lowering, or preventing a rapid rise, in the organic composition of capital. Whilst a Marxist may object to the use of the word 'capital' in this context, such innovations deserve examination. They could fall into two overlapping classes: those that lead to a reduction in the organic composition of capital by reducing the value of constant capital stock relative to net output, and those that lead to a similar reduction in the rate of constant capital flow. Examples of the first class include the more efficient use of machinery and buildings. In the second class is included the more efficient use of raw materials. The existence of these innovations undermines any notion of the tendency of the organic composition of capital to rise.

However, David Yaffe (1972) has argued that these innovations cannot be given a great deal of significance; they must be shown to *necessarily* recur. In reply we must ask why innovations causing an *increase* in the organic composition of capital *necessarily* recur? If the physical and value aspects of accumulation are separated then there is no reason to suppose that technical change will have any particular bias in the long run. In the chapter on 'Counteracting Influences' in the third volume of *Capital*, Marx devoted a section to the 'cheapening of the elements of constant capital'. He wrote: 'In certain cases, the mass of the constant capital elements may increase, while their total value remains the same or even falls' (Marx, 1981, p. 343).

Just as Marx gives an inadequate explanation of a *tendency* for the organic composition to rise, he merely asserts that the reduction in the value of constant capital is an *isolated* case. Perhaps there is no less justification to assert that the *reduction* in the value of elements of constant capital is the underlying *tendency*, and the *increase* in the organic composition of capital is a counteracting influence or isolated case?

We are drawn to an agnostic conclusion on the trend of the organic composition of capital. But it does little justice to Marx, or the Marxian tradition, to leave matters there. Some commentators have detected certain theories of technical change in Marx. Such theories

profess to demonstrate that the organic composition of capital will rise as a result of the process of capital accumulation. It must be admitted that these theories are quite convincing at first sight: so convincing that similar arguments can be found in neoclassical economic theory.

Technical Change and the Concept of Capital

A recent and forceful presentation of Marx's theory of technical change has been offered by Yaffe:

> Marx regarded it as an incontrovertible fact, as a self evident or a tautological proposition, that the organic composition of capital should rise . . . The compulsion to employ machinery, under capitalist production and to increase by these means the productivity of labour is expressed in reality by competition and the consequent need to reduce the cost of production. But this is not its explanation which must be deduced, in terms of Marx's method, from the concept of capital itself. The concept of capital is a contradictory one. One the one side we have capital as 'value in process' as value attempting to expand itself without limit and on the other side we have the working population, the limited basis of this expansion. Capital, therefore, must, on the one hand, try and make itself as independent as possible of that basis in its process of self expansion; it attempts to reduce the necessary labour time to a minimum by increasing the productivity of labour. On the other hand it needs to increase the basis of its expansion, that is the labour power available for exploitation; that means to increase simultaneously the working population . . . The dialectical solution to this contradiction . . . is to increase the scale of production through the replacing of living labour by objectified (dead) labour in the form of machinery . . . What we have tried to show from an examination of the concept of capital is the necessity of increasing the social division of labour, through the application of machinery and therefore, of replacing on an increasing scale living labour by objectified (dead) labour. It follows from this that both the *technical composition of capital* and the *organic composition of capital* must increase in the process of capitalist production although the latter will not increase as quickly as the former due to increases in the productivity of labour. (Yaffe, 1972, pp. 17–19)

The Problem of Productivity Increases

Yaffe mentions increases in the productivity of labour only. But in reality such increases are more problematic. For instance, as was mentioned above, an existing machine can be utilised more efficiently with the same amount of labour, which means that the amount of machinery per unit of output is *reduced* as a result. Technical change often takes the form of replacing one machine by another *different* one. In which case we cannot talk about an increase or decrease in the *mass* of machinery, in an economic sense, as we are talking about *heterogeneous* objects. And it is quite possible that *less* embodied labour in the form of machinery will be required per unit of output.

The increase of productivity is certainly a hallmark of capitalism. As a result there will be a tendency to reduce the amount of living labour required for every item of output. But we have no reason to suppose that the labour embodied in machinery per unit of output will decrease at a *slower* rate. The notion that productivity increases are associated with increases in the organic composition of capital is without foundation.

The Nature of Capital Accumulation

The second erroneous notion that appears in the quotation from Yaffe is that the accumulation of capital is, for practical purposes, synonomous with the accumulation of dead labour, i.e. constant capital. An accomplished Marxist like Yaffe is, of course, aware that capital is not just a thing but a social relation. Nevertheless, the habit of confusing social relations with things is a fundamental, albeit disguised, error found in the canons of over-zealous interpreters of Marx. Exactly the same error is found in neoclassical economics: the dominant school of bourgeois economics.

Amit Bhaduri (1969) has indicated the significance of the distinction between the concepts of capital as a thing and capital as a social relation in an important essay produced during the capital theory controversy. He wrote:

> It must be granted that Marx himself was unable to indicate the *logical* implications of his understanding of the role of 'capital' for the formulation of a theory of distribution between profits and wages in a capitalist economy. In the view of the present writer this is precisely what the recent controversies on capital theory do: they

> lay bare the *logical* weakness of treating capital merely as an instrument of production in developing a theory of distribution in a capitalist economy. (p. 535)

These remarks apply, with equal force, to the subject of capital accumulation. After the capital theory controversy the neoclassical model of economic growth, which is discussed below, now lies in ruins.

The accumulation of capital, therefore, cannot be simply reduced to the accumulation of homogeneous embodied labour. This error has continually recurred in the Marxian tradition. It is not uncommon for Marxists to treat reproduction schemes as if they reflect money prices, or even the physical scale of production, whereas these schemes are in value terms only. In the historic debates that were generated by the publication of Rosa Luxemburg's *The Accumulation of Capital*, Otto Bauer (1913) ignored the problems uncovered by Luxemburg by concentrating exclusively on the accumulation of embodied labour values. Luxemburg on the other hand compounded this confusion by mistaking the accumulation of capital for the accumulation of money, and an increasing social product measured in *price* terms. (See Luxemburg, 1972; 1963, chs 4–9.)

In fact accumulation involves all these aspects, but is not reducible to any one of them; capital accumulation is not just the accumulation of things, or the augmentation of single quantities. Fundamentally, the accumulation of capital is the *reproduction of capitalist social relations on an extended scale.* It involves the extension of these relations over all other subordinate modes of production, which become destroyed or subsumed by capitalism, and the intensification of these relations, when, for instance, the means of production become monopolised by fewer capitalists.

Capital Accumulation and Employment

Another argument, quite similar to the one used by Yaffe, is sometimes brought up to defend the falling rate of profit theory. It is argued that as capitalism expands to the extent that unemployment falls, wages tend to rise as a result of the more favourable situation of the working class. As a result, it is argued, capitalists tend to reduce the size of their labour force and 'substitute' constant capital for labour power. Hence the organic composition of capital will tend to rise. To be complete this theory must also argue that the process is

not reversed, with a fall in the organic composition of capital, when wages are low during a recession. Otherwise no overall trend could be deduced.

There is a grain of truth in this theory. Wages do tend to oscillate in this manner. Capitalists often lay off workers when the wage bill is too high. In these circumstances they are likely to '*rationalise*' production and invest in new plant and equipment. But we have no reason to suppose that the *value* of their constant capital will increase as a result. What happens when full employment is reached and the capitalists still strive to accumulate? They cannot enlarge their labour power, so perhaps they are forced to increase constant capital, and thereby increase the organic composition of capital? This argument is unsound because it either assumes that accumulation necessarily involves an increase in the value of constant capital, which we have argued to be false, or it assumes that the capitalists *consciously* strive to augment the *value* of their capital. On the contrary, the capitalists are not aware of their embodied labour values, or inclined to find out. Perhaps they will strive to increase the *mass* of machinery employed, but this bears no necessary relation to its *value*.

Of course we do not argue that capitalism operates according to the subjective plans of the capitalists. The overall dynamic of the system is a result of a complex interaction of forces, and capitalism retains an anarchic character. But we cannot mechanically divorce the actions of powerful individuals from the objective course of events, or regard the former as completely 'determined' by the 'economic base', which is conceived as a sort of separate machine devoid of individuals and the force of ideas. The basis of analysis, in any field of scientific enquiry, cannot be reduced to either the whole alone, or to the constituent parts by themselves.

The Concept of Capital and the Materialist Method

The tendency for the organic composition of capital to rise cannot be justifiably derived from the 'concept of capital' in a purely *a priori* manner. It is a mere tautology to *start* from the *definition* of a capital as 'self-expanding value', add the correct notion of the limited size of the pool of living labour power, and triumphantly conclude that the organic composition of capital will rise. This method of reasoning 'explains' social reality from a pre-defined *idea*; it does not explain ideas, including the concepts of political economy, from social practice.

The Marxian method involves initial abstraction from a multitude of empirical phenomena. However, Marxian concepts such as the commodity, capital, and abstract labour are not just ideas, they are *real* under capitalism. In contrast, bourgeois economics starts to 'explain' reality from ahistorical ideas such as utility and human nature. Correct economic categories are only abstract expressions of real social relations, and only remain true as long as these relations exist.

Marx, himself, tried to derive the law of the falling rate of profit from the concept of capital in several passages in the *Grundrisse*. However, this idealistic method of reasoning receives little prominence in *Capital*.

An Agnostic Conclusion

There seems to be no *a priori* reason for the organic composition of capital to rise. This conclusion rests on a rigorous separation of three aspects of capitalist production: the physical aspect, the price aspect, and the value aspect. The relations between these aspects and the whole partly determine the dynamic behaviour of the capitalist system. Only by such a rigorous separation can capital be conceived as a social relation, rather than a homogeneous 'thing'.

We do not need to elaborate the point that vulgar bourgeois economy confuses the different aspects of capitalist production. Neoclassical economics elevates the physical aspect of capital to the detriment of all others. We have 'marginal productivity', 'factor substitution'; capital as a thing *par excellence*. But the point needs to be emphasised that some Marxists have committed a very similar mistake in trying to defend the falling rate of profit theory. They have confused the value aspect with the physical aspect (and in the case of the transformation problem prices are confused with values). By reducing capital to a mere value, capital is implicitly regarded as a homogeneous 'thing'.

For these reasons the recent attack on neoclassical economics, in the capital controversy, is a significant event for Marxism. A brief and unsystematic account is given here, as Marxists cannot remain silent in the face of the theoretical conclusions. A correct interpretation of capital theory can lead to a forceful re-establishment of the concept of capital as a social relation, if certain Ricardian pitfalls are avoided. We are led to abandon the theory of the falling rate of profit, and along with it all vulgar notions of capital and capital accumulation.

THE IMPACT OF THE CAPITAL CONTROVERSY

Most of the conclusions of the capital debate stem from rigorous and logical arguments applied to a situation where heterogeneous capital goods exist. There are consequences for the theories of price, distribution, and capital accumulation. Here, of course, we are primarily concerned with the latter.

The Concept of Dated Labour

Marx's labour-theoretic approach to the analysis of capital accumulation involves a high degree of aggregation. However, it is a mistake to simply analyse the system in terms of just two types of labour time, i.e. living labour and dead labour embodied in commodities. In most cases we cannot usefully aggregate all embodied labour from the past into one homogeneous whole. The *date* at which a past labour input is required to produce a commodity is crucial. Nearly all goods are produced with both living labour and means of production. The means of production are, in turn, products of living labour and means of production in a previous time period. Hence the labour embodied in a commodity can be split into a long series of dated labour inputs (Sraffa, 1960) diminishing into the past. Each of the terms in this series has an independent significance in determining such variables as the rate of profit. Marx drew a distinction between dead labour and living labour, so the dated labour series is an extension of Marx's distinction from two to many time epithets. It is possible to regard all technical innovation as labour-saving in some sense. But the crucial point is that we need to regard amounts of labour from different time periods as qualitatively different.

Marx's aggregative approach is sometimes justified by an appeal to the real-world aggregation of money amounts in a capitalist economy. Clearly, in a system of generalised commodity production, everything has a common measure in its price. But price should not be confused with value, even if the former is regarded as the 'phenomenal form' of the latter. To paraphrase Oscar Wilde: the capitalist knows the price of everything but the value of nothing. Furthermore,the analytical search for such an underlying 'substance' is doomed to failure. Although accounting based on monetary units is common practice, this does not mean that there is a homogeneous substance beneath this phenomenal form.

The capital controversy shows that no measure of the 'amount of capital', be it 'value', price or whatever, is independent of the rate of

profit and the distribution of the product between social classes. As these alter, so too will the book value of the bourgeois world. The consequence of heterogeneity is that there is no independent measure of capitalist wealth.

D. M. Nuti (1970a, p. 53) concluded an essay on capital theory with these words: 'The ideological role of the "value of capital" is that of breaking the direct actual link between the *time pattern* of output in which any technology can be resolved, and establishing instead a relation between *current* output and *current* labour. To this purpose the *current* "value of the capital stock" is needed; a mythical conceptual construction in which the past and the future of the economy are telescoped into the present'. This criticism can be also applied to the habit of measuring constant capital in terms of a single amount of embodied labour.

The Solovian Growth Model

The similarity between the bourgeois concept of capital and the crude 'embodied labour' conception is reflected in the similarity between the falling rate of profit theory and the neoclassical growth model, particularly that of Robert Solow (1956), involving the idea of a 'production function'. Two inputs, dubbed 'factors of production', i.e. 'capital' and 'labour', combine together in production to create a net output. This output is represented as a mathematical function of the inputs. Solow discusses a number of such production functions. He makes the simplifying assumption of constant returns to scale, i.e. output per worker does not depend upon the size of the plant, just the relative proportions of 'capital' and 'labour'. This allows him to represent the production function by a two-dimensional graph, examples of which are shown in Figure 2.1.

Solow shows that in many cases there is an equilibrating process which allows output per worker and capital per worker to converge to a fixed level, and full employment is achieved. But this allows for no technical progress. It would seem reasonable to assume, along with Solow, that technical progress can be represented by an 'expanding' production function of the type shown in Figure 2.2.

At first the production function is represented by the curve *PF*1. Later it moves up to *PF*2, and later still it has moved to *PF*3. Hence output per worker increases even if the amount of capital per worker stays constant, as a result of technical progress. And now the discussion of Solow's equilibrating process leads to the conclusion that 'the

Figure 2.1 Production in functions

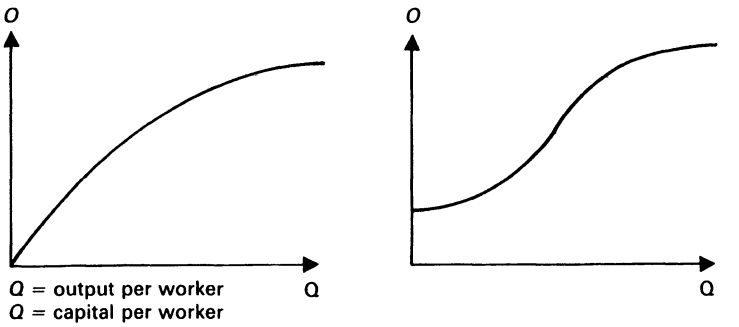
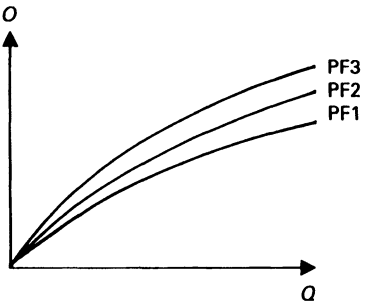


Figure 2.2 Production function with technical progress



capital–labour ratio never reaches an equilibrium value but grows forever' (Solow, 1956, p. 81).

If we ignore the ideologically-bound terminology and the monstrous presumption that full employment can be maintained automatically under capitalism, then the similarities with the falling rate of profit theory are evident. In both instances we have the presumption that we can measure constant capital independently of all other economic conditions. Solow assumes that in the majority of cases output per worker will increase as capital per worker increases. Orthodox Marxists such as Yaffe can write: 'The increase in the means of production per worker . . . is not merely a technical premiss . . . It is the expression in general terms of the only way the productivity of labour can rise under capitalist production' (1972, p. 17).

We have the conception of a particular type of technical progress which can lead Solow and some Marxists to a similar conclusion. Thus Yaffe writes: 'It follows that both the technical composition of capital and the organic composition of capital *must* increase in the process of capitalist production.' Finally, the notion is shared that an increase in the organic composition of capital, or the amount of capital per worker will lead to a fall in the rate of profit.

The Attack on the Neoclassical Aggregate Production Function

One of the first shots in the battle was fired by Joan Robinson (1953). She contested the complacency of the neoclassicals who assumed that the 'amount of capital' can be readily measured. After twenty years of debate the aggregate 'capital and labour' production function lies in ruins. One of the latest and more important blows was delivered by Piero Garegnani (1970). From the premiss of heterogeneous capital goods he developed several feasible 'production functions', depending on given feasible technical conditions of production. These bear *no relation* to the 'well-behaved' neoclassical production function. Four of Garegnani's examples are shown in Figure 2.3.

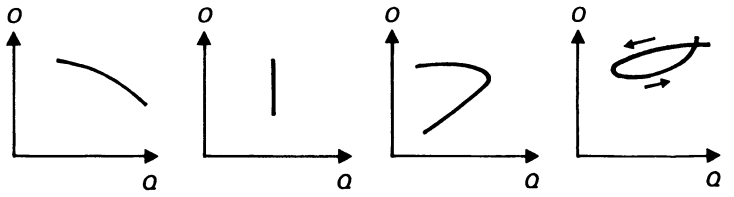
It is clear from these examples that increased capital per worker (Q) is related to output per worker (O) in no simple or consistent way. *There is no basis, therefore, for asserting that increased productivity is generally associated with an increased organic composition of capital.* Also Garegnani shows that there is no simple inverse relation between Q and the rate of profit. The notion that the march of productivity leads to a general fall in the rate of profit is completely shattered.

If we try to introduce a notion of technical progress into these production functions we do not get the simple Solovian result that Q 'grows forever'. Far from it. Technical progress bears no simple or necessary relation to Q, or to the organic composition of capital.

The arguments of Garegnani, Sraffa and others are systematic and logical. Their destructive power is rooted in these qualities. Marxists have no reason to abandon these arguments, but they must be supplemented by a critique of the fashionable Ricardian interpretations of capital theory. However, this cannot be done by aping the arguments of neoclassical economists which have been proved so indefensible. Neither can the matter be resolved by a simple reiteration of Marx.

We now turn to an examination of the empirical data for the

Figure 2.3 Garegnani's 'perverse' production functions



United States which suggest that there has been no consistent rise in the organic composition of capital. The evidence does suggest a rise in the organic composition of capital up to about 1920 with the general spread of mechanisation – after that date innovations seem to have led to constant capital saving improvements and a consequent decline in the organic composition of capital.

A SURVEY OF EMPIRICAL DATA FOR THE UNITED STATES

Data alone cannot decisively refute a theory. But that does not mean that empirical tests have no status in Marxism. Marxian categories are not just ideas, they correspond to real relations and parameters in the capitalist system.

The evidence that is relevant to an examination of the theory of the falling rate of profit is not the actual profit rate, or the share of profits in national income, but data concerning the organic composition of capital and related expressions. In Britain, for example, Andrew Glyn and Bob Sutcliffe (1972) have argued that there has been a fall in the rate of profit due to a falling share of profits in the national income. But that does not, in any way, endorse Marx's theory, which stems from the hypothesis of a rising organic composition of capital.

Unfortunately there are few empirical studies of the organic composition of capital. The author is not aware of any other major study other than the ones carried out by Gillman (1957) and Mage (1963). Both of these studies apply to the United States. The former is concerned with the organic composition of capital in the manufacturing sector, the latter is concerned with the economy as a whole. There have been many criticisms of these statistics, and in the opinion of the present writer both sets do not show real *value* ratios, i.e. ratios

between amounts of socially necessary labour time. However, the data are reproduced here for the information of the reader. The data are expressed in terms of the definition of the organic composition of capital that is found in this article (i.e. $q = k/(v + s)$). Mage's data were already expressed in this form, but Gillman's had to be calculated from the statistics he provides for k, v, and s.

No pronounced upward trend in the organic composition of capital is evident in Mage's figures in Table 2.1. The high figures for 1930, 1935 and 1940 are partly a result of the Great Depression, when net output ($v + s$) was low and a great deal of constant capital stock was unutilised. If these figures are excluded the slight upward trend is even less significant.

Some startling facts are apparent in Table 2.2. First, it appears that the organic composition of capital in the manufacturing sector is much less than in the economy as a whole. Perhaps this can be explained by the high productivity of the industries that produce capital goods for that sector. Secondly, after a clear rise in the organic composition of capital from 1880 to 1921, there is a tendency for its magnitude to decline after the latter date. Discounting the high figures in the years of severe depression, the organic composition of capital was about 1.3 in the boom period in the 1920s, and this figure is not rivalled after the Second World War, at least up to 1952.

We now turn to the data provided by bourgeois economists. The ratio that is analogous with the organic composition of capital, according to our definition, is the 'capital–output' ratio. This is the ratio between the price of constant capital stock and the price of output. The capital–output ratio is related to the rate of profit in the following manner:

$$\text{rate of profit} = \frac{\text{profit}}{\text{price of total capital}}$$

$$= \frac{\text{share of profits in income}}{\text{capital-output ratio}}$$

The latter result illustrates the analogy between the capital–output ratio and the organic composition of capital. These two ratios are not identical but they have a similar status within two respective accounting systems, one in terms of prices, the other in terms of values. In fact the capital–output ratio is *more* relevant for a direct calcula-

Table 2.1 The organic composition of capital in the US economy, according to Mage

year	1900	1905	1910	1915	1920	1925	1930
q	3.67	3.16	3.18	3.51	3.65	3.95	4.47

year	1935	1940	1945	1950	1955	1960
q	4.92	4.09	2.64	3.45	3.64	4.20

Table 2.2 The organic composition of capital in the manufacturing sector of the US economy, according to Gillman

year	1880	1890	1900	1912	1919	1921	1923
q	0.41	0.52	0.72	0.95	1.40	2.04	1.35

year	1925	1927	1929	1931	1933	1935	1937
q	1.30	1.30	1.19	1.79	1.95	1.47	1.18

year	1939	1947	1949	1950	1951	1952
q	1.20	1.04	1.23	1.11	1.10	1.11

tion of the rate of profit in real terms. The operative rate of profit, upon which the capitalists base their investment decisions, is a ratio between price amounts, not a ratio between values. It is possible for the organic composition of capital to rise whilst the capital–output ratio falls, but the capitalist is unaware of the former, which does not necessarily effect the real rate of profit, or the investment decision.

Once again, this does not mean that the economy operates entirely in accord with the subjective wishes of the capitalists. But these subjective wishes are *part* of the objective reality, and any investigation into the dynamics of the capitalist system must show the basis on which capitalists make decisions to invest. To 'explain' the workings of the capitalist system without any reference to appearances, or the ideas that motivate the capitalist, is to raise the 'economy' to the status of a heavenly machine grinding out the destiny of capitalist society. Marxists, like high priests, alone are aware of the god-like

Table 2.3 Ratio of net capital stock to net national product in the USA (Mean annual figures per decade)

period	1869–78	1879–88	1889–98	1899–1908	1909–18
ratio	3.6	3.0	3.6	3.5	3.9

period	1919–28	1929–38	1939–48	1948–55
ratio	3.8	4.4	3.3	3.0

Table 2.4 Ratio of capital stock to net product in the US manufacturing sector

year	1880	1900	1922	1948
ratio	0.78*	1.18	1.58	0.98

* Strictly not comparable with 1990 figure because of different methods of obtaining data.

power of the machine. Hence this 'materialist' attempt to understand capitalism collapses into an idealism; society is divided into two parts, one of which is superior to society. The result is that Marxism has no contact with empirical data, and no possible basis for a fruitful dialogue with other approaches in social science.

One of the most extensive studies of the capital–output ratio in the US has been carried out by Simon Kuznets (1961). His data for the economy as a whole are presented in Table 2.3. These provide a remarkable resemblance to Mage's data in Table 2.1. There is no marked upward trend in the capital – output ratio, and a slight downward trend is evident after 1909–18 if we disregard the inflated figure for the depression years of 1929–38. Even if we include the figure for the years 1929–38 statistical analysis shows that the overall upward trend in the capital – output ratio is very slight indeed. The trend line shows a rise of only 0.0086 per year. On this basis the trend reaches the magnitude of 4.3 in the year 2000. But the extent of the variance of the actual figures from the trend allows us to make no such prediction from the statistics.

Kuznets regards the figures in Table 2.4 as rough approximations only. The earlier figures are larger than those provided by Gillman for the manufacturing sector, but a similar pattern is evident. The figures show a rise before 1922, but the figure for 1948 indicates a fall in the capital–output ratio after the former date.

The figures in the first three parts of Table 2.5, where individual

Table 2.5 Kuznets's ratios of capital to output for selected major industries in the USA

Manufacturing Industries

	1890	*1900*	*1929*	*1937*	*1948*	*1953*
Food	0.21	0.24	0.26	0.18	0.15	0.12
Textiles	0.35	0.39	0.30	0.19	0.16	0.14
Chemicals and Refining	0.42	0.44	0.55	0.49	0.47	0.47
Metal products	0.44	0.47	0.39	0.35	0.27	0.25

Extractive Industries

	1870	*1890*	*1919*	*1940*	*1953*
Metals	1.14	2.37	1.49	0.59	0.77
Anthracite coal	0.35	0.45	0.45	0.34	0.32
Petroleum and natural gas	1.64	3.45	5.51	1.73	1.01

Regulated Industries

	1880	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*	*1950*
Steam railways	16.0	9.9	6.5	4.4	3.6	4.4	4.0	2.7
Electric railways	–	3.3	6.8	5.8	4.1	3.4	3.4	2.3
Electricity supply	–	12.1	12.3	10.5	4.8	3.7	2.4	1.3
Telephones	–	5.0	3.9	2.6	1.6	1.9	1.8	1.8

Agriculture

	1870	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*	*1950*
(A)	8.86	8.64	8.64	8.09	8.51	8.28	7.29	6.68	7.06
(B)	2.75	2.70	2.76	2.47	2.84	2.98	2.48	2.11	2.52
(C)	1.28	1.22	1.12	1.06	1.44	1.58	1.40	1.13	1.57

(A) Ratio of total capital, including land, to net farm income.
(B) Ratio of total capital, excluding land, to net farm income.
(C) Ratio of total price of buildings and equipment to net farm inme.

industries are considered, are the ratios between capital and *gross* output, so they are not strictly comparable with the capital–net output ratios, which are larger for a given industry. Most of the industries show a slight overall decline in the capital output ratio over time. Petroleum and natural gas shows a very rapid rise from 1870 to 1919, and an even more rapid fall after the latter date. Steam railways, electricity supply, and telephones all show a very marked fall over the whole period.

The figures for agriculture are especially interesting as they show the effects of mechanisation in that sector. The upward trend in the price ratio of buildings and equipment to net farm income reflects the process of increasing mechanisation. But this does not create an overall rise in the total capital–net income ratios, including or ex-

cluding land. It appears that machinery has replaced power animals and other livestock *along with* savings in the use of other agricultural materials. These two simultaneous processes have led to a slight fall in the capital–net income ratios.

In conclusion, most of these figures do not give empirical backing to the hypothesis of a rising capital–output ratio. Most of the figures show a rise up to about the year 1920 and a general fall after that date. A similar pattern is evident in Gillman's data. The period up to 1920 was characterised by an *extensive* accumulation of capital, i.e. a rise in the mass of machinery, a spreading of mechanisation, an accumulation of values, and the general extension of capitalist relations of production in the USA. The years after 1920 could be regarded as years of *intensive* innovation in an already mechanised economy, punctuated by crises such as the Great Depression. More attention was shifted to constant capital-saving improvements, and the more efficient utilisation of existing plant and machinery, in the home economy.

POLITICAL AND METHODOLOGICAL IMPLICATIONS

In this section we shall discuss the political and methodological implications of the so-called law of the falling tendency of the rate of profit. The rejection of the law has profound implications. Some would argue that such a rejection constitutes a victory for reformism. On the contrary such an antithesis is based upon a faulty problematic.

The Law and its Counteracting Influences

It is commonplace to assert that society is not a laboratory. It is clear that laws of social development cannot be isolated from their counteracting influences. In contrast the physical scientist attempts, with some success, to isolate the phenomenon under investigation and determine its inner laws, without the clutter of extraneous influences.

With this point in mind, interpretations of the law of the falling rate of profit can be grouped into three classes: the law as a manifest tendency, the law as a concomitant force, and the law as an ultimate tendency. In the first conception the law is regarded as an evident and persistent force; counteracting forces just retard the fall in the rate of profit, they do not annul its clear downward trend. The second conception is less decisive: the law is regarded as one force amongst

many. The outcome of this multitude of interacting influences is not necessarily a fall in the rate of profit. Finally we may regard the law as an *ultimate* tendency, which can be checked by counteracting influences. Consequently although a fall in the rate of profit may not be evident for long periods of time, it appears ultimately sometime in the future.

Perhaps it is easy to dismiss the conception of the law as a manifest tendency; few Marxists adhere to this conception today. But this may be explained by the fact that a persistent fall in the rate of profit or rise in the organic composition of capital are not clearly evident in the twentieth century. In contrast, Adam Smith and Ricardo were much bothered by the fall in the rate of profit which was evident in the eighteenth and early nineteenth centuries. Marx's theory was, at least in part, an attempt to solve this riddle. Today, however, with no consensus in economic circles, and in view of the evidence of Gillman, Mage and Kuznets, few would deny that the 'counteracting influences' have become prominent for many decades.

The Law as a Concomitant Force

The second conception is practically a polar opposite of the first; instead of necessity we have indeterminancy in the long run. Over thirty years ago Maurice Dobb put forward an interpretation of Marx's law which seems close to the notion of the law as a concomitant force:

> There is often a tendency . . . to give Marx's view of this matter a too mechanistic twist, depicting it as though it relied on the forecast of profit falling in a continuous downward curve until it reached a point at which the system would come to an abrupt stop, like an engine with insufficient pressure of steam behind the piston. The true interpretation would seem to be that Marx saw tendency and counter-tendency as elements of conflict out of which the general movement of the system emerged.[14]

In the second section of this present essay we have contested the idea of a necessary fall in the rate of profit on theoretical grounds. The notion of the law as a concomitant force, with an indeterminate outcome, could seem to be in accord with our theoretical position. Such an interpretation would be false. It is not justified to *describe* forces bringing down the rate of profit as 'tendencies' whereas forces

acting in the opposite direction are seen to be mere 'counteracting influences'. Such an arbitrary designation of conceptual status could be reversed. In which case the counteracting influences would become 'law' and the law of the falling rate of profit would collapse – by a mere change of terminology.

In a reaction against mechanistic Marxism the notion of the law as a concomitant force does not completely escape from the mechanistic problematic. The agnosticism of this position could be reduced to a lack of *knowledge* of the laws of motion of the 'economy'. Further discovery might reveal laws which act to bring down the rate of profit. To escape from this problematic we need to reject the notion of the economy as a machine. We shall return to this problem at a later stage.

The Law as an Ultimate Tendency

This is, no doubt, the most widespread conception of the law. It, itself, has two variants: some regard the 'underlying' fall in the rate of profit as being superimposed by periodic fluctuations, others regard the 'ultimate' fall in the rate of profit as an 'inevitable' process which is to become pronounced sometime in the future. In the latter case the 'periodic fluctuation' spans an epoch. At least for the purposes of this discussion these two variants are essentially similar. Within this conception of an ultimate tendency we have, in a sense, a synthesis of the first two conceptions: conjunctural indeterminacy but 'in the last instance' the force of necessity.

Here the law runs the gauntlet of counteracting influences. It is in constant danger of being thrown back to its starting-point. But in the long run it triumphs: not in the shape of rich empirical experience, but in the *idea* of its 'ultimate' victory. The 'last instance' is never announced by the sound of trumpets and the collapse of the citadel of profit. It is prophesied, but its coming is unrecognisable. Its status as an 'ultimate' law faces the perennial challenge of another periodic upswing in the rate of profit, which would lead us to the conclusion that there is at least one more 'last instance' to come. As Althusser has aptly remarked in a different context: 'From the first moment to the last, the lonely hour of the "last instance" never comes' (Althusser, 1969, p. 113).

The law as an ultimate tendency can never be identified with empirical experience: for fear of the tyranny of facts. The history of the capitalist mode of production becomes a dualist combination of

rational forces and empirical surroundings. The law finally comes to rest in the realm of pure reason: it *explains* the demise of capitalism, but the law of the falling rate of profit is never revealed as an ultimate tendency in the realm of appearance.

Marxian political economy has tended to become a seance with the spirit of a weird 'economic machine' which never appears in view. Its 'laws' are identified, its mechanics become known, or rather they are *already* known, even before they become manifest. History submits to our *Principia Economica*.

The Role of Marxian Political Economy

It may be argued that the previous theoretical position applies to all tendential laws of an 'ultimate' character. That argument is indeed correct. Marxism is more or less rid of the 'law' of the absolute immisseration of the proletariat, even its origin in Marx is doubtful. Efforts are being made to purge Marxism of all notions of a break-down theory. It is now opportune to reject the law of the falling tendency of the rate of profit.

Lucio Colletti (1972, 1973) and others have pointed out that the works of Marx and Engels have been interpreted in a mechanistic manner by most of the deans of orthodox Marxism for nearly a hundred years. It has become commonplace to identify the source of these mechanistic distortions of Marxism in some of the works of Engels. However, some of the blame must also fall on Marx. His *Preface to a Contribution to the Critique of Political Economy* can be, and has been, interpreted in a crassly mechanistic fashion, although its real meaning is somewhat ambiguous or obscure. In the preface to the first German edition of the first volume of *Capital* Marx talks of 'laws . . . working themselves out with iron necessity' (Marx, 1976, p. 91).

The version of Marxism that was given prominence by the leading theoreticians of the Second International, such as Kautsky and Plekhanov, rests on a vulgar notion of the 'economy', which is seen as one isolated 'factor', emptied of all effective social and historical content. The 'economy' runs on like a machine, prior to any real human intervention or mediation, whereas in Marx we can find countless references to his notion of the 'social relations of production' which embraces both the production of *things* and the production of *ideas*: material production and the reproduction of social relations.

Unmechanistic interventionist Marxism cannot proceed, therefore,

from a pure analysis of the 'economy', and then embellish this fabric with sociological and political 'detail'. These 'factors' cannot be mechanically isolated. The categories of Marxian political economy are at once economic, sociological and political. Consider, for example, the concept of labour power as a commodity. It involves the existence of separate 'sociological' *classes* between which purchase and sale can take place, a *legal* framework within which a labour contract can exist, and an existence of a *state* which can protect capitalist social relations, as well as the more obvious 'economic' connotations.

Marxian political economy has traditionally been the fount of prediction in the shape of 'economic perspectives' for socialist organisations. The duality between theory and phenomena has been transformed into a *de facto* separation between theory and practice. The role of theory is mere prediction: to assure the movement of the 'inevitability' of socialism, to herald the next crisis which is 'just round the corner'. Theory, in short, is a commentary on the workings of the mythical economic machine. Practice, on the other hand, is involvement in economic struggle as an acknowledged cog of the machine.

Such mechanistic theory is a basis for quasi-religious fanaticism: the idea that despite isolation and defeat the objective force of events will ensure that victory is inevitable. Notably, this fanatical aspect of mechanical materialism was persistently attacked by Antonio Gramsci. As a Marxist, he suggested that 'laws' pointing to supposedly 'inevitable' developments are unjustified and serve no positive political purpose.[15] For these and other reasons it is necessary to bury the last iron law of Marxian political economy – the law of the falling tendency of the rate of profit.[16]

Notes

1. *Capital*, vol. 1, ch. 25, sections 2 and 3; and vol. 3, part 3. See also Marx (1973, pp. 386–98, 745–58).
2. Marx (1973, pp. 413–14).
3. Marx (1981, p. 255).
4. *Capital*, vol. 3, part 2; Sweezy (1942, ch. 7); Bortkiewicz (1952); Steedman (1973); Hodgson (1974); Yaffe (1973).
5. Marx (1981, pp. 138–9, 163–9, 208, 334, 335–6).
6. *Capital*, vol. 2, part 2, and vol. 3, ch. 4.
7. Marx (1981, p. 317).

8. Marx (1981, p. 318).
9. Marx (1981, p. 318–19).
10. Marx (1969, pp. 415–16).
11. Robinson (1942, p. 36–40).
12. Meek (1967, pp. 131–5).
13. Marx (1976, p. 419).
14. Dobb (1940, p. 110). Since the above article was written, Ben Fine and Laurence Harris (1976, 1977) have gone even further than Maurice Dobb in proposing a version of the law as a concomitant tendency. They describe it as 'the law of the tendency of the rate of profit to fall *and* of the tendency for counteracting influences to operate' (Fine and Harris, 1976, pp. 162–3) and assert that 'the existence of both the tendency of the rate of profit to fall and of counteracting influences has the status of a law in the sense that both are inevitable products of capitalist accumulation' (p. 167). In my reply I suggest that this amounts to a vacuous 'law of the tendency of the rate of profit to *fall or rise*' (Hodgson, 1977, p. 98). It is also reasonable to ask why, in this interpretation, the downward forces should be given the description and implied status of a 'law' and those in the opposite direction are labelled 'counteracting influences'. Given that Fine and Harris regard both sets of forces as significant, they give no reason why the labels should not be switched, giving 'the law of the tendency of the rate of profit to rise'.
15. Gramsci (1971, pp. 167–8, 171, 336–7, 342–3).
16. This essay was written before the 'Okishio theorem' (Okishio, 1961) became widely known and advanced as a further argument against the theory of the falling rate of profit (Bowles, 1981; Roemer, 1981).

3 Sraffa, Value and Distribution: An Expository Essay on the Capital Controversy*

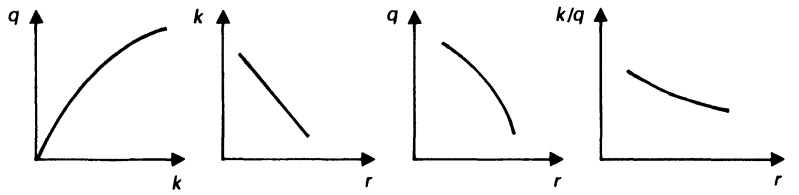
The aim of this paper is to explore some of the questions of debate between neoclassical economists and those who base their work on that of Piero Sraffa (1960). Not only is the content of this present essay highly unoriginal but also it relies heavily on the work of others, particularly Amit Bhaduri (1969), Piero Garegnani (1970) and Ian Steedman (1972). Clearly much of the debate has to be left out of this short survey; a discussion of the question of re-switching is the most notable absentee.

ON THE NEOCLASSICAL THEORY OF DISTRIBUTION

The usual textbook neoclassical theory of distribution found itself on the view that an aggregate production function exists and is 'well-behaved'. As capital per worker rises the change in output per worker will be charted by this 'well-behaved' function, incorporating the well-known dictum of 'diminishing returns'. The rate of profit (rate of interest) is then built into the analysis. In equilibrium, under perfect competition, the extra amount of output derived from the extra unit of 'capital' equals the remuneration for the owner of that 'capital'. The rate of profit is thus determined by the marginal productivity of capital. As a consequence of the general shape of the production function it is then shown that the amount of capital per worker and the output per worker are inversely related to the rate of profit. Also the 'capital–output' ratio falls as the rate of profit rises. Such relationships are summed up in the diagrams in Figure 3.1, where k is capital per worker, q is output per worker and r is the rate of profit.

* This essay was first published in the *British Review of Economic Issues*, no. 1, November 1977.

Figure 3.1 Relations underlying the neo-classical theory of distribution



In order to simplify our exposition and to express 'capital' and 'output' in 'per worker' terms we have assumed constant returns to scale throughout this paper. The rejection of this assumption does not invalidate its main conclusions, however. It is interesting to note, in passing, that the relationships in Figure 3.1 are implicit in the orthodox Marxian literature, for example, an inverse relation between the Marxian 'organic composition of capital' and the rate of profit roughly corresponds to the relation expressed in the fourth of the above diagrams.

Even at this early stage it is possible to ask the neoclassical economist some penetrating questions. We can ask, like Joan Robinson (1953): how is 'capital' going to be measured; in tons, metres, or dollars? A physical measure is meaningless unless capital consists of just one heterogeneous good. A price measure is impossible unless there is a pre-existing set of relative prices. But such prices depend upon the rate of profit, and this is meant to be a determined rather than a determining variable. Prices, it seems, cannot be assumed at the outset without first assuming a value for the rate of profit. If the production function is a function of 'capital' and this is measured in price terms, then the view that this function leads to a determination of the rate of profit involves circular reasoning. We are led towards Sraffa's (1960) conclusion that there is no measure of capital independent of distribution and prices.

A central neoclassical tenet, crucial in their theory of distribution, is the proposition that the rate of profit is determined by the marginal productivity of 'capital'. In the second diagram above the function of r in terms of k is a first derivative of the function for q in terms of k in the first diagram; i.e. $r = dq/dk$. That is, of course, the mathematical expression of the neoclassical tenet. We shall now show that this tenet has been successfully refuted when an attempt has been made to apply it to the economy as a whole.

BHADURI'S REFUTATION OF THE NEOCLASSICAL TENET

Intuitively, Bhaduri's criticism is as follows. 'Capital' per worker increases by a small unit increment, resulting in a small increase in output per worker. The latter is held to be equal to the rate of profit. However, one change results in another, and we are in a real economic world, where there are no stable horizons, no constant units of length, no firm ground under our feet. A real change in output has been experienced so at the same time, in general, the elements of distributed output, i.e. the wage and the rate of profit, will also change in the process. Remember we are *not* considering a single small capitalist amongst many, whose increase in output makes no significant change to the aggregate. An increased rate of profit will mean an increased claim, by the owners of capital, on the produced output, and the magnitude of the residue will identify a new rate of wages. As a result, therefore, the unit change in capital per worker, multiplied by the rate of profit, will not, in general, be equal to the change in output without the addition or subtraction of some other quantities. The marginal productivity theory is flawed because we have moved away from the micro-economic world of the single firm in perfect competition, where the economic environment is immutable and stable in the short run, to the aggregated world where real total output is changing and no aggregate measure or standard is sacred. As D. Mario Nuti (1970b) remarks: 'What makes the neoclassical theory vulnerable is the extension of microeconomic concepts to the field of macroeconomics.'

Bhaduri presented his argument in rigorous algebraic terms, and it shall now be summarised. Using the same symbols as before, with the addition of w for the wage rate, it is an accounting identity that

$$q = kr + w$$

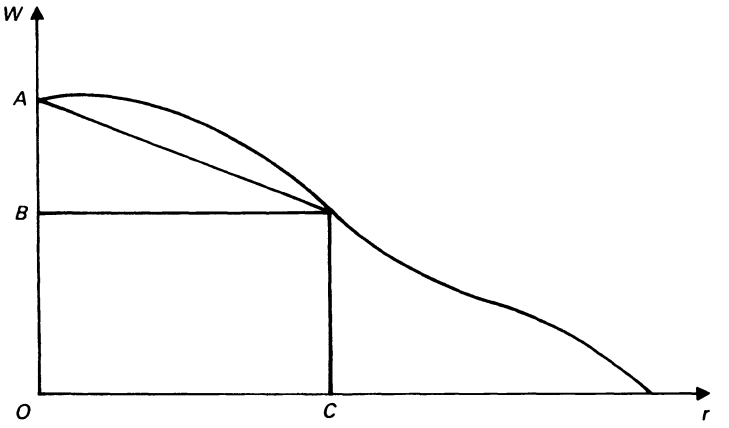
By total differentiation we achieve the result:

$$dq = rdk + kdr + dw$$

and

$$\frac{dq}{dk} = r + k\frac{dr}{dk} + \frac{dw}{dk}$$

Figure 3.2 Non-linear wage–profit frontier



It is clear that, in general, the rate of profit does not equal the marginal product of capital (i.e. dq/dk).

SAMUELSON'S SECRET ADHERENCE TO THE LABOUR THEORY OF VALUE

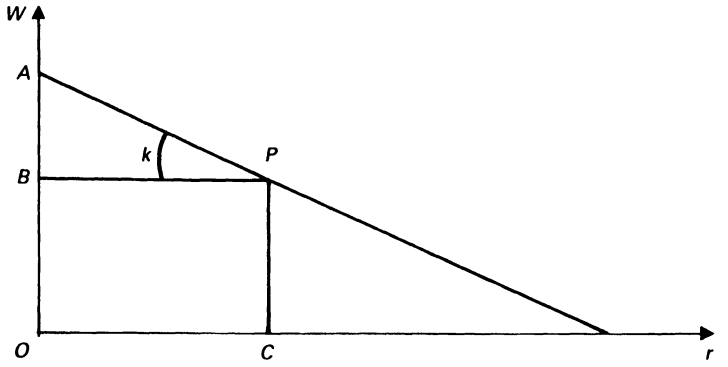
Bhaduri shows that the marginal productivity theory of profit will hold if and only if, by fluke or assumption,

$$\frac{dw}{dr} = -k$$

This result can be confirmed by inspection of the previous equation. The latter result, as Bhaduri points out, is equivalent to Paul Samuelson's condition that the elasticity of the 'factor–price frontier' equals the distributive shares, when the factors are paid according to their marginal products in an economy with a homogeneous production function of degree one in labour and 'capital'.

Can the condition be put in diagrammatic form? Consider a plausible function relating wages to profits as in Figure 3.2. From the diagram, when profits are zero all output goes to wages, as we would expect. The value of total output must, therefore, be equal to OA. At

Figure 3.3 Linear wage–profit frontier



the point P, representing a given distribution of output, OB is wages and OC is the rate of profit. The absolute magnitude of profit per man is AB. By definition

$$AB = kr$$

Hence:

$$AB = k.OC$$

$$k = \frac{AB}{OC}$$

This means that the amount of capital per worker is given by the slope of AP. The numerical value of dw/dr is, of course, the slope of the tangent to the wage–profit curve at P. In general this will differ from the slope of AP unless the wage–profit frontier is a straight line, as in Figure 3.3

In the case where the wage–profit frontier for a given technique is a straight line the marginal productivity theory will hold. A necessary and sufficient condition for its validity is that the amount of capital per worker is invariant, as the latter condition will be associated with a straight line only. For curved frontiers the amount of capital per worker will vary and be generally different from the slope of the frontier itself.

In his attempt to rescue the marginal productivity theory with a

'surrogate production function', Samuelson (1962) had to assume that the 'capital–labour ratio' was the same in all lines of production. From this a straight-line wage–profit frontier was derived. Recalling the literature on the famous 'transformation problem' in Marxian economics, we know that a uniform 'capital–labour ratio', or, in Marxian terminology, a uniform 'organic composition of capital', will result in prices of goods being proportional to the amount of labour utilised for their production. (See for example Medio, 1972; Hodgson, 1974). It seems that Samuelson has had to rely on a hidden labour theory of value in order to attempt to rescue the neoclassical theory of distribution.

GAREGNANI'S *COUP DE GRACE*

Utilising Sraffa's basic theoretical apparatus, Garegnani (1970) has produced a forceful refutation of the neoclassical theory and shown that the neoclassical picture of a 'well-behaved' production function is based on highly restrictive and even unrealistic assumptions. We shall consider just one of Garegnani's examples. An economic system produces corn and bread with the following technology:

	Inputs				Outputs	
	corn	*bread*	*labour*		*corn*	*bread*
farm:	a	0	1	$\rightarrow$	1	0
bakery:	b	0	c	$\rightarrow$	0	1

a, b, c, are given positive constants for the system. Clearly, a must be less than unity and for the economic system to be self-sufficient b must be less than $1-a$.

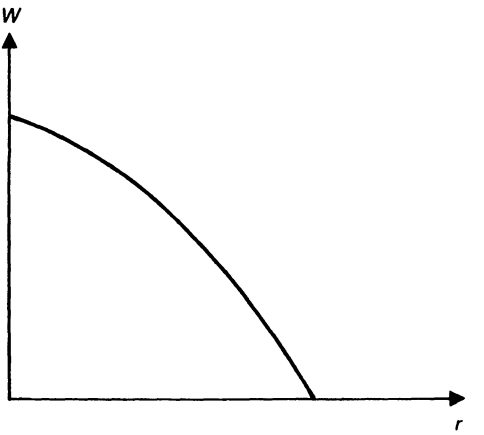
In both industries, cost plus profit must equal revenue. If we let the price of corn be p and measure all prices in terms of bread, then with a uniform rate of profit the following equations must hold:

$$ap\,(1 + r) + w = p$$

$$bp\,(1 + r) + cw = 1$$

Note that we have assumed that wages are paid at the end of the period of production, but in general this assumption is not significant. Eliminating p from the two equations we get:

Figure 3.4 Garegnani's non-linear wage–profit frontier



$$w = \frac{1 - a\,(1 + r)}{c + (b - ac)\,(1 + r)}$$

Only by fluke will this be a straight line. With given values of a, b, c, we obtain a curve. A possibility is illustrated in Figure 3.4.

Even at this early stage of Garegnani's argument, with a very simple example, we have contradicted the assumption of a linear wage–profit frontier, which is a necessary feature of the neoclassical marginal productivity theory.

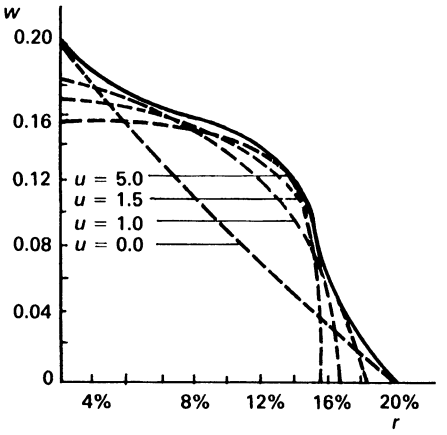
Eliminating w from the two equations we get:

$$p = \frac{1}{c + (b - ac)\,(1 + r)}$$

The next step is to assume that, at a given time, *several* technological processes and economic systems are available. There is no reason to reject the assumption that their number is infinite. Garegnani posits an infinite family of economic systems, each defined by a particular value of a parameter u. The technological coefficients are given by the following equations:

$$a = \frac{27e^{-2u}}{(6 + u^{1.1})^2}$$

Figure 3.5 Wage–profit envelope with choice of technique



$$b = \frac{5 + u^{1.1}}{6 + u^{1.1}}$$

$$c = \frac{30 + 11u^{1.1} + u^{2.2} - 27e^{-2u}}{6 + u^{1.1}}$$

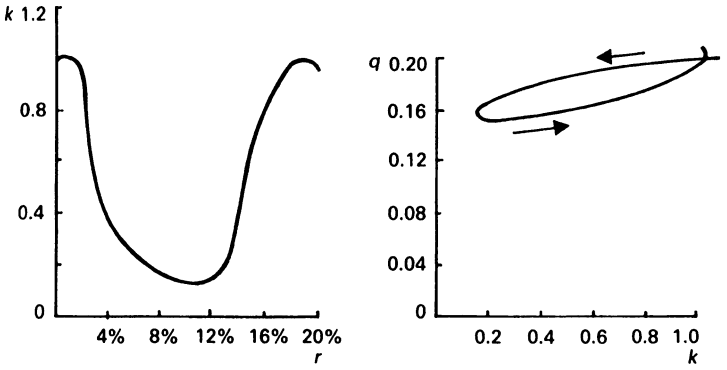
where e is the base of natural logarithms.

The wage–profit frontiers, for various values of u, are superimposed in Figure 3.5. The envelope of all possible functions, for all values of u from zero to infinity, is shown by the solid curve.

Using the method illustrated in Figure 3.3, or by algebraic methods utilising the equation for p, we can obtain a function relating the value of capital per worker to the rate of profit, and a production function relating output per worker to capital per worker. Note that output and capital are valued in terms of the known relative prices. The two functions are shown in Figure 3.6.

The 'production function' in Figure 3.6 is based on a simple, reasonable and representative model. But it is certainly not 'well-behaved'. Its 'perverse' features can be shown to be grounded on little else than the existence of more than one produced good in the system (see Steedman, 1972). Furthermore, the basic elements of the neoclassical theory, as illustrated in Figure 3.1, can be shown to be

Figure 3.6 'Perverse' production functions



based on equally restrictive assumptions. In a general economic system there is no logical basis for assuming a 'well-behaved' production function, an inverse relationship between capital per worker and the rate of profit, an inverse relationship between output per worker and the rate of profit, and an inverse relationship between the 'capital–output' ratio and the rate of profit.

The latter results can be used as a basis of a refutation of both Solow's neoclassical growth model and Marx's theory of the falling rate of profit. (See Chapter 2 above.)

We have rebutted the neoclassical theory of distribution that relies on the aggregate production function. Regarding the more careful, disaggregated, neoclassical theory two points may be noted. First, no such theory will be adequate unless it shows how the rate of profit that is implicit in the commodity prices which face the entrepreneur is the same as the rate of profit which results from the sum total of economic forces at the macroeconomic level. Second, as Luigi Pasinetti (1969) and Piero Garegnani (1970) point out, the lack of a well-behaved production function, an inverse relation between capital per worker and the rate of profit, and so on, applies at the industry level as well as the economy as a whole. Such 'well-behaved' relations cannot be presumed to exist whenever two or more production processes are aggregated. Given this fact one is not entitled to assume the existence of downward sloping demand curves for 'capi-

tal' in each industry or, as Garegnani argues, downward sloping demand curves for labour. In Garegnani's (1970) words:

> It is thus hard to resist the conclusion that no ground is left for explaining distribution in terms of demand and supply for capital and labour.

4 Marx without the Labour Theory of Value*

Ian Steedman concluded *Marx After Sraffa* with the words:

> It can scarcely be overemphasized that the project of providing a materialist account of capitalist societies is dependent on Marx's value magnitude analysis *only* in the negative sense that continued adherence to the latter is a major fetter on the development of the former. (1977, p. 207)

This conclusion raises the following question which is not addressed in Steedman's book: what is left of Marx's economic analysis in *Capital* after the labour theory of value is removed?

In the past there has been a kind of 'unholy alliance' both between hostile critics of Marx, and many Marxian economists, in answer to this question. Both groups have agreed that Marxian analysis stands or falls on the labour theory of value. If it is removed there is nothing systematic left. The difference, of course, is that hostile critics have stated that the labour theory is wrong, and looked forward to the collapse of the Marxian analytic system, while most Marxian economists have defended the labour theory in an attempt to shore up the whole analysis in *Capital*. But the fundamental agreement remains: both groups have argued that the labour theory is essential to *Capital*.

It is the main aim of this paper to suggest a contrary view, mainly through an examination of Marx's text. It is the view of this author that there is a rich body of analysis in *Capital* which not only survives, but improves, after the removal of the labour theory. In fact, few economists have asked the question, what remains of Marx after the labour theory is removed, nor have they seriously read Marx in that light.

In this essay I shall concentrate on some issues which appear in the early chapters of *Capital*. They relate to the labour process, production and exploitation. It will be shown that there is a latent theory of

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exploitation in *Capital* which does not depend on Marx's embodied labour value magnitudes.

In selecting the analysis of production and exploitation in the early chapters of *Capital*, it is not suggested that such themes are the sole purpose of, or that they are even prominent throughout the entire work. Clearly, there are many other important areas of analysis in *Capital*: theories of capital accumulation, business cycles, finance capital, reproduction, stagnation, and so on. In selecting the limited topics of production and exploitation two important themes are identified. Furthermore, by showing that the analysis of these areas is enhanced by the removal of the labour theory, a similar examination of the remaining, significant areas of analysis is encouraged.

ON THE LABOUR THEORY OF VALUE

It is necessary to define what is meant by 'the labour theory of value' so as to make clear what elements of theory are to be removed from *Capital*. It must be emphasised, however, that a *critique* of the labour theory is not being attempted here. It is simply a question of *removing* the labour theory to see if some other key concepts can stand on their own.

In addition, it has to be recognised that interpretations of the labour theory are highly controversial.[1] Furthermore, the labour theory of value which is found in Marx is not simply a theory of relative prices; it has a number of other implications. That, however, does not mean that the exercise is invalid.

A further problem is that Marx's analysis in *Capital* moves from one level of abstraction to another. Most of volume 1 of *Capital*, for instance, is about capitalism in general, focusing on relations between capital and labour. In contrast, volume 3 deals more with relations between capitalists, including competition between units of capital and the formation of relative prices of production. While it must be recognised that no analysis of capitalism can be complete without an integration of all these levels of analysis, Marx does, in fact, deal with several questions in volume 1 of *Capital* without recourse to a theory of relative prices. At the same time, however, such a theory does figure prominently in the first chapter of that volume. These are questions which cannot be discussed any further here.

Marx leaned very heavily on the analysis of profits and relative prices bequeathed to him by the classical economists Smith and

Ricardo: 'The belated scientific discovery that the products of labour, in so far as they are values, are merely the material expressions of the human labour expended to produce them, marks an epoch in the history of mankind's development' (Marx, 1976, p. 167).

Marx never made it clear what was meant by 'the labour theory of value'. In fact, as far as I am aware, he never used the term. Sometimes, but rarely, he used the term 'law of value'. Hence it is very difficult to impute a precise meaning to the former phrase. In this essay we shall assume that the labour theory of value includes the following propositions:

1. Under certain conditions (balance of supply and demand, for example) the relative prices of commodities are determined by the amounts of socially necessary labour directly or indirectly required for their production. (Marx's conception of this determination, in the most precise terms, is presented in his chapter on the 'transformation problem' in volume 3 of *Capital*.)
2. From this it follows that the money value of the surplus product (under the same type of restrictive conditions) is functionally determined by a quantity of surplus labour. (An examination of the process of extraction of this surplus labour is a major theme of volume 1 of *Capital*.)
3. There are positive correlations between the quantities of embodied labour and the determined prices in (1) and, as a consequence, profits and surplus labour in (2). In Marx's words: 'Whatever may be the ways in which the prices of different commodities are first established or fixed in relation to one another, the law of value governs their movement. When the labour-time required for their production falls, prices fall; and where it rises, prices rise, as long as other circumstances remain equal' (1981, p. 277). And 'with a given working population, if the rate of surplus-value grows, whether by prolongation or intensification of the working day or by reduction in the value of wages as a result of the developing productivity of labour, then the mass of surplus-value and hence the absolute mass of profit must also grow' (1981, p. 326).

In Steedman's work (1977) an effective critique has been made of (1). However, as Michio Morishima (1973) and others have shown, it is possible to sustain (2) without recourse to (1). But little attention has been paid to the dynamic aspects in (3). I contend that this is a major element of Marx's value theory.

There is an important difference between the defence of (2) in Morishima's work and the work of Gintis and Bowles (1981) which is similar to Morishima's in mathematical terms. In the case of Morishima there are a number of equations relating a positive measure of the surplus product in terms of a set of *definitionally* positive value elements (not as defined in Marx) to positive profits. Any such positive value elements, be they related to labour or not, would serve the same purpose. The Morishima approach to this extent tells us little about the real relations of production in capitalist society, or about the real nature of exploitation. Gintis and Bowles, when they drop the mathematics, go much further and give an informal description of the special qualities of labour and labour power. Although they claim that this sustains the labour theory of value, their main point is quite different. They break the symmetry between capital and labour in the neoclassical paradigm, and begin to provide an analysis of the dynamics of capitalist production and exploitation based on a study of real social relations. The propositions in (1), (2) and (3) above are not utilised, being redundant in the analysis. A question is raised with regard to the more advanced approach of these two authors: what is it that remains of the labour theory of value beyond simply an old and borrowed name for this theory of social relations?

USE-VALUE AND UTILITY

We commence our brief journey through Marx with the implicit conception of use-value in *Capital*. Although Marx, like Smith and Ricardo before him, used this term interchangeably with utility, the classical and Marxian conception of use-value is quite different from the neoclassical conception of utility introduced, after 1870, by Jevons, Marshall, Walras and others. Few Marxists have noticed this, and the point is of significance in our later discussion of production and exploitation.

On the second page of the main text of volume 1 of *Capital*, Marx implicitly distinguishes the concept of use-value from neoclassical utility: 'The usefulness of a thing makes it a use-value. But this usefulness does not dangle in midair. It is conditioned by the physical properties of the commodity, and has no existence apart from the latter' (Marx, 1976, p. 126). Note that, according to Marx, the use-value of an object does not reside purely in the mind of the

human consumer or owner; it has an external manifestation in the object itself. This contradicts the neoclassical notion of utility, which relates to subjective satisfaction. For Marx, utility has an objective quality, rooted in part in the physical qualities of the object concerned. This same, objective conception of use-value is found in the writings of Smith and Ricardo. (For example, the famous assertion that water has a high use-value and diamonds have a low use-value refers to general, objective qualities, not to individual satisfaction on a subjective basis.)

As well as being an objective, rather than subjective concept, by use-value Marx generally means a set of heterogeneous qualities. This contrasts, once again, with utility, which is measured on a homogeneous quantitative scale, in either the ordinal or the cardinal sense. While Marx does occasionally suggest that it is possible to order use-values, he makes it clear that: 'As use-values, commodities differ above all in *quality*' (1976, p. 128 [emphasis added]).

For Marx, as for Smith and Ricardo, use-value was the usefulness of a particular object to *society*. Once again, this contrasts with the individualistic conception of utility. Furthermore, Marx makes it clear that for him the social need for a given object is conditioned by the mode of production. Hence a moral judgement is not necessarily involved in this description of the social usefulness of a commodity. Hence the use-value of a commodity is a description of its capacity to fulfill certain socially-conditioned human needs, not the individual satisfaction obtained from its consumption. The essentially social character of use-value is made clear in this passage: 'Every producer of a commodity is obliged to produce a use-value, i.e. he must satisfy a particular *social* need' (1976, p. 476 [emphasis added]).

In short, use-value is objective, qualitative and social, whereas the neoclassical notion of utility is subjective, homogeneous and individual. Utility does not embrace the intrinsic features and qualitative aspects of goods; it is simply a subjective index of satisfaction. In contrast, use-value is nothing but the useful qualities of goods in a given social environment. For example, the utility of a loaf of bread is the satisfaction obtained by an individual from its consumption. In contrast, its use-value is a description of the useful qualities of bread, including its nutritional value, and its role in a certain social culture. These are human and socially-related needs. The concepts of utility and use-value are quite different, and a major break was made from the classical and Marxist traditions in economics when Jevons and other neoclassical economists founded utility on subjective satisfac-

tion. Both neoclassical economists, and many Marxist economists, have thus far paid little attention to this break.

This clarification of the classical and Marxist conception of use-value helps, of course, to sustain the well-known distinction between use-value and exchange value, which is denied by neoclassical thinkers. But its significance is wider than that, as shall be explained below. It is important here to emphasise that use-value, although conditioned by factors which may relate to specific modes of production, relates to human society in general. In other words, use-values exist in *any* form of human society, and are not dependent on a specific set of social relations. In contrast, exchange value relates to a commodity-producing society only. Capitalism, of course, is a special form of commodity-producing society, and a commodity is defined by Marx as a good or service exchanged on a market.[2]

LABOUR AND LABOUR POWER

We now move from the issue of exchange value and use-value, which is prominent in Chapter 1 of *Capital*, to Chapters 6 and 7, which, after the labour theory of value is removed, still shine with the most illuminating ideas.

Marx defines labour power as follows: 'We mean by labour-power, or labour-capacity, the aggregate of those mental and physical capabilities existing in the physical form, the living personality, of a human being, capabilities which he sets in motion whenever he produces a use-value of any kind' (1976, p. 270). Clearly, labour power exists in any productive human society, not simply in capitalism.

Labour itself, as distinct from labour power, is defined in a later passage: 'Labour is, first of all, a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature' (1976, p. 283).

In various passages Marx discusses specific features of labour which do not relate to any particular mode of production, for example: 'A spider conducts operations which resemble those of the weaver, and a bee would put many a human architect to shame by the construction of its honeycomb cells. But what distinguishes the worst architect from the best of bees is that the architect builds the cell in his mind before he constructs it in wax' (1976, p. 284). Thus, accord-

ing to Marx, labour is an *intentional* activity. This distinguishes it from animal behaviour and non-intentional human activity. Work in the household, for example, is still labour even if it is neither abstract labour nor carried out within capitalist relations. Labour is a human characteristic, it is not a characteristic of a specific mode of production.

THE LABOUR PROCESS

Concrete studies of the labour process, under modern and nineteenth-century capitalism, have multiplied since the publication of Harry Braverman's famous (1974) work. However, less attention has been given to the precise meaning of the concept of 'the labour process' in *Capital*. The complexity and implications of this concept are not necessarily evident at first sight. The 'simple' aspect of the labour process is described by Marx as follows: 'The simple elements of the labour process are (1) purposeful activity, that is work itself, (2) the object on which that work is performed, and (3) the instruments of that work' (1976, p. 284). Marx goes on to describe the above elements in more detail. He then writes:

> The labour process, as we have just presented it in its simple and abstract elements, is purposeful activity aimed at the production of use-values. It is an appropriation of what exists in nature for the requirements of man. It is the universal condition for the metabolic interaction between man and nature, the everlasting nature-imposed condition of human existence, and it is therefore independent of every form of that existence, or rather it is common to all forms of society in which human beings live. (1976, p. 290)

Thus the labour process, like labour and labour power, is also a universal category, and bears no specific and exclusive relation to a particular mode of production. Generally, however, the labour process in Marxian literature has tended to take on a different meaning, referring to the specific relations of capitalist production.

Another point to note at this stage is that *the labour process produces use-values*, which, although conditioned by a specific form of society, also have a *universal* character, as stated above.

In the paragraph after the last quotation from *Capital* cited, Marx introduces the capitalist, and capitalist relations of production: 'Let

us now return to our would-be capitalist. We left him just after he had purchased, in the open market, all the necessary factors of the labour process; its objective factors, the means of production, as well as its personal factor, labour-power' (1976, p. 291). Marx then modifies the universal or 'simple' description of the labour process, by adding to it those elements specific to the capitalist mode of production: 'The labour process, when it is the process by which the capitalist consumes labour-power, exhibits two characteristic phenomena. First, the worker works under the control of the capitalist to whom his labour belongs . . . Secondly, the product is the property of the capitalist and not that of the worker, its immediate producer' (1976, pp. 291–2).

The labour process remains 'the universal condition for the metabolic interaction between man and nature', but it is now carried out *within* capitalist relations of production. As a consequence, the labour process, and its active agent, the worker, undergo a process of reification in the eyes of the capitalist:

> By the purchase of labour-power, the capitalist incorporates labour, as a living agent of fermentation, into the lifeless constituents of the product, which also belong to him. *From his point of view*, the labour process is nothing more than the consumption of the commodity purchased, i.e. of labour-power; but he can consume this labour-power only by adding the means of production to it. The labour process is a process between things the capitalist has purchased, things which belong to him. Thus the product of this process belongs to him just as much as the wine which is the product of the process of fermentation going on in his cellar. (1976, p. 292 [emphasis added])

A similar argument is found in Marx's 'Results of the Immediate Process of Production':

> the sale and purchase of labour-power, presupposes that the means of production and subsistence have become autonomous objects confronting the worker, i.e., it presupposes the *personification* of the means of production and subsistence which, as purchasers, negotiate a contract with the workers as vendors. When we leave this process which is enacted in the *market-place*, in the *sphere of circulation*, and proceed directly to the *immediate process of production*, we find that it is primarily a *labour process*. In the labour

> process the worker enters as worker into a normal active relationship with the means of production determined by the nature and the purpose of the work itself. He takes possession of the means of production and handles them simply as the means and materials of his work. The autonomous nature of these means of production, the way they hold fast to their independence and display a mind of their own, their separation from labour – all this is now *abolished* in practice. . . . If we consider production just as a labour process, the worker consumes the means of production as the *mere means of subsistence of labour*. But production is also a process of *valorization*, and here the capitalist devours labour-power of the worker, or appropriates his living labour as the life-blood of capitalism. (1976, pp. 1006–7)

THE CAPITALIST PROCESS OF PRODUCTION

Naturally, the objective of capitalist production is not the exclusive production of use-values:

> Use-values are produced by capitalists only because and insofar as they form the material substratum of exchange-value, are the bearers of exchange-value. Our capitalist has two objectives: in the first place, he wants to produce a use-value which has exchange-value, i.e. an article destined to be sold, a commodity; and secondly he wants to produce a commodity greater in value than the sum of the values of the commodities used to produce it, namely the means of production and the labour-power he purchased with his good money on the open market. His aim is to produce not only a use-value, but a commodity; not only use-value, but value; and not just value, but also surplus-value. (1976, p. 293)

Here we must address the labour theory of value. The above passage can be criticised directly if the word value is taken to be 'socially-necessary embodied labour time'. Whatever the validity of the labour theory of value it is quite clearly *not* the aim, or objective of the capitalist to produce surplus value, in *embodied labour terms*. The *aim* of the capitalist is to produce profit, not to augment the magnitude of embodied labour in the output over the embodied and living labour employed in production. The aim is profit *even if* the actual *result* of the process were to be a maximisation of surplus

(embodied) labour (which, in fact, it is not). Second, as Steedman (1977) shows, it is possible to construct examples where maximising surplus value runs counter to maximising profits or the rate of profit. Notably, if value is defined as some form of equilibrium price, and surplus value as the equilibrium price of the surplus product, then the passage makes much better sense. (See Hodgson, 1982, pp. 149–53.)

Immediately after the passage cited above, Marx makes it clear that the labour process is just one aspect of the process of capitalist production:

> It must be borne in mind that we are now dealing with the production of commodities, and that up to this point we have considered only one aspect of the process. Just as the commodity itself is a unity formed of use-value and value, so the process of production must be a unity, composed of the labour process and the process of creating value. (1976, p. 293)

Thus the key duality of the commodity, as use-value and exchange value, aspects contrasted at the beginning of *Capital*, now has an analogue in two aspects of capitalist production: first, the labour process (i.e. the production of use-value) and second, the process of creating value (through exchange value). A later passage again makes this point clear:

> The production process, considered as the unity of the labour process and the process of creating value, is the process of production of commodities; considered as the unity of the labour process and the process of valorization, it is the capitalist process of production, or the capitalist form of the production of commodities. (1976, p. 304)

Just as use-value, properly defined, has an objective, sensuous form, so too does the labour process. Yet these dimensions of social reality are masked by appearances in the capitalist system. Use-value, on the one hand, is masked by subjectivist notions and a preoccupation with immediate prices. The labour process, on the other hand, is masked by notions which raise the capitalist to being the active agent of production, and relegate the worker to a passive 'factor of production'. The stripping away of these masks and misconceptions is hindered, not helped, by the labour theory of value and the concept of embodied labour.

The importance of Marx's dual conception of the process of production is that, whatever the particular mode of production, labour remains the *active agency* in the production of use-values within the labour process. While capitalist relations may be necessary to produce profit, labour does not require the capitalist to produce a use-value. Quite obviously this leads directly to a notion of exploitation, conceived without the labour theory of value. If labour is the active agency in the production of use-values, then labour is also the active agency in the production of a surplus product in a class-divided society, no matter how that surplus is *valued*. Yet the capitalists do not contribute to the additional production of use-values, according to Marx's conception of the labour process, even if they provide the social conditions necessary for production in a particular economic system. In short, in terms that would be acceptable to Marx; the capitalists do not work, yet they appropriate the surplus product. From this there follows a notion of class exploitation.

It must be emphasised that no quantitative theory of value is required to reach this conclusion.[3] In particular, the labour theory of value as we have defined it is irrelevant to this (Marxian) demonstration of exploitation. This remark applies even if some valuation may be required to measure different *rates* of exploitation. In any case, such a valuation does not have to be made in terms of embodied labour.[4]

CONCLUDING REMARKS

In this brief consideration of Marx's *Capital* without the labour theory of value it has been shown that, embedded in Chapter 7 of the first volume of *Capital*, is a conception of the labour process quite different from that found in much of the literature. This provides a foundation for a notion of exploitation which is not dependent on the labour theory of value (Hodgson, 1982). The main aim here has been to show that it is possible to 'read' Marx without the labour theory of value and still derive Marx's central conclusions. The labour theory of value is further weakened here only by the suggestion of its redundancy, although this has not, of course, been demonstrated in relation to every issue and topic in *Capital*. This article is intended to start a debate, not to finish one.

Notes

1. The most lucid and prominent version is found in the classic works by Dobb (1940), Meek (1956) and Sweezy (1942). Criticisms of this approach have come from Steedman (1977), Hodgson (1982) and Wolff (1981).
2. The denial by Gintis and Bowles (1981) that labour power is a commodity is based on a peculiar definition of 'commodity' which is not found in Marx. According to them, a commodity, by definition, is something which is produced by 'abstract labour'. Also by definition, abstract labour is the labour of a wage labourer; i.e. it is regulated by the capital–labour relation. Clearly labour power is not produced under these conditions, and thus is not a commodity *according to these definitions*. Gintis and Bowles (correctly) wish to assert that labour power is a special commodity, but it would seem better to do this by delineating the special features of labour and labour power (see Hodgson, 1982), than by changing the clear, useful commodity found in *Capital*. According to Gintis and Bowles, capitalism is no longer 'generalised commodity production', and needs to be distinguished from simple commodity production by other means. The sense of 'commodity' in the present chapter, which is no different from that in *Capital*, is of a good or service which is regularly sold on a market, which says nothing of whether or not the good is produced by a wage labourer.
3. This seems to be the essential argument in Cohen (1979). However, I argue (1982) that exploitation has several dimensions, and that this notion is but one among four. Labour as 'agency' is discussed in Ellerman (1973; 1986).
4. Why not measure the surplus in monetary units? Money is the material representative of wealth under capitalism, not embodied labour.

5 Marxism without Tears: Reflections on 'Rational Choice Marxism'*

After reaching a postwar peak of academic popularity and interest sometime in the 1970s, Marxist theory has since declined from prominence, partly due, of course, to the changed political climate of the 1980s. However, after the debates of the 1970s, Marxist economic theory has now been consolidated into just a few remaining innovative schools of thought.

One of these has been developed, in the main, by Jon Elster and John Roemer. Their favoured description for their brand of theory is 'Analytical Marxism' (Roemer, 1986b), but their approach is too specific to permit this label, with its implicit suggestion that all other Marxisms are not of the analytical kind. The sympathetic description of the Elster–Roemer approach as 'Rational Choice Marxism' by Alan Carling (1986) is preferable and more illuminating.

These works employ 'standard tools of microeconomic analysis' (Roemer, 1988, p. 172) including versions of general equilibrium and game theory. The approach is not without value. Indeed, its analytical rigour is refreshing when compared with the scriptural dogmatism of the Marxian fundamentalists. But it incorporates core assumptions concerning rationality, knowledge and equilibrium which are indistinguishable from neoclassical orthodoxy. Consequently, remove the radical language, and beneath is found yet another version of mainstream economic theory, with a similarly rationalistic, mechanistic, atomistic and individualistic bias. So despite the important analytical contribution of the rational choice Marxists, they have essentially abandoned the project to build new theoretical foundations, and have fallen back onto neoclassical orthodoxy.

Like the Régulation School and others, the rational choice Marxists reject much of the invalid Marxist theoretical baggage, particu-

* This essay is an extended version of a review of Roemer (1988) in the *Review of Social Economy*, 1990. For a critique of Roemer's important (1985) essay on exploitation see Dymski and Elliott (1988). Heijdra *et al.* (1988) make links between the works of Elster and Roemer and the so-called 'new institutional economics'. The latter is discussed in Chapter 12 below.

larly in most cases the labour theory of value and the theory of the falling rate of profit. Both schools are innovative and creative, in contrast to the Marxist fundamentalism which dominated many debates of the 1970s.

But clearly there is a great divergence here. The Régulation theorists reject the validity or priority of the search for 'sound microfoundations' and concentrate, instead, on macro-modelling in an evolutionary framework. In contrast, for the other group, microfoundations are almost everything, and they are keen to preoccupy themselves with game-theoretic or other comparative static, equilibrium models of rational choice.

This outcome might tell us something about the limitations of Marxism itself, but I will not dwell on these in this essay as many of the relevant points have been raised elsewhere in this book. The present chapter has been prompted by the appearance of Roemer's book *Free to Lose* (1988) which, as well as providing an outline of the approach of rational choice Marxism, is also an attempt to reach a popular audience with a less formalistic and more accessible text.

In this major book, John Roemer presents a clear summary of his immense analytical scholarship in the 1980s. The corpus of this work is impressive in its own right, displaying as it does such great flair and analytical precision, but it is also a significant milestone in the development of both Marxist theory and economics as a whole.

It is not worthwhile to engage in a review of Roemer's work which concentrates primarily on the matter of his fidelity to Marx's writings. His work is meant to be innovative rather than interpretative, and Roemer declares openly that many important features of Marxist theory are omitted from his account. Whilst we may thus challenge his appropriation of the 'Marxist' label I will not dwell long on this issue here.

However, in one respect I shall stay on this 'fundamentalist' tack. It is asserted here that for Marx the phenomena of money and capitalist firms are essential objects in his theoretical analysis of capitalism. Having made this pronouncement, it shall be shown that Roemer's chosen analytical framework cannot incorporate such entities.

This essay concludes with some remarks on Roemer's policy conclusions and a critique of his assumptions concerning human rationality.

ABSTRACTION AND WALRASIAN ASSUMPTIONS

The statement that for Marx the representations of money and capitalist firms are indispensable to his theoretical analysis of capitalism should be uncontentious. However, the reasons for the existence of money and capitalist firms, and their appropriate analytical representation in economic theory, have been a subject of great controversy for many years. What is at stake is the capacity of a Walrasian, or other similar neoclassical framework, with their assumptions of perfect information and perfect competition, to represent these phenomena.

Notably, in adopting orthodox microeconomic tools, Roemer places himself within the boundaries of Walrasian-type analysis. Among the features that are common to his work and that of the Walrasian school is a neglect of information problems, such as an asymmetry of information between agents, and in particular – and even more seriously – an exclusion of true uncertainty. Roemer's analysis is founded on models in which such informational issues and problems are insignificant.

However, in one respect Roemer's procedure parallels that of Marx. It is widely acknowledged that the attempt to establish the possibility and existence of exploitation in *Capital* and elsewhere is based on the assumption of a 'pure' competitive market system, where cheating, theft, and physical coercion are excluded. Marx attempted to establish exploitation in this 'pure' case to show that the system was rotten at the core, and could not be improved simply by removing its superficial blemishes.

Given that no theoretical model can describe relevant phenomena in their entirety, some degree of simplification and abstraction is inevitable. For example, the capitalist system cannot be analysed in its entirety, with attention to every one of its past and present facets, anomalies, institutions and details. Clearly, some aspects have to be excluded. The question, however, is which ones. The problem is to construct a framework of analysis with levels of abstraction that are appropriate to the object of analysis.

In particular, in attempting to understand the essence of such phenomena as exploitation and class under capitalism, we have to be very careful about what is left out of the hypothetical 'pure' model of the capitalist system. Being a product of a nineteenth-century intellectual environment in which such considerations were not to the fore, Marx did not give explicit emphasis to matters of information,

knowledge, and uncertainty. With hindsight, however, we now know that it is dangerous to place them anywhere else but in the foreground. It now shall be shown how important this issue is in regard to the phenomena of money and firms.

Money

Central to the economics of Keynes is the idea that money is a means of dealing with an uncertain future, i.e. a future concerning events to which we can attribute no calculable probability. Uncertainty in this sense is excluded from Walrasian theory in all its forms, including its later versions such as those pioneered by Kenneth Arrow and Gerard Debreu. For this reason and others money has yet to be successfully accommodated in such a general equilibrium framework.

This failure has been admitted by leading general equilibrium theorist Frank Hahn (1988, p. 972): 'monetary theory cannot simply be grafted on to Walrasian theory with minor modifications. Money is an outward sign that the economy is not adequately described by the pristine construction of Arrow and Debreu.' Hahn may not agree with Keynesians or others in their proposed theoretical solution to this problem, but his observations concerning the endemic failings of Walrasian theory are valid.

Consider a world of either perfect knowledge, or in which the probabilities of all possible events were well described and known. Given that money is itself not a direct source of utility for consumers, why on earth in such a world would people hold onto money?[1] Money would be used merely as a means of exchange, simply as a means of obtaining desired commodities. In Marx's terms we could have C–M–C, and not M–C–M′ in which, as under capitalism, money becomes itself not simply a means but an end.

In the real world, an important reason for holding money is that it helps us deal with uncertainty. However, in such a situation we do not necessarily know what the expected benefits or losses may be, particularly as we cannot know or estimate the appropriate probabilities. In other words, the incorporation of money proper must involve the introduction of an asset, but not one possessed according to any (explicit or implicit) utilitarian calculus. Money does not figure in Roemer's analysis, nor for this reason is it likely to be easily assimilated therein.

Firms

Similar problems arise with the phenomenon of the firm. Long ago Frank Knight argued that its 'existence in the world is the direct result of the fact of uncertainty' (1921, p. 271). Building on and going beyond Ronald Coase's (1937) 'transaction costs' explanation of the firm, the idea that its existence is partly to do with the problems of organisation and decision-making in the context of true uncertainty has recently been expressed by a number of writers such as Neil Kay (1984), Richard Langlois (1984) and Brian Loasby (1976).

For instance, Kay (1984) has shown that in a neoclassical world of perfect knowledge, the firm is stripped of most, if not all, of its familiar structures and functions. He shows that if perfect knowledge were real then the firm as we know it would not need to exist. Gone would be familiar functions such as marketing, research and development, and the gathering of financial information. Even the monitoring and supervision of labour by foremen and supervisors would vanish, because if the general office of the firm 'is in possession of perfect knowledge, then the need for these intermediaries disappears' (p. 36). The quality and the amount of work performed would be known, and would be paid for at the contracted rate. Furthermore, there is no decisive difference if problems of probabilistic risk are introduced, because there 'is a close affinity between perfect knowledge and risk in terms of homogeneity and replicability of associated events'. Kay concludes: 'True uncertainty and information costs represent the dominant consideration in areas of firm, market and state organization' (p. 83).

Likewise, Loasby (1976) argues that in general equilibrium analysis, including its probabilistic or contingent-claims versions, there is no need in theory for any non-market form of organisation. Although knowledge may not be perfect in this case, knowledge of all the appropriate probabilities would enable complete and fully specified contracts between workers and entrepreneurs, and the employment relation, as we know it, would not exist. An essential feature of the employment contract is that it might deal with true (i.e. non-probabilistic) uncertainty and unforeseen contingencies.[2] In sum, even the probabilistic version of general equilibrium theory, which implies information problems of a stylised and limited kind, provides no reason why firms, as such, should exist.

It seems that the 'pure' capitalism embraced by Roemer provides no justification for, or reason to expect, either money or capitalist

firms. The reason being that in order to explain such phenomena we must refer to the notion of uncertainty. The concept of uncertainty is a necessary (but not of course a sufficient) element in any theoretical explanation of such economic entities.[3]

CONCEPTIONS OF SOCIALISM

The neglect of uncertainty and information problems has an important policy outcome: Roemer's (1988, ch. 10) support for wholesale public ownership and an unspecified but supposedly comprehensive system of planning. Notably, Walrasian theory has been used in the defence of widespread central planning at least once before, in the argument of Oskar Lange and Fred Taylor (1938). Despite the prevailing misconception, the Lange–Taylor model does not involve markets in any real sense. Their proposal was for the state to *simulate* the market by observing excesses and deficits in supply, and adjusting prices accordingly, not in an autonomous and decentralised fashion, but *from the centre*.

Ludwig von Mises and Friedrich Hayek criticised this and similar proposals because they are unworkable. It is quite impossible for any central planning agency either to gather together or to process the required information. If we take into account all the possible variations in type, quality and location of product then the amount of information involved is far too massive. Even if it were brought together and placed at the disposal of a single agency, the planning and price calculations would take years, even on the fastest of known or conceivable computers. It is only by misunderstanding or ignoring such information problems that wholesale central planning can be considered as viable. The real experience of planning in the Eastern bloc, as Alec Nove (1983) and others have described, tells us a different story.

Note, however, that the argument summarised in the preceding paragraph does not imply that von Mises and Hayek were correct in positing the obverse proposition: that instead of planning there should be universal private enterprise and 'free' markets. On the contrary, some important types of information can be usefully centralised and used in forms of limited planning. Although much information is irrevocably dispersed, some can be centralised. Consider the illustration of the telephone directory. Indicative planning is an example of the use of limited and centralised information (Estrin

and Holmes, 1983; Hare, 1985; Meade, 1970). Industrial policy is another (Best, 1986; Carter, 1981; Cowling, 1987; Gruchy, 1984; Hughes, 1986; Rapping, 1984).

To recapitulate, if information problems are neglected then it is quite possible to conceive of society being organised according to a rational, central plan. But in the real world, however, we are faced with problems of uncertainty, limited knowledge, and limited computational capacity which mean that there must remain some considerable scope for both markets and private enterprise under socialism. We do not have to go to the policy extremes of the Austrian School to endorse this conclusion. After all it has been recognised by Gorbachev in the Soviet Union and other Eastern bloc reformers.

For related reasons, industrial democracy cannot have a second place to planning and public ownership, as Roemer (1988, p. 107) suggests. In his comparison of private and public ownership the technology is taken as given. However, technology is not a mere physical fact, but can be altered by both the internal social relations within the firm and by the mode of ownership. Of course, as Roemer (p. 107) states, industrial democracy is neither necessary nor sufficient for public ownership of the means of production. But we should not disregard it for this reason.

Part of its economic value is in terms of improved information flows within the firm. In addition, it has been shown to increase motivation and reduce alienation, as well as restoring human dignity and rights of work.[4] Abba Lerner (1944, p. 1) wrote that the 'fundamental aim of socialism is not the abolition of private property but the extension of democracy'. If we concur with this then industrial democracy has indeed a central and indispensable role alongside pluralism and democracy in the political sphere.

In sum, considering proposals for a socialist future, we find a further and peculiar sense in which Roemer's work, with its statist and centralist policy conclusions, is a logical development not of Marxist economics but of neoclassical theory. This may appear strange to those who associate neoclassical theory with liberal and pro-market policies. However, the informational assumptions of neoclassical theory mean that it is unable to capture important features of decentralised knowledge and decision-making in a market economy. It more truly represents a mythical and centralised command economy where information can supposedly be easily processed and gathered together in the hands of a planning agency.

Neoclassical theory is in this sense more 'socialist', albeit in regard

to a centralised-version socialism which is unattainable and unworkable, than a sophisticated post-Marxism in which problems of information are recognised. Even in his 'revolutionary' rhetoric, Roemer may, in fact, be even more faithful to orthodox analysis than he himself has recognised.

THE ORIGINS OF THE RATIONAL AGENT

It has been shown that Roemer's world is a highly artificial one. Not only are firms and monetary phenomena absent, but also by embracing orthodox microeconomic tools he assumes an omniscient, rational 'economic man'. This ignores a central issue, of which Marx was well aware but which is ignored by Roemer: How is the historical evolution and origin of such a calculating being to be explained?

Roemer, like the orthodox economic theorists, assumes that economic agents are rational and calculating. Although the particular form of greedy and self-interested behaviour can be given specifically capitalist associations (1988, p. 150), the assumptions concerning reason, calculation and knowledge appear to be endowed with general applicability. Indeed, if agents are capable of global, calculating behaviour under capitalism then why not assume that they have been for much of human history? Just as the Wall Street and City of London financiers are assumed to assess probabilities and shuffle their portfolios, so too could the knight in shining armour, before the rescue from the dragon's lair, consider the probability of being killed by the beast and estimate the future remuneration (pecuniary or otherwise) from marriage to the maiden. In both cases, a quick burst on the pocket calculator would be worthwhile before the deed is done.

There are many defects in this picture of the rational agent, even if we may dispense with the elements of caricature. First, as Herbert Simon (1957a) has pointed out, followed by Ronald Heiner (1983) and others, such global and continuous rational calculation is ruled out by the limited computational capacity of the human brain. Second, as Barry Hindess (1984) has observed, the rational choice conception takes the mode of assessment of choices and ends for granted, as if the facts were given, and as if there was only one way of interpreting this data and reaching decisions concerning the appropriate means.

Third, numerous anthropologists, sociologists and social psychol-

ogists – as a very small subset, inspect Douglas (1973, 1987); Harré and Secord (1972); Parsons (1940) – have argued that social and economic motivations are in some sense moulded or formed by social circumstances and institutions. Consequently, we cannot take maximising or self-interested economic behaviour for granted. These are specific historical phenomena, formed in specific cultural milieux. As Julius Sensat (1988) argues persuasively, such a view of individuals and their purposes was also held by Marx. Consider the following passage from the *Grundrisse*:

> Only in the eighteenth century, in 'civil society', do the various forms of social connectedness confront the individual as a mere means towards his private purposes, as external necessity. But the epoch which produces this standpoint, that of the isolated individual, is also precisely that of the hitherto most developed social (from this standpoint, general) relations. The human being is in the most literal sense a political animal, not merely a gregarious animal, but an animal which can individuate itself only in the midst of society. (Marx, 1973, p. 84)

Again, the point is not to deride Roemer and Elster for being unfaithful to Marx. When it comes to that particular sin, we all have committed it. Instead, attention is being drawn to the untenability of the assumptions of rationality that they have borrowed from orthodox theory. In short, explanations of economic behaviour based on rational intentions 'rely on institutional and informational props, which cannot themselves be explained in instrumental terms' (Hargreaves Heap, 1989, p. 7).

Finally, although the description of the rational agent in orthodox economic theory and rational choice Marxism is untenable because of its assumptions concerning information, knowledge, cognitive functions and social culture, there is still a problem. Although the individual is never truly isolated and self-interested, elements of the idea of 'rational economic man' do correspond to real shifts in the economy and society, in particular the rise of capitalist institutions and an individualistic culture.[5] The problem, therefore, is to explain the historical emergence and origins of 'economic man'.

However, economic historians who adopt orthodox tools of economic analysis tend to evade this problem. A good example is the historical work by Douglass North and Robert Thomas (1973) and North (1981) on the rise of Western capitalism. Although in their

discussion of this transition from feudalism many factors are highlighted, the emergence of well-defined private property rights is given a central position in their work. It is presumed that with the gradual emergence of private property in medieval England, rational, calculating individuals began to undertake profit-seeking activities, leading eventually to greater economic prosperity for the nation as a whole.

Despite its value and sophistication, the North–Thomas analysis fails to explain the deliberative and guileful individual which it assumes at the outset. Robert Holton (1985, p. 54) has made this point well in his comprehensive discussion of transition theories: 'As with so much economic theory, the calculative, rational individual is presumed rather than explained.'

Clearly, as the above quote shows, Marx did not take such an individual as given. For Max Weber too, the explanation of the development of rationalistic and calculating behaviour was a problem not to be ignored. What had to be explained was the shift from the 'economic traditionalism' of pre-capitalist society to the active, calculating pursuit of profit that pervades the culture of capitalist business. His answer involved not simply ideology and the 'Protestant Ethic', but also such factors as the separation of productive enterprise from the household and from considerations of kinship, and the emergence of state and other institutions pervaded by rational–legal bureaucratic routines (Weber, 1930, 1947).

EXPLOITATION AND CONSENT

Such issues do not seem to concern the architects of rational choice Marxism. Indeed, they take the untenable notion of the calculating, rational actor of orthodox economics, and extend it unwittingly to other socioeconomic systems. Thus Roemer (1981, p. 5) tells us that under feudalism and slavery the system of extraction of labour from slaves and serfs was 'overtly coercive' not only to our modern eyes but also to theirs. For instance, if 'one had lived under feudalism, the theory of exploitation as the appropriation of surplus labor would have seemed utterly clear'.

The statement would not be true even if the words of Marx's *Capital* could have somehow been communicated to the feudal serfs through some audio time warp. The stunning historical and psychological naivety involved in the view that slaves and serfs were widely

aware of the existence, nature and extent of their exploitation is more than a fluke. It is sustained by a number of false notions, including the very idea that the rational, calculating individual has both current reality and historical universality.

History, psychology and anthropology, however, tell a quite different story. It is too long to relate here, but anthropology, for instance, provides evidence of varied forms of social ritual, hierarchy, authority and dominance. There are examples of consent without coercion or restraint to practices which would be regarded as exploitative and absurd by Western standards. History is full of instances of the apparent consent of slaves to slavery, tribes conniving in their dominance by others, revolting serfs in their thousands appealing against their lord to the perceived legitimacy of monarchal taxation and rule, and Hindu untouchables seeing righteousness in their own subjugation and suffered discrimination.

If we require examples closer to home, consider the behaviours of concentration camp inmates documented in Barrington Moore's *Injustice* (1978) and the experiments by Stanley Milgram (1974), both of which illustrate the extent to which quite ordinary people will go to comply, willingly and often without coercion or obvious gain, with the dictates of what appears as legitimate authority.

Considerations such as these place a question mark above Roemer's approach to the concept of exploitation, based as it is on the notion of the rational and calculating agent. Clearly, by choosing and working extensively in the area of exploitation theory, Roemer has concern for humanity. His theoretical works on exploitation are not without great insight, for they raise serious and fundamental issues concerning our modern predicament. But they ignore much of the problem. Roemer assumes, along with orthodox economics, that people act in a utilitarian manner in regard to perceived benefits or costs. The contention here, however, is that much more is involved in human action than that.

To acquiesce, to strive or to revolt, people require meanings and values, even before the costs and benefits of their alternative courses of action are known. We cannot understand the great events and tragedies of human history, or the nature of oppression and injustice, unless we understand that. In forcing Marxism into an orthodox mould, Roemer has created a Marxism sans history, sans institutions, sans humans, sans tears.

Notes

1. For a discussion of this problem see Grandmont (1983).
2. See the next chapter for further arguments.
3. This argument also is expanded in the next chapter.
4. See Chapter 7 below.
5. Ronald Kieve (1986) makes this point forcefully in his critique of Roemer *et al.* However, this particular critique is marred by its uncritical rendering of Marx himself and its inappropriate and unconvincing dismissal of the alleged political 'reformism' of the rational choice theorists.

6 Marx after Robinson: An Essay on the Distinction Between Production and Exchange and Related Matters*

Although Joan Robinson's economic thought covers a great number of diverse topics it contains some unifying and persistent themes. Two in particular will be considered here. The first is that orthodox analysis applies in the main to problems of the allocation of given resources, and not to the creation or accumulation of goods or services through time. The second, an alleged limitation of orthodox theory and its link with pro-capitalist ideology, is that conceptual and normative distinctions must be made between incomes from work and incomes from property.

It is somewhat surprising, given the persistence of these themes, that they have not received more evaluation and attention, either by supporters or opponents of the arguments. This essay begins to rectify the deficiency. It proceeds by arguing, first, that these two linked Robinsonian themes are more problematic than may appear at first sight. Second, there is a connection with the radical literature on the labour process and, third, with modern developments in the theory of the firm. It will be argued that the Robinsonian themes can only be sustained by introducing a Knightian or Keynesian concept of uncertainty.

THE ECONOMICS OF A PRISONER-OF-WAR CAMP

'There is one very special case to which the Walrasian analysis applies pretty well,' writes Joan Robinson (1979a, p. 153), 'that is the market

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in a prisoner-of-war camp.' In this system nothing is produced and prisoners swap the contents of their Red Cross parcels using cigarettes as money. 'It makes sense also, with some modifications,' she writes elsewhere, 'in an economy of artisans and small traders . . . Two essential characteristics of industrial capitalism are absent in these economic systems – the distinction between income from work and income from property and the nature of investments made in the light of uncertain expectations about a long future' (1979a, p. 34).

These ideas are recurrent.[1] They are not raised once or twice and then dropped, through doubt or frustration, but are repeated with increasing persistence, clarity and confidence. Harvey Gram and Vivian Walsh, in a timely evaluation of Joan Robinson's work published the year of her death, saw the 'distinction between income from work and income from property' as fundamental to her thought and to the questions she raised concerning distribution and accumulation (Gram and Walsh, 1983, pp. 519, 547).

However, there still remain a number of outstanding conceptual issues. Despite repetition of these distinctions – between incomes from work and from property, and between allocation and production – the reasons why orthodox theory has not embraced them still deserve further examination. A clue is provided by Joan Robinson herself in one of her later essays, where she provides an instructive quotation from Robert Clower (1976):

> An ongoing exchange economy with specialist traders *is* a production economy since there is no bar to any merchant capitalist acquiring labour services and other resources as a 'buyer' and transforming them (repackaging, processing into new forms, etc.) into outputs that are unlike the original inputs and are 'sold' accordingly as are commodities that undergo no such transformation. In short, a production unit *is* a particular type of middleman or trading specialist.

Typically, neoclassical economists refer to production as an 'exchange with nature', and for at least some members of the Austrian School all purposeful human action, including production, is exchange.[2] These approaches share common roots and some of the key ideological presumptions of classic liberalism. The choosing, propertied individual is regarded as the primary and animating force in the social system. Decisions to buy and sell impel and determine production, as expressed in the idea of 'consumer sovereignty'.

Decisions in the market-place are primary and active, production is merely consequent and passive.

The implications of this orthodox view are clear. First, there is no substantial distinction between production and exchange, as the former is seen as being animated by (and even taking the form of) the latter.[3] Once the deal is struck the wheels of production are essentially predetermined. The law of contract, through appropriate penalties, ensures that the goods will appear at the appointed time and in good order. In this case all the key choices and actions take place in the determination of the contract itself. Production is merely an annex of the market; a place where agents act in accordance with the relevant clauses of the deal.

There is another consequence of this point of view. If all action is animated by exchange, and exchange involves property, then work itself is part of an exchange. After all, in the labour market the worker agrees to an employment contract which is supposed to specify the kind of work to be carried out. Labour time is bought (or 'hired'), perhaps by the hour, in return for an agreed wage. In this case the employee is exchanging his or her property, i.e. labour time, for an income, i.e. wages. Thus Joan Robinson's distinction between income from work and income from property dissolves. Work itself, according to this view, is simply the hourly consumption of the property that has been bought by the employer. The wage thus appears as an income from the sale or rent of this particular property, just like any other.

Consequently, in the classic liberal view of the world – the view that is still taken by most economists – Joan Robinson's two distinctions are not meaningful or substantial. Production is animated by exchange, and wages too are an income from property, albeit in a special sense. Thus without further theoretical support the Robinsonian distinctions are condemned to future obscurity. The economics of the prisoner-of-war camp will continue to be applied, with amendments and additions, to the modern dynamic and corporate world. The question remains: are the distinctions substantial, and if so why?

The escape route proposed here from this theoretical incarceration is as follows. Clearly, the issues involved relate directly to the nature of the employment contract and of productive institutions such as the firm. First, a Marxian view that the Robinsonian distinctions can be sustained mainly by distinguishing between labour and labour power will be examined and found wanting. Next, some related work on the

employment contract by Herbert Simon will be shown to have taken a further but insufficient step in the right direction by introducing an element of indeterminacy. This leads on to the Coase–Williamson argument that the existence of the firm, and the peculiarities of the employment contract, are explicable in terms of transaction costs. On the basis of recent discussions of the nature of transaction costs, it is argued that the information problems associated with the firm and employment contracts cannot be properly understood without the recognition of true uncertainty. This leads directly to the rehabilitation of the Robinsonian distinctions.

LABOUR, LABOUR POWER, AND INDETERMINACY

The distinction Marx made between labour and labour power is a useful entrée for examining the distinctions between production and exchange, and between work and property incomes. Harry Braverman (1974) is largely responsible for the current renewed emphasis on the distinction between labour and labour power in Marxian theory.[4] As in Marx's writings, labour, the activity of work, is distinguished from labour power, the potential for work. It is the latter that is bought and sold in the market-place by the hour. Marxian labour process theorists have thus concerned themselves with the specific social arrangements and practices concerned with the extraction of the maximum possible amount of labour out of a given quantity of labour power.[5] They are able to do this by asserting that no predetermined quantity or quality of labour flows automatically from the sale of the labour power that is specified in the contract of employment. Instead, the outcome depends on a struggle and trial of strength between management and employees.

Whilst labour does not flow automatically from labour power, does this also mean that there is virtually no connection between them? Is it possible, for instance, to go so far as Richard Edwards (1979, p. 12) in the following statement?: 'Workers must provide labour power in order to receive their wages, that is, they must show up for work; but they need not necessarily provide *labour*.' Perhaps in response to such over-stretched arguments, Ian Steedman (1982, p. 151) writes: 'In normal circumstances, to have disposal over workers' ability to work means precisely to get them to perform a certain number of hours of a certain kind of work: if they remain idle, or even work less hard than was anticipated by the capitalist, then the latter *does not*

have full disposal over the workers' capacity for labour.'

Steedman's conclusion is not simply to re-establish a linkage between labour and labour power but to assert that the concept of labour power is itself 'redundant' (p. 153). Whilst this conclusion is not endorsed here, it is notable that Marxian labour process theorists have failed to give an adequate response to such arguments.

Furthermore, and strikingly, much of Braverman's analysis can be turned against his own assertion of the distinction between labour power and labour. In giving great emphasis to the methods through which it is ensured that the maximum labour is extracted from labour power, such as hierarchical organisation, incentives, discipline and managerial supervision, Braverman is implying that the amount of labour performed is essentially under capitalist control. As Craig Littler and Graeme Salaman (1982, p. 252) put it: 'the overall theoretical thrust of Labor and Monopoly Capital is to suggest that capitalists no longer face the problem of labour power as a variable and indeterminate component of the production process'.

It is questionable that recent work by Marxists is more successful in overcoming this problem. In a major study of the growth slowdown of the US economy, Samuel Bowles, David Gordon and Thomas Weisskopf (1984) also draw on the distinction between labour and labour power. In their analyses they stress the possibility of a 'free lunch': i.e. due to waste and slack in the economy, the possibility of extra output being obtained without an increase in inputs.[6] Going further than Harvey Leibenstein's (1976) identification of 'X-efficiency', they claim to explain variable productivity through reference to the balance of class forces within the firm.

Similarly, Samuel Bowles's (1985) analysis focuses on the (costly) processes through which employers exercise power over labour, and the ability of workers to resist. Likewise, the amount of labour performed, and consequently the output, depends on factors such as the level of unemployment and the degree of unionisation, both of which help to determine (positively or negatively) 'employer leverage' over workers.

The relevance of the difference between labour and labour power for the Robinsonian distinctions is obvious. Yet, given the parameters that determine 'employer leverage', a fixed amount of labour will exude from a given amount of labour power. Output is not simply a function of capital and labour, but a determinate (more complex) 'production function' exists nevertheless. One is left asking what is the purpose of the distinction between labour and labour

power in this analysis, especially given such orthodox features as the assumption of maximising behaviour by both employers and employees, which results in a predetermined equilibrium solution?[7] There is, in fact, despite claims to the contrary, no 'free lunch' in this model. Anything 'extra' must flow from a change in the parameters governing output.

Formally, Bowles's (1985) theoretical model is virtually identical to that of Carl Shapiro and Joseph Stiglitz (1984). Their important shared feature is an equilibrium solution in which profits are maximised, with a level of employment that is at an equilibrium in the sense of ensuring a degree of discipline over the workforce that is consistent with an optimal level of output:

> If there were no unemployment and if all firms paid the market-clearing wage, then the threat of being fired would not lead individuals to reduce their shirking: they would know that they could costlessly obtain another job. But if . . . there is unemployment . . . then workers have an incentive not to shirk: there is a real cost to being fired. (Stiglitz, 1987, p. 20)

What is not essential to a model of this type is the phraseology of class struggle; indeed, real struggle is actually excluded. Whilst in some sense there is a distinction between labour and labour power – in that performed labour will depend upon factors which are additional to the employment contract – given those factors the amount of labour is predetermined once the contract is agreed. Once again, the Robinsonian distinctions disappear.

Braverman, Bowles and others, like Marx, before them, all fail to emphasise an essential element in the argument, without which the distinction between labour and labour power collapses into verbiage and irrelevance. To sustain the distinction, and the very autonomy of production from exchange, it is necessary to show that (within limits) the amount of labour extracted from labour power is in some sense indeterminate.

As far as this author is aware, the first theorist to give a substantial treatment of indeterminacy in the employment contract is Simon (1951).[8] Simon attacks the traditional view in economic theory that labour is a 'passive factor of production', and asserts that the orthodox view 'abstracts away from the most obvious peculiarities of the employment contract' (p. 293). This is seen to differ 'fundamentally from a sales contract – the kind of contract that is assumed in

ordinary formulations of price theory'. In a sales contract a 'completely specified commodity' (p. 294) is exchanged for an agreed sum of money. Even in cases where complete specification is absent, the details of the agreement are often regarded by law as implicit or 'understood'. In contrast, in the employment contract the worker agrees to perform one from a mutually agreed and limited range of patterns of work, and allows the employer to select and allocate the tasks. In effect the worker agrees to accept the authority of the employer, notably concerning the specification of the particular work to be performed.[9]

Whilst noting the frequency of contracts of this type in the real world, Simon does not examine the reasons why employers do not or cannot fully specify the work in advance. Fortunately, however, these reasons are fairly well understood today. Imperfectly specified employment contracts are widely attributed to the possibility of unforeseen changes in product demand or in the supply of materials or components, or of interruptions in production as a result of mechanical malfunctions or industrial disputes. Herein is a source of the indeterminacy in production. We shall suggest below that this indeterminacy is of a type for which probabilities cannot be known.[10]

The nature of 'imperfect specification' in a labour contract must be further clarified. It does not simply mean that the terms of the contract are not spelt out in detail: in this case they may still be 'understood' by the parties. The imperfection of the labour contract goes further in that it covers a range of possible outcomes. Thus 'imperfect specification' here connotes also a degree of indeterminacy of outcome, whereby the contract cannot be generally 'understood' to refer to something that is well-defined and specific.

The pecuniary consequence of this indeterminacy, Simon argues, is that compared to a sales contract where the worker is contracted to supply a well-specified commodity or service, the capitalist will pay a higher wage for the privilege of asserting authority over the worker and of postponing the precise specification of the work to be performed.

The key indeterminacy in Simon's model is the fact that the outcomes (for example, profits, work satisfaction) for each pattern of work are not known precisely at the time of contracting. Simon formalises this by considering the probability density function of outcomes for each feasible pattern of work. At the time of contracting both employer and employee are assumed to know the relevant probabilities but not the precise outcomes.

While Simon advances our understanding of the employment contract by recognising its essential indeterminacy, it is notable that he treats this as a matter of calculable probability. Herein lie some problems. For if the probabilities are known then it not only makes possible a complete specification of the contract at the start,[11] but it also undermines the concept of authority that is central to Simon's argument. Given the probability distributions, the worker can compute the likelihood that each pattern of work will be selected by the employer. Thus the acceptance of authority is not simply within limits but also with known probabilities of employer behaviour. The ruling authority is not the employer, but, as it were, the random throw of the dice. Given maximising behaviour, the employer has no more power over the choice of outcome than the employee. The only significant difference is that the choice of pattern of work has the employer's utility as the maximand, given that the worker has maximised first.

Whilst Simon's attempt to differentiate between employment contracts and sales contracts is a forward step, serious internal problems remain. These are not simply problems of 'lack of realism' to which Simon himself openly draws our attention; they are problems regarding the internal coherence of the analysis itself.

COASE, WILLIAMSON AND TRANSACTION COSTS

A more recent and better-known approach to the peculiarities of the employment contract, which also relates to the issues at hand but is also inadequate in that context, has been developed primarily by Oliver Williamson (1975, 1985) on the basis of the classic article by Ronald Coase (1937). Coase's principal concern was with the capacity of the firm to supercede the price mechanism and allocate resources by command rather than through price. As Coase puts it: 'Outside the firm, price movements direct production, which is co-ordinated through a series of exchange transactions on the market. Within a firm, these market transactions are eliminated and in place of the complicated market structure with exchange transactions is substituted the entrepreneur–co-ordinator, who directs production' (p. 388). Coase's well-known explanation of why this occurs is in terms of the 'cost of using the price mechanism' (p. 390).

Following on from this approach, Williamson developed his central thesis that economic institutions such as the firm 'have the main purpose and effect of economizing on transaction costs' (Williamson,

1985, p. 1). However, the idea of transaction costs 'has become a catch-all phrase for unspecified interferences with the price mechanism' (Dahlman, 1979, p. 144). Furthermore, the typical formal representation of transaction costs among mathematical economists, as a fixed proportion of the value of the goods that are exchanged, differs 'in no significant way' from a regular transportation cost.

Dahlman (1979, p. 148) suggests that all types of transaction cost 'reduce to . . . resource losses due to lack of information'.[12] It can be accepted that for purposes of theoretical clarification, Dahlman's argument is an important step forward, but it is not clear what a reduction of costs to matters of information could mean. Indeed it could be fitted neatly into a neoclassical paradigm. One possibility, following the lead of George Stigler's classic (1961) article, is to accommodate search and information costs in a probabilistic framework. Information is then being treated just like any other commodity, and is subject to the marginalist rule that its consumption is optimal when the marginal cost of information search and acquisition is equal to its expected marginal return.

However, Keynes's insights (1936, ch. 12; 1937) have rendered the very idea of a rational calculus of information costs objectionable; in the normal circumstances of uncertainty we are forced to abandon full, rational calculation and are obliged to fall back on 'the convention', or 'average opinion'. Further, if such a rational calculus were possible, it is not clear why market contracting is superseded by the organisation of the firm. After all, if information is simply a commodity like any other, there is no apparent special rationale for the firm to act as the minimiser of these information-related transaction costs. The 'information costs' version of the transaction costs argument does not appear to supply a convincing reason for the existence of the capitalist firm and for the relative rarity of alternative arrangements in real life. As Brian Loasby (1976) has argued, there is no need in theory for non-market forms of organisation in the general equilibrium model. Even the probabilistic version of general equilibrium theory, which implies information problems of a stylised and limited kind, provides no reason why firms, as such, should exist.

Richard Langlois's (1984) solution to this problem is to make a distinction between different kinds of information problem which parallels Frank Knight's (1921) famous distinction between risk and uncertainty. The essence of the argument is that 'parametric uncertainty' (akin to Knight's 'risk') cannot be used to find the source of transaction costs which are relevant to the explanation of the relative

efficiency of organisations such as a firm. A similar argument has been offered by Neil Kay (1984) who has shown that, in a neoclassical world of perfect knowledge, the firm is stripped of most of its familiar structures and functions. The outcome is the same if problems of probabilistic risk (or 'parametric uncertainty') are introduced, because there 'is a close affinity between perfect knowledge and risk in terms of homogeneity and replicability of associated events'. The argument leads inexorably to the consideration of true uncertainty as an essential concept to understand economic institutions such as the firm.[13]

By emphasising true uncertainty (as opposed to risk), but with different features and qualifications, Loasby, Kay and Langlois are all returning to Knight's *Risk, Uncertainty and Profit* and a core idea in its discussion of the firm that its 'existence in the world is the direct result of the fact of uncertainty' (1921, p. 271).[14] In the light of these theoretical developments it seems that an answer to Coase's question as to why firms exist is re-emerging in terms of a non-probabilistic concept of uncertainty. Transaction costs may or may not remain an intermediate category in the argument. But it is clear that transaction costs as a category are not meaningful without some concept of true or radical uncertainty, and this, either directly or indirectly, seems to be a necessary concept to explain the existence of the firm.[15]

A REHABILITATION OF THE ROBINSONIAN DISTINCTIONS

Whilst we are concerned with production *per se* and not simply with the specific institution of the capitalist firm, it is arguable that some of the uncertainty pertaining to the latter relates to the suggested indeterminacy of the production process itself as suggested above, i.e. in terms of its inherent and unavoidable vagaries and variations. Thus it is proposed here that there is some degree of objective indeterminacy in the production process, partly as a result of which, agents are uncertain, in the sense of Knight or Keynes, as to the outcomes.[16]

In general we can never demonstrate the existence of indeterminacy because there is always the possibility of a hidden and unknown causal mechanism at work. However, what we do know from the mathematical theory of chaos (Gleick, 1988; Stewart, 1989) is that even if the world is deterministic, it would almost certainly behave in

a non-probabilistic, and unpredictable way. The possibility of 'deterministic chaos' is thus established. Consequently, even if the world is deterministic, we should have to treat it as if it were indeterministic and unpredictable. Even if all our choices are caused, many of them will appear spontaneous and free. There is thus established a strange ground upon which determinists and indeterminists can meet.

On such a basis the Robinsonian distinctions between production and exchange can be rehabilitated, by the inclusion of an element of indeterminacy in production. Because the consequences of contracts pertaining to employment and production are not known precisely, even in terms of calculable probabilities, even when all contracts are concluded, real uncertainty is unavoidable and there is a functional distinction between production and exchange; a distinction that has eluded many orthodox theorists. Production is no longer an annex of the market because of the indeterminate outcome of production itself. All agents in the productive process confront the unforeseen and have to react to the unexpected. The forthright will engage with others to create stratagems and institutions to deal with the problems that are foreseen. But essentially, the notion of an 'optimum' or 'equilibrium' is without much meaning, for eventualities depend on imagination and expectation concerning an unfolding but uncertain future.

Of course, for Keynes (1936, 1937) the existence of uncertainty was crucial in his theory of macroeconomic behaviour. But, with a few exceptions, the importance of radical uncertainty to the analysis of microeconomic institutions, such as the firm, is not widely appreciated. An important exception is George Shackle (1972, p. 423), who asserts that 'business is contest rather than co-ordination, that its appropriate theory is the theory of battle rather than that of pre-reconciliation'. Such real struggle and conflict depend, as Shackle shows with his customary brilliance, on such elements as incomplete specification of the 'rules' and the exploitation of ignorance or surprise.

We now turn to the second Robinsonian distinction: between incomes from property and incomes from work. Given that production has an indeterminate outcome it could be argued that a trader who hires a machine or other productive facilities to a capitalist is subject to a similar degree of uncertainty as the worker who hires his labour power. In both cases remuneration is fixed, once certain conditions are met.

What is different, however, is that whilst the worker is actively

engaged in production, the owner of capital goods is not actively involved in the process, unless he or she takes managerial responsibilities and works as well. (In this case the individual combines roles as both owner and managerial worker.) To receive an income from work, the provision of an object of property, i.e. labour power, is not sufficient. The worker must submit to the authority of the employer but also continue as a purposeful agent, i.e. provide deliberate and purposeful work.

The elaboration of this distinction between two different sources and types of income cannot be carried out in full here[17] but the argument is partly based on the view that human agents are capable of purposeful behaviour but capital goods are not. Essentially, one is active but the other is passive. The owners of labour power and the owners of capital goods are both active and purposeful decision-making agents in the sphere of exchange. But during the process of production, capital goods themselves are passive instruments, subject to the purposeful activity of the workers (and managers). Owners, as such, here play no direct role.

Thus there is an essential distinction between income from property and income from work. The owner of property may obtain an income from hiring the goods, simply as a consequence of concluding a contract on the market. The goods themselves are not active agents, so they play no part in varying potential output. In contrast, the worker agrees to provide labour but to an imperfectly specified pattern, subject to some indeterminacy as elaborated above.[18]

Given the indeterminacy inherent in production, there must be choices and clashes of will: matters are not resolved *ex ante* by contractual or market-place decisions, despite the orthodox assertion that the employment contract is subject to 'continuous renegotiation' (Alchian and Demsetz, 1972, p. 794) during production, so that payments actually reflect productive contributions *ex post*. But this ignores the arguments of Coase, Simon, Williamson and others to the contrary. What has been established here is that the distinctions they make between employment and other contracts, and between firms and markets, can be sustained only on the basis of the concept of true uncertainty.

Strikingly, just as these distinctions depend upon the concept of uncertainty, an element of indeterminacy is also required to define the concept of purposeful behaviour. As Russell Ackoff and Fred Emery (1972) have argued, a key feature of purposeful behaviour is that its goals are not pre-determined. Unlike a programmed, goal-

seeking device, such as a thermostat, the human agent can potentially change his or her goals *without any external stimulus*. Even in a sophisticated computer program which enables a kind of 'learning', where past experience leads to a different response to a repeated problem, the outcome is not truly purposeful behaviour because the output is still predetermined and the goals themselves are fixed. The capacity to change both behaviour and goals without external stimulus is an essential component of will and real choice. Yet this is essentially to include an element of indeterminacy: a feature that is not only absent from orthodox economic theory (Loasby, 1976, p. 5; Hodgson, 1988, pp. 10–12), but is also essential if Joan Robinson's distinctions, between production and exchange, and between incomes from work and property, are to be sustained.

In a very real sense, we have arrived at a modernisation of some of the key themes of the economics of Marx, with the introduction of uncertainty in the sense of Knight or Keynes.[19] This is also an essential thrust of Joan Robinson's work, and sustains her constant reminders of the stature and complementarity of Keynes and Marx as economists.

Notes

1. See, for instance, Robinson (1942, pp. 18, 92; 1960, pp. 92–3; 1965, pp. 75, 141; 1969, pp. 3–4; 1973b, p. 115; 1979a, pp. 5, 29–30, 34, 68, 153, 157). These ideas almost certainly owe their origin to the influence of Marx on Robinson's economic theory; see, for example, Marx (1972, pp. 480, 499; 1973, pp. 274–5; 1976, pp. 675–84; 1981, p. 501).

   In one passage Robinson (1979, p. 5) makes explicit reference to Bukharin's (1972, pp. 54–6) discussion of the importance of production and accumulation as opposed to the 'point of view of consumption', as allegedly typified in the economic theory of Böhm-Bawerk and the Austrian School.
2. For example, Jack Hirshleifer (1970, p. 12) and Ludwig von Mises (1949, p. 97). Notably, recent exponents of the 'Property Rights School' (for example Furubotn and Pejovich, 1974) have failed to criticise, with or without their customary vigour, their neoclassical and Austrian colleagues for assuming that 'nature' has property rights to exchange.
3. Whilst orthodox economists have traditionally ignored the 'black box' of production, some recent orthodox attempts to look inside it have typically reduced production and the employment contract to a more or less straightforward exchange. For a classic statement in this regard see Alchian and Demsetz (1972), and for critiques see Hodgson (1988, ch. 9), Nutzinger (1976) and Tomlinson (1986).
4. After a century of neglect, by the late 1970s much Marxist scholarship

was focused on the chapters in *Capital* which are devoted to the processes of production (Marx, 1976, chs 7–18). In addition to the inspiration of Braverman (1974) note the remarks in Rowthorn (1973) on the significance of the distinction between labour and labour power and on 'despotism in the labour process' (p. 10).

5. For reviews of the literature on the labour process see Littler and Salaman (1982), Nichols (1980), Thompson (1983), Zimbalist (1979).
6. Lest we ridicule such a suggestion, note that a recent theory of the origin of the universe considers that matter itself can be created, as it were, from nothing: 'I have heard it said that there is no such thing as a free lunch. It now appears possible that the universe is a free lunch' (Guth, 1983, p. 215).
7. Indeed, Bowles (1985, p. 20) explicitly assumes that 'workers have complete information about job and wage conditions throughout the economy, that employees know all (actual and potential) employee characteristics' and assumes away 'problems of risk aversion and issues of reputation (workers and capitalists alike have no memories)'. It is a defect of the classical, Marxian and neoclassical traditions in economics that insufficient attention is paid to problems of information, uncertainty, cognition and knowledge. It is mainly due to their attempts to deal with these issues that Knight and Keynes offer signposts into the twentieth century.

   Note, however, that in some passages of Marx's work, and unlike the Bowles (1985) model, there is a sense of an ongoing and non-equilibriating, historical process (for example Marx, 1976, chs 7–17) and more than a hint of post-Keynesian indeterminacy (for example Marx, 1969, pp. 504–9). On the latter see Kenway (1980) and Hodgson (1982, ch. 13).
8. Gintis (1976) is one of the few theorists to offer a sizeable discussion of Simon's article, but, despite making some valid criticisms, he does not give sufficient credit to the innovative character of Simon's theory. Notably, Simon's article is included in Putterman's (1986) excellent collection.
9. Many years ago Knight (1921 p. 270) argued that 'with human nature as we know it it would be impracticable or very unusual for one man to guarantee to another a definite result of the latter's actions without being given power to direct his work'. As Coase (1937, p. 401) rightly points out, this statement is not universally true; consider the counter-example of a contractor who 'is guaranteed a certain sum providing he performs certain acts'. Nevertheless, whilst the indefinite character of labour is not a universal condition of human existence, it is a feature of typical employment contracts in a capitalist firm, and is thus associated with the existence of employer authority. Also, notably, Coase foreshadows Simon's emphasis on the authority relation as a key characteristic of the employment contract when he quotes Batt (1929, p. 6) to the effect that the 'right of control or interference . . . marks the servant [i.e. employee] from an independent contractor' (Coase, 1937, p. 404). Strangely, Simon (1951) does not refer to Knight nor even to Coase's seminal paper on the firm.

10. Note that uncertainty could result either from the fact that there are no objective probabilities to be ascertained, i.e. there is indeterminacy in a full and radical sense, or that they exist but they cannot be known. On this distinction see Elster (1983, pp. 27–8) and Lawson (1988).
11. Clearly Simon (1957a) has an answer to this question in terms of bounded rationality, i.e. the difficulty in making all the computations and assessments that are involved in such a fully-specified, contingent-claims contract. This does not appear, however, in his 1951 article. Furthermore, bounded rationality, as Simon later made clear, relates to uncertainty in the true sense, as used by Keynes and Knight. A further response to the question could be made in terms of transaction costs in the manner of Coase (1937) or Williamson (1975), as discussed below.
12. As noted elsewhere (Hodgson, 1988) this is an example of the mistake of 'informational reductionism'.
13. An important feature of this line of argument is that it does not rely on the conception of the human agent as opportunistic. Consider, as an example, the possibility of a person reneging on a half-completed contract. The problem here is not fundamentally one of opportunism *per se*: it is because one party to the contract is uncertain if the other will renege or not. The other person may, or may not, be opportunistic and self-seeking; that is a secondary question. Indeed, it might even be possible that he or she might break the contract for altruistic rather than selfish reasons. Strictly, the question of opportunism is not the basic issue and Williamson's emphasis on opportunism as the central element of transaction costs is quite inappropriate. The key point is the existence of the uncertainty as to whether or not the contract will be completed.
14. Coase (1937, p. 401) points out that 'nowhere does Professor Knight give a reason why the price mechanism should be superseded' in the firm. If the reason for the existence of the firm is due to relatively high transaction costs, then, as argued above, these costs are largely informational in character and depend upon the existence of (Knightian) radical uncertainty. Thus in attacking some of Knight's genuine limitations, Coase almost throws out the baby with the bathwater.
15. Note also the parallel with the well-established Keynesian argument that money exists largely to deal with an uncertain future, and the role of money is very much to do with this uncertainty. Consequently, as argued in Chapter 5 above, types of analysis which rule out true uncertainty, such as neoclassical general equilibrium theory, cannot cope with relevant modern phenomena such as money and the firm.
16. Of course, it is not being argued that uncertainty is the *only* important feature here. See Hodgson (1988, ch. 9) for a further discussion of the essential characteristics of the firm.
17. For a further discussion see Hodgson (1982, chs 16–18).
18. Note, however, that the variable and indeterminate character of output renders a variable and indeterminate quality not to wages, which are normally fixed by the employment contract (albeit sometimes with the addition of output or profit-related bonuses) but to profits. Thus there is a further parallel with Knight's (1921) explanation of the origin of profit in terms of uncertainty.

19. It should be stressed that, contrary to the more frequent interpretation, emphasis on the concept of uncertainty does not necessarily lead to a subjectivist outlook regarding individual knowledge and the springs of action. In contrast, as Tony Lawson (1985) has argued, there is a view in Keynes's own writings which stresses the function of social conventions in providing a basis upon which to form expectations of the future and to act accordingly. We cope with uncertainty not simply on the basis of our own subjective resources, but with conscious or habitual recourse to the rules and conventions with which we interact. Thus, as suggested elsewhere (Hodgson, 1988), the introduction of the concept of true uncertainty makes possible an alternative line of theoretical development along institutionalist lines. The argument, in short, is that in a world of uncertainty, where the probabilistic calculus is ruled out, rules, norms and institutions play a functional role in providing a basis for decision-making, expectation, and belief. Without these 'rigidities', without social routine and habit to reproduce them, and without institutionally-conditioned conceptual frameworks, an uncertain world would present a chaos of sense-data in which it would be impossible for the agent to make sensible decisions and to act. See also Heiner (1983).

Part II
Towards a New Economics

7 Theoretical and Policy Implications of Variable Productivity*

> 'We must not confine our attention to the economic measures that governments can take, or expect too much of them. We have thought too much about the Chancellor of the Exchequer and too little about the other 25 million workers in the country. The discussion of what settings the government should aim to keep on its dials, and which valves it should open somewhat and which close – this is a necessary discussion, but it becomes preoccupying, and in so far as it tempts us to assume that national development depends mainly on what is being discussed it takes our eyes away from . . . the remedies for long-term development.' (Sir Henry Phelps Brown, 1977)

The post-war synthesis in economic theory has provided us with, on the one hand, so-called 'Keynesian' macroeconomics, with an emphasis on the instruments and mechanisms of aggregate monetary and fiscal policy, and on the other hand, surviving and even resurgent neoclassicism with its predilection for policy solutions based on market forces. Much is excluded by this synthesis. In this paper attention is shifted to a question that is skirted by the prevailing orthodoxy: the causes of differences and variations in productivity. We start from the fact that large variations in productivity persist even with similar capital equipment, labour and technology. This fact alone contradicts the neoclassical theory of production and an exclusive emphasis on aggregate fiscal and monetary matters in macroeconomic theory and policy. In the second section of this article, our legacy in the theory of production, with its limitations, is discussed, along with some attempts to move away from the neoclassical paradigm. The basis of a different theoretical approach is sketched out in

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the third section, with emphasis on certain aspects of the work of Marx. The fourth and final section relates the theoretical discussion to empirical evidence on the relationship between worker participation and labour productivity. This, in turn, suggests an approach to macro–microeconomic policy based on the transformation of relations of production in the workplace. In short, a genuine 'supply side' transformation (in radical terms rather than in terms based on individual incentives) is proposed to supplement conventional 'demand management' techniques.

EMPIRICAL EVIDENCE ON DIFFERENCES IN PRODUCTIVITY

There are, of course, a number of ways of defining productivity, and of measuring it. However, as our purpose in this section is merely to point out the existence of notable differences and variations in productivity, and the overall pattern for a few major capitalist countries, these technical issues can be left on one side.

Useful data on absolute levels of productivity are provided by, among others, Maddison (1977) and Prais (1981). The evidence indicates that average productivity in Britain was higher (on a per worker or per worker-hour basis) than in the USA, Germany, France and Italy in the late 1800s, but had slipped behind all these countries by the 1970s. However, estimates of current productivity levels differ. The Hudson Report (1974) found that in 1969 productivity was 3.45 times greater in the USA than in the United Kingdom. Maddison's figures give a corresponding ratio of 1.61. Other estimates lie within these two extremes. For 1935–9, Rostas (1948) calculated that output per worker was 2.2 times greater in the USA for a selected sample of manufacturing industries. For 1950, Paige and Bombach (1959) carried out a calculation for manufacturing as a whole and found a factor of 2.7 in favour of the USA. In a recent and extensive study Prais (1981) found that in 1978 productivity per worker was 3.0 times greater in the USA and productivity per worker-hour was 3.2 times greater. It affects that the gap has been steadily increasing for most of this century.

Comparisons between Britain and other West European countries by Maddison and Prais show that productivity levels in France and West Germany are between 20 per cent and 50 per cent greater than in the United Kingdom. Most authorities agree that the level of

productivity in Japan, although increasing very rapidly, did not catch up with Britain in the 1970s. Huge differences in national levels of average productivity are clearly evident.[1]

Productivity differences are even more dramatic in particular industries. Prais gives many examples, including the fact that the American motor vehicle assembler is, on average, five times as productive as his or her British colleague. A report by the Central Policy Review Staff (1975) found the car assembly worker in the United Kingdom about half as productive as his or her counterpart in France, West Germany or Italy, even with identical plant and equipment. Similar differences are found in other industries, but the national pattern is by no means uniform. It would be wrong to conclude, however, that large compensatory increases in Britain, to reduce the gap, can be ruled out.

Low Investment as the Basis of Low Productivity?

It is well known that investment and fixed capital per employee are lower in Britain than in other developed capitalist countries (Blackaby, 1978; Caves and Krause, 1980). However, the evidence does not indicate that low levels of fixed capital are the principal explanation of low productivity. Blume (1980), Brown and Sheriff (1978), and Purdy (1976) show that the average increase in output resulting from a unit of investment expenditure in Britain is much less than in France, Italy, West Germany and the USA. Pratten (1976) examined 100 multinational companies located in Britain, the USA, West Germany and France, and found that differences in the amounts of plant and machinery appeared to be responsible for only one-fifth of the average difference of productivity of 35 per cent. Other factors, such as length of production run, efficiency of capital utilisation and final product mix, together were more important than differences in capital stock or investment. Earlier, Rostas (1948) and Frankel (1957) were unable to confirm a relationship between capital per employee and productivity in a comparative study of the USA and the United Kingdom. The extensive works of Caves (1980) and Prais (1981) both support the view that variations in capital equipment per employee are not the main reason for variations in productivity. To find the main sources of productivity differences, and the basis of their potential variation, we must look elsewhere.

THE RELATIVELY INVARIANT THEORY OF PRODUCTION

The empirical evidence indicates that large variations in productivity are possible even with similar or identical capital equipment. Yet the prevailing, neoclassical theory of production treats output as an automatic and direct result of the provision of 'labour' and 'capital'. When output exceeds that predicted by the neoclassical production function, the residual is then explained by improvements in 'technology'. However, this additional variable is even more difficult than 'labour' or 'capital' to quantify, and it has been shown that differences in productivity can arise with similar or identical labour, capital *and* technology. It is implausible to suggest that orthodox theory provides a real explanation of different and variable productivity levels with given factors. Instead, ill-defined variables are brought in to fit the theory to the awkward facts.

Invariant Productivity – from Smith to Sraffa

The habit of regarding production as an automatic result of given inputs has persisted for two centuries. Exceptions are rare. Notably, Adam Smith's discussion of the division of labour as a spur to increased productivity in his *Wealth of Nations* is an attempt to grasp the dynamic and social nature of production, albeit with only partial success. However, in Ricardo's work attention shifts, primarily, to the process of distribution of a product which is effectively taken as fixed.

It is well known that Marx criticised Smith and Ricardo for assuming the length of the working day as given (for example Marx, 1969, p. 413). In addition it is clear that Marx had a conception of production as an active process, involving tension and struggle under capitalism, which does not produce a strictly predetermined output (for example Marx, 1969, p. 406; 1976, pts 2–5). Not only is this approach evident in Marx's critique of Ricardo but it is also alluded to in Marx's concept of *variable* capital,[2] and the distinction between relative and absolute surplus value. There is a stress, in Marx's work, on the dynamic aspects of the process of production which is unequalled elsewhere.

The neoclassical economists, of course, paid little attention to Marx. After Marshall's *Principles* (which does contain a measure of nagging realism) attention shifted rapidly from the sphere of pro-

duction to exchange. With the ascendancy of the neoclassical production function the mechanistic dogma[3] triumphed. Even Keynes did not dislodge it completely, for a version of this production function survives in the *General Theory*. Keynes's main attack on fixed 'Ricardian' notions is not in terms of variable productivity, but variable *employment*. Following Marx, we have raised the question of variations of *productivity per employee*. The survival of a neoclassical notion of production within parts of the *General Theory* prevents Keynes from addressing this himself. It is suggested here that this survival partly accounts for the one-sided emphasis on *demand* management in orthodox Keynesian policy, to the neglect of proposals to restructure relations of production – the real 'supply side' of the economy.

Even with major developments after Keynes, the principle of variable productivity did not prevail. The use of Sraffa-type analysis to reveal logical inconsistencies within the aggregate neoclassical production function has sometimes led to the replacement of this function by a more adequate, but equally mechanistic, Sraffian matrix of input–output relations. However, Steedman (1977, ch. 7) has shown that it is possible to express, in formal terms, the variable intensity of labour within the Sraffian system.

The X-efficiency Theory

The most well-known challenge to the neoclassical 'black-box' theory of production has come from Leibenstein (1976) with his 'X-efficiency' or 'X-inefficiency' theory. However, this has a number of defects. First, it still adopts the remaining apparatus of neoclassical theory, marking out 'X-inefficient' deviations from neoclassical output norms. These norms are constructed via the neoclassical process of optimisation under constraint. If, in contrast, production is seen as a process taking place through real time, involving social agents who try to *shift* constraints,[4] who *learn* about processes and goals 'by doing', where relations of production involve conflict and coercion, and where production takes place in a climate of uncertainty, this 'optimising' picture in neoclassical theory, and its consequent norms, are undermined. For this reason it is proposed that the 'X-efficiency' and 'X-inefficiency' nomenclature be dropped. Instead the term 'variable productivity' is proposed. This does not necessarily involve neoclassical norms and, quite deliberately, harks back to the term 'variable capital' and the analysis of Marx.

Second, the emphasis within Leibenstein's work, and that of his followers (for example Frantz, 1980) is on asocial and psychological explanations, such as 'the state of mind' and individual 'effort', of so-called X-inefficiency. The stress is on individualistic, rather than social and institutional, factors. A concrete examination of the process of production and the social relations involved is lacking. It is easy to see how this connects with Leibenstein's preference for conventional (market and private enterprise) policies to increase productivity. His medicine is, quite simply, *more capitalist competition*:

> The external environment puts pressure on the executives of the enterprise, who in turn transmit pressure to other members of the firm further down the hierarchy. Under a high degree of competition, if sustained over a long period of time, the external pressure may be sufficiently great that the result may approximate cost minimization. However, many markets are imperfect. They provide *shelters* from competitive pressure . . . In sheltered environments there is no necessity for business firms to minimize costs (Leibenstein, 1980, pp. 103–4).

In response to this condemnation of 'imperfections' and praise for competition it must be asked why there is, in Leibenstein's theory, any role for the firm and its associated 'hierarchy' at all. This question was posed by Coase (1937). Would it not be more efficient to dissolve the firm and have all the workers carrying out market transactions between each other, as they complete each stage in the creation of the product? The firm, Coase notes, is marked by the *absence* of market transactions within its institutional 'shelter'. And Marx pointed out in *Capital* that within the capitalist firm resources are allocated by planning and direction, not by the market mechanism. If Leibenstein were consistent he would argue for the removal of the 'shelter' of the firm itself, and for a community of competing self-employed producers.

In Coase's view, however, this latter model is not feasible in practice, and would create additional costs, particularly those related to the securing of adequate and relevant information, and to the carrying out of the numerous transactions involved. In the work of Simon (1951) and Simon and March (1958) even greater emphasis is put on the problem of uncertainty in relation to the firm and the employment contract. Uncertainty over future levels of production and demand necessitates a firm with certain organisational structures.

Far from being 'imperfections', these structures are necessary for the market and private enterprise system to function.[5]

If we accept that there is a significant dispersion of productivity levels between firms (both within and between countries) it is necessary to consider differences of social organisation as a major explanation of that phenomenon. It is not the existence of non-market forms of organisation that is the problem, but the existence of certain types of firm structure which are detrimental to productivity. Second, on the external side, we are driven to conclude that competitive market forces are unable (at least on their own) to eliminate relatively inefficient firms. The policy implications are then obvious: a reliance on competitive forces alone to raise average productivity is likely to fail, and it is necessary to examine the usefulness of governmental or other organisational stimuli.

Georgescu-Roegen's Analysis of Production

Georgescu-Roegen's contribution to the theory of production (1970, 1971) raises more fundamental questions than that of Leibenstein. A brief mention is warranted here. Georgescu-Roegen rejects the neoclassical view in which factor inputs are treated as *flows* into the sphere of production on a continuous basis. He stresses that capital inputs into production are more like *funds* which can be drawn upon, from time to time, during the production process. In the nature of things 'most of these funds are idle over large periods of time'.

There are several implications of this argument, some of which are merely hinted at in Georgescu-Roegen's work. First, the special role of labour, including the labour of management, is suggested, in that it directs and activates the whole process. As a result, contrary to the neoclassical view, 'labour' and 'capital' cannot be treated symmetrically. Second, effective production must involve knowledge of both production technique and the disposition of the 'funds', i.e. means of production. This involves the communication of information within the firm as to the availability of materials and tools. In turn, this necessitates some form of organisational structure (and a hierarchic model, in these terms, is not necessarily the most efficient). In addition, the question of the motivation of workers, not only in regard to work itself, but in cooperating with others and passing on information, is raised. We are led to consider radical issues which may challenge the prevailing hierarchic or market-orientated policy solutions.

TOWARDS A THEORETICAL ALTERNATIVE

In this section an attempt is made to sketch out the basis for an alternative approach to the theory of production. Our starting-point is certain aspects of the work of Marx.

The Labour Process and Production

In the exposition in Chapter 7 of *Capital*, and the so-called *Resultate*, a distinction is drawn between the 'labour process', which takes place in all modes of production, and the capitalist 'process of production' itself. The latter generates 'surplus value' and profits, and regenerates the capital–labour relation. The labour process is subsumed within the capitalist process of production (Marx, 1976, pp. 291–2).

The 'simple' elements of the labour process (as they exist in all modes of production) are 'purposeful activity, that is work itself' and the objects and instruments of that work (p. 284). Marx emphasises the intentional and purposeful character of human labour. We do not have to enter into the philosophical and psychological debate about the existence of human consciousness here. It is sufficient to point out a distinction between what may be termed the *active* and the *passive* elements of the labour process. The active element (or efficient cause) is labour; the passive elements are the objects and instruments of work.

Under capitalism, however, the labour process 'exhibits two characteristic phenomena. First, the worker works under the control of the capitalist to whom his labour belongs . . . Secondly, the product is the property of the capitalist and not that of the worker, its immediate producer' (pp. 291–2). As a consequence of this superimposition of capitalist production relations, a process of reification occurs. The capitalist sees the labour process as nothing more than the consumption of purchased commodities (including labour power), as the symmetrical interaction of 'things which belong to him' (p. 292). The active and real agency of labour is overshadowed. A misconception of production as a mechanical and asocial process then emerges: labour becomes a mere 'factor of production' alongside 'capital'.

In reality, however, non-automated capitalist production involves a more or less continuous interaction of human wills, between workers on one hand and managers on the other. It is the general aim of capitalist management to direct the will and activity of the worker

towards the aims of the firm, in particular the creation of acceptable levels of profit. This is not a mechanical process but a process of structured social interaction, in which, in general, capitalist interests are dominant.

Labour and Labour Power

The non-mechanical nature of the process is further illuminated by reference to Marx's distinction between labour and labour power. Most contracts of employment are *imperfectly specified.* It would be very difficult to specify all possible patterns of work, at the point of making the contract. In practice, not all feasible patterns of work are known or made explicit. As a result, much conflict between workers and managers is generated over the precise nature and meaning of an imperfectly specified contract.

We may conclude that a given amount and type of labour is not promised, and cannot be predicted with certainty, in the employment contract. Concrete labour does not follow directly or automatically from the sale of labour power; it is the outcome of a structured social conflict. Although Marx's reasons for insisting on the distinction between labour and labour power are diverse, and in some cases obsolete (De Vivo, 1982), the distinction does remain of central importance.

Some Implications: Hierarchy and Control

We have shown that the capitalist production process, in its schematic form, has two different nodes of social power. The first is the power of the capitalist, based on (1) ownership of the means of production, (2) ownership of the product, and (3) direct or indirect control of the labour process. Typically, control is exercised in a hierarchic fashion (Marglin, 1974; Reich and Devine, 1981). The second node of power, dominated by the first, is the active agency of the workers in the labour process. It is important to emphasise that *complete* domination and control of the labour process by management is not possible. Workers can submit to managerial authority and carry out instructions, but it is impossible to supervise production on a continuous basis, to ensure that instructions are carried out exactly, or to endorse every display of independent initiative by the worker. Furthermore, managerial authority is acting, *within* the firm as well as outside, in a situation of uncertainty, and in many cases it will be

impossible to generate precise and exact instructions to cover all contingencies. Under capitalism, labour remains a real node of social power, and it cannot be completely subsumed under managerial authority.

This conflicts with the view that hierarchy is the most efficient and effective form of organisation for the firm. In this view, held by Leibenstein and many others, management are the brains of the firm and the workforce are the limbs, the latter mechanically carrying out the commands of the former. Competitive pressure is automatically transmitted down the hierarchy to the workforce, resulting in an increase in output. The active and independent role of the workforce is ignored.

For a refutation of such views we can turn to both social psychology and orthodox managerial theory. The pro-hierarchy arguments correspond to the old ideas of Taylor (1911) in which human operatives are 'scientifically' reduced to a set of mechanically-imposed operations. It is assumed that work can be divided into a sequence of discrete tasks, and that workers can be impelled to work in a chosen optimal pattern by a combination of punishment and reward. In recent years, management theorists, including the so-called 'human relations' school, have rejected the Taylorist approach. If nothing else, Taylorism fails to deliver the goods: it does not seem to increase productivity beyond a certain point. In addition, modern management theorists reject the 'carrot and stick' approach, and the mechanical view of firm organisation and productive activity. There is a recognition that hierarchical structures are often inefficient. Work is regarded as a social activity; it is appreciated that it can sometimes be a source of satisfaction, and a means of deriving a sense of social position, as well as being remunerative and laborious.[6] This theoretical and empirical material points to the policy conclusion of increased worker participation, and this is discussed in the next section.

POLICY AND OTHER IMPLICATIONS

It has been suggested that as well as technology, effective demand and other factors, the internal social organisation of the firm is a major determinant of its level of productivity. This can be shown, most graphically, by reference to the literature on worker participation. One of the best surveys remains the work of Blumberg (1968)

who analysed 17 experiments (including the famous Hawthorne study) and reached the conclusion: 'There is hardly a study in the entire literature which fails to demonstrate that satisfaction in work is enhanced or that other generally acknowledged beneficial consequences accrue from a genuine increase in workers' decision-making power. Such consistency of findings, I submit, is rare in social research' (p. 123). Blumberg has been criticised for basing his argument on these experiments, most of which were short-lived and involved only minor increases in participation. However, there is a large body of supplementary evidence, including long-term studies, which supports Blumberg's conclusion. This evidence includes studies of both worker cooperatives and private firms, and covers many countries.[7] In a particularly impressive study, Espinosa and Zimbalist (1978) develop a taxonomy and index of the level of participation, and find that in Chile in 1970–3 there was a positive correlation between worker involvement in decision-making and labour productivity.

In view of such strong evidence, the exclusion of worker participation as a causal factor in determining the level of productivity from mainstream economic theory would be amazing, if it were not for the fact that neoclassical economics has often been associated with pro-capitalist, pro-hierarchy, and market-orientated policy conclusions. After an honest look at the evidence it is difficult not to suggest that (1) the neoclassical 'black box' production function should be abandoned, (2) more heed should be given to organisational structures within the firm, centring on the control and regulation of work, and (3), on the policy side, increased worker participation should be in the forefront of suggested measures to improve productivity. It has to be noted that the latter conclusion is reinforced by a greater theoretical emphasis on the labour process and the sphere of production. A connection between the neoclassical emphasis on exchange, and the consequent policy prescriptions (for example reduction of trade union power, control of the money supply, privatisation and increased market competition) should be evident.

Hypotheses on National Differences in Productivity

A certain type of tentative account of the causes of low productivity in the British economy is implied by our discussion of the production process. Within this account, the active resistance of workers to technological and other changes is an important element (Purdy,

1976; Kilpatrick and Lawson, 1980). But we should not exclude the phenomenon of managerial and entrepreneurial failure (Caves, 1980; Chandler and Daems, 1980; Channon, 1973; Granick, 1972; Payne, 1978; Spurrel, 1980; Wiener, 1981). In particular, attention should be given to the over-reliance on hierarchical modes of organisation, which is explained by both the earliness of the Industrial Revolution in Britain, which set down patterns of management in an old mould, and the elitist nature of British society itself. The result is a highly class-divided society and a closed and non-participatory social practice and culture. Within the British firm, the two nodes of power have reinforced positions. Management relies on hierarchy, deference, and market forces; the workforce adopts a well-organised but largely defensive posture. The two nodes of power are in a kind of deadlock, in which neither appears to be able to triumph over the other or to impose a solution to the benefit of both. The primary explanation of low productivity in Britain is not backward technology, nor even a low or poor input of labour and capital, but deadlocked and non-participatory social relations in and outside industry.

In his excellent comparison of British and Japanese industry, Dore (1973) shows that differences in productivity can be explained in terms of differences in industrial relations and cultural environment. There was greater cooperation between workers and managers in Japan, and greater identification with the overall interests and objectives of the entire enterprise. No doubt this stems from the strange combination in Japan of capitalist economic relations and a semi-feudal culture, with an emphasis on institutional rather than individual goals, and feudal service and loyalty to the head of that institution. However, it is important to point out that the average level of labour productivity in Japan as a whole is far lower than that in the USA, and slightly lower than that in Britain. What is remarkable about productivity in Japan is its very rapid *growth*, spurred on by an increasing number of productive, high-technology plants. In a world of 'the survival of the fastest', flexibility and growth are all-important. For Japan the following hypothesis is suggested: the antiquated social culture, lacking in industrial democracy, helps to account for the relatively low average productivity, but the virtual coalescence of class goals within industry has minimised resistance to technological change, and increased the capacity for technological diffusion from the more advanced economies of the West (Gomulka, 1979; Maddison, 1979). This absorption of advanced technology has, in the past, partly accounted for high levels of productivity in certain

firms, and a rapid increase of productivity over time.

In the case of the USA the most marked feature is the lack of feudal remnants and the removal of several barriers to upward social mobility (even if this mobility can be exaggerated). At the same time the working class is highly fragmented and lacks a collectivist consciousness. It is possible that the high level of productivity results, in part, from the relatively open and democratic social culture. The slow *growth* of productivity could result from the fact that certain forms of organisation which can promote high levels of productivity, particularly those of a fragmented and non-collectivist type, inhibit flexibility and the ability to bring about change by cooperative effort. Possible, and partial, support for this hypothesis is found in a study which indicates that, *in the US context*, trade union organisation has a significant and positive effect on productivity (Freeman and Medoff, 1979). In many ways the USA is the mirror opposite of Japan; inertia, high productivity, social fragmentation, rampant individualism, low productivity growth, on the one hand: flexibility, hierarchy, social cohesion, feudal collectivism, high productivity growth, on the other.

A great deal of research would have to be done to test the above hypotheses on international productivity levels. They are put here merely to suggest the direction of future research that is indicated by the arguments in this paper. However, at the outset, such hypotheses seem more plausible than the standard neoclassical explanations of variations of productivity between countries.

CONCLUDING REMARKS

This article has attempted to expose some fatal weaknesses in the neoclassical theory of production, to sketch out guidelines for an alternative theory, and to relate these to strong positive evidence in favour of increased worker participation. However, it is not suggested that productivity variations are completely explained by organisational and participatory factors. Technology remains important, even if its conceptualisation and measurement are problematic. As many writers have insisted, technology cannot be conceived independently of social relations. The answer is not to continue to treat technology as some sort of residual explanation but to examine existing and changing technology in the context of work organisation and the labour process.

In policy terms, the arguments here give support to a radical strategy based on a democratic transformation of industry and social relations. It may be possible, therefore, to weld together a powerful combination of theory and policy in order to challenge neoclassical orthodoxy and its predilection for market-based solutions.

Notes

1. For discussions of the problems involved in international comparisons of productivity see Kravis (1976) and Maddison (1977).
2. See Rowthorn (1980, ch. 1) and Chapter 4 above.
3. This term is taken from Georgescu-Roegen (1978).
4. Lazonick (1981) undermines the neoclassical model of optimisation under constraint, using a case study of a declining industry in Britain.
5. See Chandler and Daems (1980) and Williamson (1975) for views of the 'creative tension' between markets and hierarchies.
6. See, for example, the readings in Vroom and Deci (1970) and social psychologists such as Argyle (1972) and Brown (1954).
7. Argyris (1973), Bellas (1972), Bosquet (1977), Carnoy and Levin (1976), Dolgoff (1974), Espinosa and Zimbalist (1978), Gooding (1972), Gouldner (1964), Jenkins (1973), Melman (1956; 1970), Oakeshott (1975), Stephen (1982), Vroom and Deci (1970), Zwerdling (1974).

8 Worker Participation and Macroeconomic Efficiency*

Reading the literature on worker participation, one is overwhelmed by the persistent conclusion that productivity is increased by greater worker involvement and democracy within the workplace.[1] As Blumberg (1968) rightly points out, such a consistency of findings 'is rare in social research'. Yet, to a great extent, the theoretical and policy implications of this literature have been largely unexplored by economists. Traditional (neoclassical) economic theory retains a 'black box' view of the process of production, in which given inputs of 'capital' and 'labour' lead automatically to a given quantity of output. Relations of production within the workplace were not, until recently, examined in any depth or detail.[2] Attention is shifted from the sphere of production to the sphere of the market, and to distributional and demand factors in the main.

Recognition of the potential variability of output with given factors of production, and of some of the inadequacies of the neoclassical (production function) approach, has led some authors, notably Leibenstein (1976), to attempt to develop an alternative. However, in Leibenstein's work there is little recognition of the weighty findings of the worker participation literature. In his view, inefficiency is reduced and productivity is enhanced by increasing the *competitive pressure* on the firm. This pressure is 'transmitted' down the managerial hierarchy so that efficiency is improved. Although Leibenstein's work is an improvement on orthodoxy in some respects, its policy conclusions are not very different. He ends up endorsing existing hierarchical structures within the firm and calling for increased competition in the market-place.

Even so-called 'supply-side' economics deals with elements which have traditionally (and especially in a Keynesian view) been regarded as affecting *demand*, particularly reductions in marginal and average

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rates of taxation. The 'supply-side' hope is that these adjustments will lead to increased investment, productivity, and output. But the processes that would lead to the success of such policies *within the sphere of production* are ignored. The focus is on *incentives* to make the horse come to water. There is little discussion on how it shall be made to drink. Above all, 'supply-side' economics sidesteps the *real* supply side of the economy and ignores the solution to the problem of low productivity that is obvious from the worker participation literature. This neglect of the real relations and processes of production is facilitated by an optical illusion of neoclassical theory: that relations of revenue and cost are about production itself. In fact, such relations, although rooted in the physical input–output data of production, are formulated and expressed on the market.[3]

WORKER PARTICIPATION AS AN INDEPENDENT VARIABLE

A cardinal index of the extent of worker participation in decision-making within the firm has been developed elsewhere (Espinosa and Zimbalist, 1978). The composition of this index will not be discussed here, other than to pose worker participation as a quantifiable and independent variable. It is assumed that with such information as the number of worker representatives on the board, the type and number of decisions taken by workers in production, and so on, it is possible to construct such a meaningful index, and that it would be applicable to advanced capitalist and post-capitalist societies. The extent of worker participation is denoted by P.

For several reasons it is necessary to simplify the analysis. It is assumed that there is no technical change, and that amounts of performed labour and the means of production remain the same. As attention is focused on the effects of a change in worker participation over a period of months or years, however, this is not a 'short-run' analysis in the conventional sense.[4]

One of the objectives of this paper is to discuss different notions of 'efficiency' as they apply to different social relations and types of economic system. To each notion of efficiency there corresponds a different function to be maximised. It shall be shown that very different 'optimal' solutions can result from different efficiency functions.

There are four primary functions of P. Each has a different shape,

with evidence in support from the participation literature, cited above. The first function of P is output, denoted by Q. Output will increase up to a certain level, and for convenience we assume that output falls off beyond that high level of worker participation. A reason for this could be that worker involvement in a very large number of decisions, taken directly or collectively at mass meetings, would decrease output beyond a certain point. This will be dubbed the 'Oscar Wilde Effect' after his famous quip that the construction of socialism is impossible because it would take too many meetings.[5] However, it is suggested here that this Oscar Wilde Effect will not come into operation until worker participation reaches a very high level: much greater than that achieved in existing industrial societies.

The second function is called job satisfaction: denoted by J. It is the value that workers assign to the satisfaction that they obtain from work, measured by the amount that workers are ready to trade off with the increased satisfaction from greater worker participation, other things being equal.[6] The evidence for such a positive correlation between job satisfaction and participation is overwhelming (see, in particular, Blumberg, 1968). $J(P)$ is, therefore, upward sloping. There are many real-life examples of a worker preferring a job paying, say, \$200 a week as compared with one paying \$300 because greater satisfaction is obtained in the former case. In this example the value of J is at least \$100. For simplicity it is assumed that J is a linear function of P.

The third function concerns wages (W), and it is more problematic. It could be argued that as worker participation increases, workers could be 'bought off' by their obtained increase in job satisfaction. In this case the sum of J and W would not fall as P increases, but W itself would fall. In contradistinction, it could be argued that as worker participation increases, a process of 'consciousness-raising' takes place, and workers expect greater remuneration as well as an increase in decision-making power. Furthermore, it could be argued that increased participation would go with greater trade union strength (see Freeman and Medoff, 1979) and greater power for workers in the process of wage bargaining. Thus W is a function of both P and another variable, which we shall call expectations (E). It is assumed that P and E are sufficient to determine W, and they combine in a function of the following form:

$$W(P, E) = PE + w_o$$

where w_o is a positive constant. Hence, if E is also a constant, $W(P, E)$ is a linear function, upward-sloping if E is positive and downward-sloping if E is negative. Assume, for simplicity, that E is independent of other pertinent variables.

The fourth function, called management security, is denoted by S. It is suggested that managers will be disposed toward a certain finite increase in worker participation largely because of the beneficial effects on output. However, beyond a certain level, determined by culture and prevailing ideology, management will feel progressively insecure if worker participation is increased. As workers take a greater decision-making role, managers may feel that their economic role and source of income is under threat. Evidence of such insecurity in face of increased worker participation is plentiful. Edwards (1979, p. 156) notes a case where an efficient and otherwise successful experiment was ended because management security was threatened. In the words of the trading director of the company concerned: 'The experiment was *too* successful. What were we going to do with the supervisors – the managers? We didn't need them anymore.' Leibenstein (1980, p. 97) cites another relevant example.

Although S is essentially a non-monetary variable, it shall be assumed that it is reducible to a money-value. This could be done by asking what increased income managers would require to offset a decrease in security resulting from a given increase in worker participation.

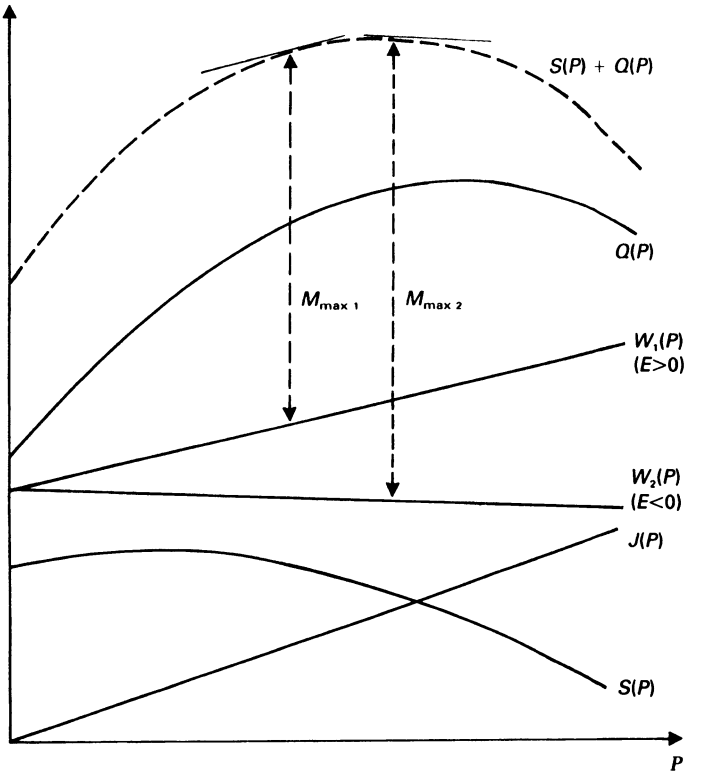
To summarise, the four primary functions are as follows:

Notation	*Dependent variables*	*Behaviour as P increases*
$Q(P)$	Output	Increases, then reaches maximum, then falls.
$J(P)$	Job satisfaction	Increases.
$W(P, E)$	Wages	Increases if E is positive; decreases if E is negative.
$S(P)$	Management security	Increases, then reaches maximum, then falls.

The four functions are illustrated in Figure 8.1. It has been noted that:

$$\frac{dW}{dP} + \frac{dJ}{dP} \geq 0$$

Figure 8.1 Worker participation and productivity



Also, realistically, it is assumed that the maximum of $Q(P)$ relates to a higher value of P than the maximum of $S(P)$.

OPTIMUM PARTICIPATION

Management, it is assumed, maximises the sum of gross profits and management security, i.e., it maximises $M(P)$ where

$$M = Q - W + S$$

Clearly, $Q - W$ is gross profits.

Diagrammatically, the maximum for M is found by summing the two functions $Q(P)$ and $S(P)$, then finding the maximum distance of

$Q + S$ above $W(P, E)$. In Figure 8.1 two functions for W, relating to two values of E, are shown. Obviously the maximum for M occurs when the gradient of $S(P) + Q(P)$ is equal to the gradient of $W(P, E)$. The two maximum values, M_{max1} and M_{max2} are shown in the diagram. These are both stable maxima, at which neither output, nor wages, nor job satisfaction is necessarily maximised. In terms of this model, it shows that it is generally not in the interests of management to maximise either worker participation or output.

If a new, political dimension is introduced, then different results can be obtained, with different optimum situations. A framework will be set up which allows an infinite number of political possibilities to be considered. The political element is introduced for a number of reasons. In particular, it seems evident from observation of advanced industrial countries that worker participation is rarely introduced piecemeal. Its introduction is promoted by general political circumstances, such as the aftermath of a war or the election of a new government. These circumstances can vary a great deal.

A general political function $G(P)$ is assumed, where

$$G = aQ + bW + cJ + dS$$

and where a, b, c, and d are constants. All are assumed non-negative, except b, which can take any real value. Cases of the general political function where b is negative and c is zero are called 'conservative' versions of the general political function. Clearly $M(P)$ is such a case, where $a = -b = d = 1$ and $c = 0$.

A 'syndicalist' solution would be to set d at zero, but with a positive b. The complexion of the 'syndicalist' regime would be determined by the relative weights given to a, b, and c. If b was made sufficiently large in relation to a and c, then priority would be given to the immediate maximisation of the wage rate, over long-run increases in output, investment, and job satisfaction at work. It could be argued, however, that a regime which gave zero weight to management security would not be feasible, at least for an extended period of time, in practice.

A 'liberal' regime could be defined as one where a, c, and d are positive, but where b is negative. In comparison with the 'conservative' case, 'liberal' regimes will reach an optimum at a higher level of worker participation. This could approach, or even exceed, the level of participation at the maximum level of output.

Another political variant would be 'corporatism'. In terms of our

model this means setting c at zero, but with b at a positive level, unlike 'conservatism'. Under 'corporatism' the quest for greater job satisfaction is abandoned in favour of an exclusive emphasis on output, wages, and management security. The general effect of the removal of the function $J(P)$ is to shift the maximum position for G to the left. In other words, the optimum position will be at lower levels of worker participation.

Any regime which has positive values of a, b, c, and d is defined as 'socialist'. Clearly, this covers a vast range of possibilities, including a 'managerial socialism' where d has a relatively large value. If a sufficiently large weight is given to the coefficient c, then it is possible that no stable maximum will exist. The search for higher job satisfaction, and a higher level of G where $J(P)$ is a dominant element, will lead to higher and higher levels of P, even beyond the maximum of $Q(P)$. It is possible that Q will reduce to the level of W before a stable maximum is reached. At that point wages exhaust the entire output. The system could then go into debt or collapse. A similar scenario could occur if E is positive and sufficiently large, and $W(P, E)$ dominates the G function. It must be emphasised that such unstable 'socialist' scenarios depend on the existence of sufficiently large and positive gradients for $W(P, E)$ or $J(P)$, and a sufficiently high weighting being given to the $W(P, E)$ or $J(P)$ functions. The fact that a stable solution is more likely to exist under a 'conservative' or 'liberal', regime where the coefficient for $W(P, E)$ is negative, and a regime where the coefficient for $J(P)$ is small or zero, does not necessarily mean that such regimes are more desirable. The circumstances that have been outlined, which relate to a possible, unstable 'socialist' regime, may well have been present in Russia in 1917–18 (see Deutscher, 1950), in Poland in 1980–1, and in post-war Yugoslavia to a lesser extent (see, for example, Comisso, 1979).

A possible means of obtaining stability under a 'socialist' regime is to give sufficient priority to Q in the general political function and to avoid an excessive level of expectations (E). The optimum for such a stable regime will be at a higher level of worker participation than for a 'conservative' regime with identical values of a and d, or for a 'liberal' regime with identical values of a, c, and d. Alternatively, a 'socialist' regime could achieve stability by, among other things, giving a sufficiently high weight to $S(P)$. Such regimes, reminiscent of the Soviet bloc perhaps, would be associated with lower levels of worker participation.

In general, as $S(P)$ and $Q(P)$ are the only two functions which have

maxima, stable political solutions will have sufficiently large positive coefficients for one or both of these two functions. However, the greater the weight given to $Q(P)$ instead of $S(P)$, the greater will be the value of P at the stable maximum, if it exists. Another way of shifting the stable maximum to the right is to reduce the value of E, i.e. to change the climate of opinion in the country so that lower wage levels are accepted at given values of P. However, as a reduction in E is associated with an increase in P under stable conditions, $W(P, E)$ will not necessarily fall as a result.

CONCLUSIONS

A number of points have been highlighted in this short paper. One of the most important is that a greater level of output could be achieved, at a greater level of worker participation, if less priority were given to the security of the management strata and their perceptions of insecurity at high levels of worker participation. In addition the importance of the relative weights given to output, wages, and job satisfaction in reaching, or not reaching, a stable optimum has been stressed. This draws attention to the importance of the political climate in which macroeconomic adjustments take place.

The model is an extremely simple one. It does, however, indicate the importance and value of an approach which takes account of organisational and other determinants of the level of production, in particular the extent of worker participation. While there is not yet enough empirical data to estimate the functions involved in this model, it has been demonstrated that it is possible to take account of the voluminous participation literature in an economic model. It is unfortunate that, hitherto, such literature has been largely neglected by economists, particularly as the maximisation of productivity and output has become the *sine qua non* of economic success.

Notes

1. See, for example, Blumberg (1968), Bosquet (1977), Espinosa and Zimbalist (1978), Melman (1970), Stephen (1982). For work based on this evidence see Carnoy and Shearer (1980), Pateman (1970), Vanek (1975), Vroom and Deci (1970) and Zwerdling (1980).
2. For recent unorthodox attempts to develop an analysis see Burawoy

(1979), Edwards (1979), Hodgson (1982) and Chapters 6 and 7 above, Reich and Devine (1981). Williamson (1975) has started a 'new institutionalist' trend amongst orthodox economists who have began to look inside the black box.

3. As Machlup (1967) observed, the neoclassical theory of the firm is about prices in markets and is not, essentially, about the internal behaviour of the firm.
4. Normally, a period of months or years would include changes in the provision of fixed factors of production and technological improvements. But because of the limitations of this model it is impossible to deal with these here.
5. The precise quotation attributed to Wilde is that socialism would take 'too many evenings'. For an amusing and pertinent discussion of this see Walzer (1970).
6. The assumption is made throughout this chapter that wage differentials remain the same or that labour is homogeneous. Amongst the 'other things' assumed equal is the level of 'expectations' (defined later in the chapter).

9 Economic Pluralism and Self-Management*

'The truth is rarely pure, and never simple.' (Oscar Wilde)

It is fashionable in some circles to go to extremes. For instance, some zealots of the New Right suggest a market-based and private property rights solution to almost any economic, political and social problem. This is inverted by some on the traditional Left who proclaim a collectivist goal of complete central planning and wholesale nationalisation.

The self-management literature offers an ostensibly much more attractive and democratic alternative goal. But it is also possible here to 'go to extremes': to propose a complete and pure solution based on the universal application of workers' self-management and complete market coordination. One of the most explicit examples of this tendency is found in the work by Peter Jay (1980), where he calls for a further extension of the market mechanism in the West as well as in the East, (possibly even including the health, education and social services (p. 39)) and for the non-piecemeal and near-universal creation of the workers' cooperative. Of course, in their practically-orientated statements most of the other proponents of such a solution are more measured and sophisticated in their approach. It is often freely admitted that there is a role for central planning, that market coordination cannot and should not be universal, that there is a role for nationalised industry plus a small capitalist sector, and so on. The deficiency in many of these cases is not one of intent; it is theoretical in nature. Whilst the theory of the self-managed economy has grown apace since the seminal contributions of Jaroslav Vanek (1970) and Benjamin Ward (1958, 1967) there has been relatively little work related to the structure and system-based problems of the participatory economy as a whole.

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The purpose of this essay is not to mute the appeal of the self-management goal. If we have to bend the stick away from traditional, statist socialism and hedonistic capitalism then the 'self-management' and 'small is beautiful' literature has considerable utility. An indifference between this current and its statist and capitalist rivals is not being proposed. Neither is a unstructured *mélange* of the political 'centre' being offered here as an alternative.

For all his laudable radicalism, Fritz Schumacher made clear his rejection of simplistic solutions: 'there is no *single* answer. For his different purposes man needs many different structures, both small and large ones, some exclusive and some comprehensive' (1973, p. 54). This same argument is apposite to the issue of self-management. Just as there is a danger of diluting its message and appeal, there is an equal possibility that if it is presented in singular or purist terms it will fail to offer a plausible solution to the complex and varied problems in a modern economy. A scepticism of simple answers to complex problems is justified.

In endorsing such scepticism there is no necessity that the radical edge of the self-management case be blunted. Arguably it is a stronger weapon if the criteria for its application are made sharp and non-universal, and if it is presented alongside complementary measures for enlarging participation.

Such a pluralistic approach has been clearly evident in the policy statements of Solidarity in Poland – the organisation that has heralded democratic reform in Eastern Europe – ever since its foundation in 1980. Whilst emphasising the overall importance of self-management, Solidarity proposed far-reaching reforms to the structure of Polish economy; including substantial decentralisation of the planning and decision-making structures, and, importantly, a number of types of enterprise, including a small private sector (both small capitalist and self-employed firms), and including diverse forms of common ownership, such as workers' cooperatives (most of these producing for the market), municipal and public enterprises. It is contended here that the idea of economic pluralism, as expressed by Solidarity, is an essential feature of any (partially or fully) democratic and participatory economy.

In the first section of this essay we shall discuss some relevant non-neoclassical theoretical work on markets, and raise some serious practical reservations about the extension of the market on the scale suggested by Jay. In a subsequent section a theoretical framework will be proposed which can encompass the preceding argument and

retain a central and dominant idea of a self-managing and participatory socialism.

NEOCLASSICAL THEORY AND THE LIMITS OF THE MARKET

The precise definition and demarcation of the territory known as 'neoclassical economics' is, of course, problematic. But for our purposes here the definition in terms of (a) rational, maximising behaviour by all relevant agents, (b) the absence of substantial information problems and true uncertainty, and (c) the theoretical focus on equilibrium, is sufficient.

Much, or indeed most, of the theoretical literature on the self-managed firm is cast in the neoclassical mould. The agents governing firms are assumed to be rational in the sense that they exhibit consistent, maximising behaviour. Crucial information regarding revenue and costs is assumed to be obtainable without too much difficulty. Maximising behaviour with known revenue and cost curves thus leads readily to both short-run and long-run equilibria. The self-management literature has thus reproduced the neoclassical theory of the firm with the amendment of the nature, but not the equilibriating function, of the maximand. The neoclassical model of the firm and the market system is sophisticated, elegant, seductive, and formally precise. But it is wrong. There are many diverse reasons for this verdict, and it is possible to concentrate on no more than a few here.

One source of the trouble for neoclassical theory is its attempt at a universal analysis of all economic phenomena. The framework of individual, rational choice is used to describe markets but also, without much amendment, it is applied to other economic structures and systems. Consequently, the universality of neoclassical analysis can lend itself easily to pure and universal solutions. In particular, if the neoclassical choice framework is seen as an adequate expression of market relations (which in fact it is not) then the universality of the analysis suggests that markets in practice have a potentially universal application. Thus this *potential* universality is implied directly by neoclassical theory; and it is independent of the degree of attachment that the neoclassical theorist may have for markets in policy terms.

It is not suggested here that neoclassical theory is necessarily pro-market. In fact, as Austrian theorists such as von Mises and

Hayek have argued, it is a poor theoretical vehicle for such a policy. Furthermore, the informational assumptions in neoclassical theory correspond more closely to a mythical centralism of knowledge than to the real decentralisation of the market. What is suggested here is that because neoclassical theory is weak in describing and explaining institutional structures and the role of information and knowledge, it is likewise weak in comprehending the relative strengths of market and non-market forms, and in deriving appropriate policy criteria to demarcate between them.

To illustrate this, let us raise a pertinent question. If the market in a self-managed society is to be so ubiquitous then why retain the cooperative *firm* at all? After all, if markets are so valuable then it would seem appropriate that each worker should trade the product of his or her labour with other individual workers. In other words, the appropriate form of 'self-management' would appear on these grounds to be a system of self-employed producers (what Marx called 'simple' or 'petty' commodity production) and not the workers' cooperative.

Of course, a question similar to the one in the preceding paragraph was asked in a different context by Ronald Coase (1937) in his classic article. He asked why the market is absent from the internal workings of the ordinary firm. His answer is in terms of the excessive transaction costs involved in organising production on the basis of a price mechanism. In particular, it would be too cumbersome and costly to organise the complex process of production on the basis of repetitive contracts between individual workers. Contracts are not eliminated within a firm but they are greatly reduced by its existence.

Despite subsequent attempts to accommodate a Coase-type approach into a broadly neoclassical theory of the firm (for example Williamson, 1975, 1985), Coase's question is ultimately destructive for neoclassical theory. Coase himself makes unwarranted concessions to marginalism in his article, and he criticises the view of Frank Knight (1921) where the existence of the firm is related to uncertainty. As I have indicated elsewhere (Hodgson, 1982, p. 191), at this point Coase almost throws out the baby with the bathwater. If there was no uncertainty, there would be no 'cost of using the price mechanism' or of 'discovering what the relevant prices are' and Coase's theory would not apply. The existence of uncertainty and other information problems is a necessary (but not sufficient) condition for the existence of the firm.

Uncertainty, of course, is distinguished from risk. To the latter, but not the former, we can attach a meaningfully calculated probability (Keynes, 1937). Neoclassical theory can include risk, often calling it 'uncertainty' (see Hirschleifer and Riley, 1979) but as Paul Davidson (1978) and others have pointed out, it does not readily embrace true uncertainty in the sense of Knight (1921) and Keynes. True uncertainty cannot be incorporated into neoclassical theory because it would prevent agents from maximising in the standard sense. Without a calculus of probability and risk, agents would not be able to search incrementally towards an optimum. The neoclassical theory demands that a probability is attached to each outcome, and this, by definition, excludes true uncertainty.

Arguably the concept of risk alone is not sufficient to understand the firm. If definite probabilities can be attached to the contingencies associated with the organisation of production then we open the door to its complete conceptualisation in individual, contractarian, terms. (For an example see Alchian and Demsetz, 1972; and for a critique see Nutzinger, 1976). If contracts are simply subject to risk then they can be defined in more precise terms than is customary or practicable with the real-world contract between the (capitalist or cooperative) firm and the worker. In reality, however, this is not the case.

Consequently, there can be no adequate theory of the firm, including the workers' cooperative, which does not include uncertainty. As Keynes knew full well, the concept of uncertainty has destructive consequences for traditional theory. In particular, as Neil Kay (1984) shows, an analysis of information problems including uncertainty is crucial to the theory of the firm. Neoclassical theory in avoiding true uncertainty is thus unable to construct a substantial theory of this institution. As Fritz Machlup (1967) readily admits, the neoclassical theory of the firm is really a theory of market prices and costs, and is consequently not about firms at all.

Consideration of the uncertainty governing the employee–employer relationship in the capitalist firm led Alan Fox (1974) to argue convincingly that an element of supracontractual 'trust' was essential to industrial relations, and that a purely contractual system was not feasible. The existence of uncertainty and other severe information problems accounts for the limitation of the market mechanism within the enterprise and the very existence of the (hierarchical or cooperative, but non-market) organisational structure of the firm.

A purist, market-based model of a self-managing society built in

neoclassical terms is thus presented with a problem. Its theoretical presuppositions, which downgrade or ignore information problems and uncertainty, suggest that there is no reason for the (cooperative) firm to exist at all. This can be overcome only by at least a partial abandonment of neoclassical theory and the erection of clear demarcating criteria for the application of market and non-market systems of regulation and organisation. The little attention paid to the development and evaluation of such criteria, and the widespread use of the neoclassical model, is thus a defect of much of the self-management literature.

FURTHER LIMITS TO THE MARKET

A second sphere where there are practical and theoretical limitations to the operation of the market is within the household. It has been traditional for orthodox economic theory in the past to either ignore the household as an institution or to treat it as if it were a single individual: the paternal 'head of the household' personifying the household as a whole. To some extent this same defect is found in the economic literature on self-management, at least in the sense that the demarcation criteria between household and non-household forms of economic organisation are avoided. Neoclassical theory has begun to develop its own choice-theoretic model of the household (see Becker, 1965; and for a critique Sawhill, 1977) but typically this assumes that we can treat the household 'as if' it were itself a market and contract-based institution.

In my book *The Democratic Economy* it is argued that in the real world the complete penetration of market relations into the household is not possible, even within a capitalist society. One important reason is that the over-extension of market and purely contractarian relations would threaten to break up cultural and other bonds which are necessary for the functioning of the system as a whole.

More generally, Joseph Schumpeter has argued, 'no social system can work which is based exclusively upon a network of free contracts between (legally) equal contracting parties and in which everyone is supposed to be guided by nothing except his own (short-run) utilitarian ends' (1976, pp. 423–4). Thus institutional and cultural bonds have an essential function, even in a individualistic and capitalist economy.

As Schumpeter has argued with great force, the institution which

above all others has been responsible for the bonding of society, and the prevention so far of its dissolution into atomistic units by the corrosion of market relations, is the state. Similarly, in his discussion of the role of the state in the industrial revolution, Karl Polanyi (1944) shows that even in '*laissez-faire*' Victorian Britain the initial extension of the market was very much an act of the state itself, and that subsequently there was strong pressure from all quarters to restrict the market through legislation to limit the working day, ensure public health, institute social insurance and regulate trade. Not only to provide social cohesion but also to ensure the smooth working of the market itself, the state had to protect, regulate, subsidise, standardise and intervene.

Clearly this argument applies to a market-based system of self-management as well. Whatever the desirable limits of the market within such a system, there is a strong regulatory and structural role for the state. It is not necessary to enter into the dispute between 'market socialists' and those who advocate a broad role for the planning mechanism. The point being made here is that if the market-based model is taken as the option, on practical terms it cannot exclude a deep and significant interventionist role for the state.

In the past, neoclassical theory has itself provided ostensible grounds for state intervention: the arguments based on 'public goods' and 'externalities' are familiar. However, in substance that is not the argument being rehearsed here. If it were it would be highly vulnerable to the New Right critique which argues that most of the prominent externalities can be 'internalised', so as to obviate the need for state intervention, through the 'efficient allocation of property rights' to individual economic agents (Furubotn and Pejovich, 1974; for a critique see Nutzinger, 1982). In fact there is nothing within neoclassical theory, based on the autonomous and maximising 'economic man', which provides a sound basis for the theoretical or practical introduction of state or cooperative institutions at all. This is one reason why the old neoclassical and semi-Keynesian synthesis which dominated economics in the 1950s and 1960s has proved so vulnerable to both neoclassical and Austrian versions of New Right theory.

MARKETS AND INSTITUTIONS

One of the striking problems of neoclassical theory is that it cannot conceive of the market, like the state, in institutional terms. It

presumes, like the classic liberalism of the nineteenth century, that the market is the 'natural' order; it is the ether within which the preferences and purposes of free-floating individuals are expressed. The notion of the market as an institution, organised to structure, and inevitably to some extent constrain, economic activity is missing. In neoclassical theory the 'constraints' relate exclusively to market 'imperfections' or extra-market institutions. The idea of the market as an organised and functional entity, which is more than the aggregation of mere individual exchange, and which actually moulds the tastes and preferences of actors, is missing.

The fatal flaws in this stance have been detected by a number of theorists in recent years. For example, G. B. Richardson (1959, 1960) argues that if neoclassical 'perfect competition' did actually exist it could not actually function for long. The problem would be that no individual agent would be aware of the investment intentions of others. The incentive to invest depends in part on the knowledge of a limited competitive supply from other firms. 'Perfect competition' does not provide this. Precisely because of its 'perfection' it places no limit on the number of firms that can be expected to compete. Consequently the investment process will be impaired.

Richardson argues that in the real world investors obtain information about the prospective activities of those to whom they are interrelated in a number of ways. There is explicit collusion or agreement, implicit collusion resulting possibly from cultural habits and accepted routines, and there are so-called 'frictions', 'imperfections' and 'restraints'. All these, although they appear to stand in the way of 'free competition', are actually in some measure necessary to make the market system function at all.

This idea that constraints and restrictions provide information and actually help the market to function is developed (without reference to Richardson) by Jan Kregel (1980). He regards so-called market 'imperfections' such as 'wage contracts, debt contracts, supply agreements, administered prices, trading agreements' as 'uncertainty-reducing institutions' (p. 46). Kregel's argument is reminiscent of that of Keynes in Chapter 17 of *The General Theory*, where it is suggested that the partial rigidity of the money wage is necessary for the working of the economy.

A related argument (but again without reference to Richardson or Kregel) is provided by Andrew Schotter (1981). He uses a game-theoretic framework to show that institutions and routines are, far from being market 'imperfections', actually necessary to supply vital

information, particularly about the future stratagems of other agents. 'Perfect competition' does not signal this information other than through the restrictive mechanism of the price system. 'Imperfect' markets enable much more information to be transmitted, and other than through price: 'economies contain an information network far richer than that described by the price system. This network is made up of a whole complex of institutions, rules of thumb, customs and beliefs that help to transfer a great deal of information about the anticipated actions of agents in the economy' (p. 118).

These arguments go a long way to undermine the theoretical or practical norm of the 'perfectly competitive' market. For a related reason, the 'transaction costs' approach (Coase, 1937; Williamson, 1975, 1985) proves inadequate. If there is no way in which 'imperfections' and 'transaction costs' can in practice be reduced to insignificant proportions, then the very idea of 'transaction costs' is difficult to conceive and impossible to measure. There is no effective choice between a 'pure' and an 'impure' market system. Thus there are no opportunities forgone, and therefore no 'costs'.

The type of argument presented by Richardson, Kregel and Schotter achieves two objectives. First, it undermines the neoclassical theory of the market (and even its sophisticated derivative attempts to conceptualise the firm, such as the work of Oliver Williamson) and its utilisation in the theory of a self-managed, market economy. Second, it provides a rationale for the introduction of some rigidities and constraints within such a system, including, in my view, a substantial measure of state intervention and planning.

Likewise, the cooperative economy should not rely on the orthodox textbook picture of the role of the market when developing its own institutional forms. Henk Thomas and Chris Logan make a related point in their study of Mondragon. They argue that 'a strong planning agency is essential as otherwise a self-managed economy could not function. Phenomena such as the entrance and exit of firms, and the adjustment processes of capital intensity, can only be realised by careful planning and institutional support' (Thomas and Logan, 1982, p. 187). Of course, similar practical points have been made before in the Yugoslavia-inspired literature of, for example, Horvat (1975) and Milenkovitch (1971).

TOWARDS A THEORETICAL FRAMEWORK

Whilst the above argument has specific relevance to markets, and is worthy of further theoretical development at that level, there are also good reasons to strive for an encompassing theoretical framework at a higher level of abstraction. It is clear, for instance, that the argument can find an analogy in relation to the limitations of central planning (see Hodgson, 1984) as well as the market. Just as there are practical limitations to the extent of the market, there are similar limitations to central planning as well. And just as the market requires 'imperfections' to operate, central planning may be able to function only through the conjunction of market and other forms (Nove, 1983).

Furthermore, the analogy can apply to the dimension of participation and democracy itself. There are obvious practical limitations to the extent of collective decision-making. The deleterious results of 'too many meetings' of a participatory nature in the workplace could be called the 'Oscar Wilde Effect', after his suggestion that socialism was impossible because it would take too many meetings. Other writers, such as Alfred Steinherr (1977) have posited a similar phenomenon. The analogy could go further through a suggestion that the 'imperfections' of a degree of hierarchical organisation, delegated management and so on are in fact *necessary* to allow an overwhelmingly participatory structure to function. A market system cannot survive without its 'imperfections'; likewise a participatory economy requires analogous impurities to survive.

The argument can be extended to cover other economic structures and systems. Analogous remarks apply to the role of the family and domestic production within capitalism, the role of the market in the slave mode of production of classical times, and the role of the market and the church under feudalism. In each of the four major modes of production after Christ (slavery, feudalism, capitalism and Soviet-type societies) at least one 'impurity', i.e. a non-dominant economic structure, plays a functional role in the reproduction of the system as a whole. What is involved is more than an empirical observation that different structures and systems have coexisted through history. What is involved is an assertion that some different and additional economic structures were *necessary* for the socioeconomic system to function over time.

I propose a shorthand phrase to refer to this idea of a necessary or functional impurity: 'the impurity principle'. Part of the justification

for this can be derived from an analysis of past socioeconomic formations in history. But additional and related arguments can be derived from systems theory.

In the work of W. Ross Ashby (1952, 1956) there is the idea that a system has to contain sufficient variety to deal with all the potential variation in its environment. Complexity and variety within the system is necessary so that the system can survive and deal with complexity, variety and unforeseeable shocks in the real world. This is called 'the law of requisite variety'. Stafford Beer (1964), J. D. McEwan (1971) and Raul Espejo and Nigel Howard (1982) have developed and amended the idea to apply it to management systems.

The 'impurity principle' is the specific application of this more general idea to economic systems (Hodgson, 1984, pp. 104–9). The idea is that there must always be a plurality of modes of production, so that the social formation as a whole has requisite variety to promote and cope with change. Thus if one type of structure is to prevail (for example central planning), other structures (for example markets, private firms) are necessary to enable the system as a whole to function.

The impurity principle is combined with a more familiar idea which could be conveniently titled 'the principle of dominance', i.e. the notion that socioeconomic systems generally exhibit a dominant economic structure. It is expressed by Marx when he writes:

> In all forms of society there is one specific kind of production which predominates over the rest, whose relations thus assign rank and influence to the others. It is a general illumination which bathes all the other colours and modifies their particularity. It is a particular ether which determines the specific gravity of every being which has materialized within it. (Marx, 1973, pp. 106–7)

Whilst the principle of dominance is found in Marxist writings the impurity principle is, I believe, incompatible with Marxism. It was not a slip of the pen when Marx and Engels wrote in *The Manifesto of the Communist Party* that eventually production would be 'concentrated in the hands of a vast association of the whole nation'. Neither was Lenin acting out of conformity with his general philosophy when he declared in *The State and Revolution* that the socialist economy should be organised as 'a *single* country-wide "syndicate"'.

Clearly, the impurity principle provides an initial theoretical framework to support the policy of economic pluralism. However, it

does not lead to the same type of policies as presented by post-war theoreticians of the 'mixed economy'. In the major work by Anthony Crosland (1956) in this genre, no notion is present of the *necessary* combination of planning with markets, of markets with plans. The 'mixed economy' is presented as an ethical ideal, not as a functional necessity. The combination of the principle of dominance with the impurity principle again distances the theoretical standpoint here from that of Crosland; the notion of a heterogeneous structured whole, in which one type of economic structure is dominant, is not present in his work. Neither is there an emphasis on the primacy of democracy and participation as a major social and economic goal. Despite the common support for the principle of economic pluralism, the theoretical framework offered here is different in several key respects.

The arguments here for economic pluralism can also be directed against the purism of the New Right. Both Hayek and Friedman propose that the market and capitalist elements in the Western 'mixed economy' should be dramatically increased. This is pluralism in one sense but not in another. A pure market economy is ostensibly pluralistic in that it involves a decentralisation and parcellisation of economic power. But it is non-pluralistic in the important sense that it involves a largely uniform set of social and property relations, and the typical structure of the hierarchical, capitalist firm becomes almost ubiquitous. Furthermore, as Polanyi (1944) has argued, the creation and maintenance of private property rights and functioning market institutions require the sustained intervention of the state to eject economic forms and practices which are antagonistic to the private market system. Paradoxically, therefore, 'free market' policies can lead to a substantial centralisation of economic and political power. New Right policies in practice actually threaten both economic and political pluralism and grant extended powers to the central state.

CONCLUDING REMARKS

Whilst neoclassical theory contains an elegant formal theory of the market, it has serious theoretical deficiencies, only a few of which have been discussed here. One of the consequences of the adoption of the neoclassical model in the self-management literature has been to sustain a tendency towards a 'purism' in the adoption of market

mechanisms, and a devaluation of adjoining mechanisms for planning and coordination in the economic system.

It is proposed here that market systems, of whatever type, function *because* of restrictions and 'imperfections' and not *despite* them as mainstream theorists presume. Institutions, routines and constraints actually supply useful information about the actions of others. Likewise, in a participatory economy some measure of local and national planning can actually help the market system to function, and in accord with social goals.

A preliminary theoretical framework is outlined here, based on the theory of general and economic systems. This distinguishes the present perspective not only from a pure system of 'market socialism' but also from orthodox Marxism, Leninism, and the social-democratic 'mixed economy'.

However, this framework is not sufficient to provide detailed demarcation criteria for policy purposes, so as to design the appropriate combination of market, planning and other economic mechanisms. This, of course, is the $64 000 question. The demarcation criteria of Branko Horvat (1975; 1982, ch. 12), Janos Kornai (1971, pp. 340–1), Deborah Milenkovitch (1971) and Alec Nove (1983, pt 5) provide a very useful starting-point.

Kornai, for example, suggests that high industrial concentration, decisions involving major structural modifications, essential indivisibilities, increasing returns and longer time horizons give favourable grounds for overall planning, whereas their absence may favour the fuller operation of the market system. Nove makes similar points, stressing the criterion of 'planability' and including such factors as the measurability and homogeneity of the product. However, it is not simply a technical matter. In choosing the appropriate combination of planning and markets consideration has also to be given to the question of the devolution and distribution of economic power, for an over-centralised economy does not simply threaten economic efficiency in the narrow sense, but also political pluralism, local democracy and autonomy.

The systems approach adopted here may prove useful in developing such criteria and evaluating the relative advantages of planning and market mechanisms, as well as the performance potential of their combination. Although such an approach is vastly underdeveloped in its application to economics, modern systems theory, which has effectively merged with cybernetics, control theory, and information theory, does explicitly deal with the issues of information and uncer-

tainty and relates them to system and structure. It might prove to be a useful lead to follow.

The fact remains that the neoclassical theory will remain supreme until that alternative, with whatever proven tools or materials, is constructed. And until such a construction appears we shall be dependent upon a theory of the self-managed economy which is in many respects theoretically and operationally inadequate.

10 Economics and Systems Theory*

> 'Present-day economics is characterized by the fragmentary and reductionist approach that typifies most social sciences. Economists generally fail to recognize that the economy is merely one aspect of a whole ecological and social fabric; a living system composed of human beings in continual interaction with one another and with their natural resources, most of which are, in turn, living organisms. The basic error of the social sciences is to divide this fabric in fragments, assumed to be independent and to be dealt with in separate academic departments.' (Fritzhof Capra, 1982, pp. 194–5)

Much time has passed since the publication of Janos Kornai's (1971) critique of orthodox economic theory in which he urged the application of systems theory to economics. The appeal has not been unheard, and it has been repeated occasionally by others.[1] But, on the whole, economic theory remains unmoved.

Arguably, part of the trouble is systems theory itself. The literature contains plentiful insights but equally abundant ambiguities. There are many different approaches in the application of systems ideas, and the usual crop of disputes amongst system thinkers. In some versions, for example, it is over-mechanistic, appearing 'much more like causal thinking than systems thinking' (Emery, 1981, vol. 1, p. 10). In others it has led to a rigid or conservative functionalism, where every element in the social system is explained and condoned by its place in the whole. It would be a mistake to suggest that systems theorists have been entirely successful in overcoming some of the more mechanistic or other unsatisfactory formulations.

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Partly for these reasons, it is necessary to avoid the conception of systems theory as a miracle cure for a complex but bedraggled science. It is not an instant remedy, nor does it represent a single or unified philosophy or technique. In contrast, however, when systems theory became more and more fashionable in the 1950s and 1960s, exaggerated claims for its potency were made with great frequency.[2] In retrospect, the gains that have been made have been much more modest, and the overblown claims have led to much disappointment. Indeed, it would have been preferable that the term 'systems *theory*' had been dropped at the outset, so as to avoid building up false hopes, or giving the impression that it was a theoretical panacea.

Nevertheless, it is argued here that some general, underlying notions from systems theory do have a direct application to economics, and with positive effect. However, they offer a direct challenge to orthodox economic theory and that in part may help to explain why they have not been widely adopted. It is one aim of this work to examine the potential impact of systems thinking on economic theory, and to suggest some directions for future research.

As well as a caution against the view of systems theory as a panacea it should also be made clear that neither does systems theory offer an alternative formal framework which the theorist of mathematical or formalistic inclination can readily dissect and evaluate. Instead, it involves an alternative style and habit of thinking, and in particular a break with aspects of Cartesian and other ingrained methods of conceptualisation and research. With a view to illustrating this, four aspects of modern systems thinking are discussed here.

In the first section, by way of a preliminary, it is proposed that the overarching concept of a system does provide a welcome antidote to the atomistic view of orthodoxy, where the economy is viewed as a mere aggregation of its parts. Thus the current fashion for attempting to build economics purely on 'rigorous' microeconomic foundations can find its critique in much of the systems literature.

The second section considers a wider or more 'holistic' view. What is suggested is a view of the economy that is system-wide in that it embraces both tastes and technology, and in that it is an open system with respect to the natural world. Such a wider or holistic perspective is important in differentiating the systems-inspired approach from orthodox economic theory.

The third section deals with some issues that are found in some corners of the systems literature but are far from being universally adopted, and are even negated in the mechanistic formulations.

These concern some distinctions between wilful, or purposeful, behaviour, as found in humans, and the goal-directed behaviour of computers or sophisticated machines.

The fourth section suggests how some systems-theoretic ideas concerning complexity and variety may have some application to economics, and the sort of policy conclusions that may be drawn. The fifth section concludes the essay.

AGGREGATION AND THE FALLACY OF COMPOSITION

Economies as Aggregates

In general, as suggested above, systems theory has had little impact on economics. But certain schools of thought within economic theory exhibit a less holistic or system-wide approach than others. In particular, there is a strain within neoclassical theory which relies more on the aggregation of partial equilibrium results than on those from a Walrasian general equilibrium theory. Thus, for example, the individual or household demand curve is aggregated up to the level of the economy as a whole and assumed to have the same characteristic properties.

For the systems theorist such reckless aggregation comes up against the 'fallacy of composition' – precisely the error of conceiving wholes as the sum of their parts. This fallacy received attention by some economists in the past, notably by those of a Keynesian or semi-Keynesian persuasion. Thus Paul Samuelson warns of it in his bestselling textbook.[3] His remarks are ostensibly directed at some of his colleagues, as well as at the student reader. However, since the decline of support for Keynesian ideas in the 1970s, the movement in economics has been towards, rather than away from, aggregations on microeconomic foundations.

The relevance of the fallacy of composition to economics can be illustrated with three examples, the first of which will be familiar to readers of Samuelson's textbook but which is still worth repeating.

Examples of the Fallacy of Composition

In his *Fable of the Bees*, first published in 1728, Bernard Mandeville (1970, p. 199) pointed out that in 'private families the most certain method to increase an estate' is by saving. Yet he argued that it

would be 'an error' to assume that 'the same method, if generally pursued . . . will have the same effect upon a whole *nation*, and that, for example, the *English* might be much richer than they are, if they would be as frugal as some of their neighbours'.

John Maynard Keynes quoted these lines with approval in his *General Theory*. The idea that personal saving may increase personal wealth, but not necessarily the wealth of the community as a whole is now well known as the paradox of saving or thrift. It is a clear example of the fallacy of composition: what is true for individuals or households within the nation is not necessarily true by summation for the nation as a whole. For Keynes, aggregate saving meant a reduction in effective demand and could lead to a reduction in business expectations and a general contraction of economic activity.

Another example relates to the employment of labour. The neoclassical 'law of demand' states that the demand of a commodity is inversely related to its price. It is still popular to apply this principle, with little or no qualification, to the labour market. Thus the demand for labour can be increased by a reduction in wages, and indirectly by a removal of impediments to atomistic competition in the labour market, such as minimum wage legislation and trade unions. Joan Robinson invoked Keynes to contest such theories:

> Keynes showed that this theory was based on a very simple fallacy – the fallacy of composition. It is true for any one employer, or for any one industry – to a lesser extent for any one country in international trade – that a cut in wages, by lowering the price of the commodity produced, will increase its sales, and so lead to an increase of employment in making it. But if all wages are cut, all prices fall, all money incomes fall, and demand is reduced as much as costs. No one employer then has any motive to take on more men. In a crowd, anyone can get a better view of the procession if he stands on a chair. But if they all get up on chairs no one has a better view. (1951, p. 135)

An isolated reduction of wages for one employer is simply a reduction in costs. But the wage bill in the economy as a whole is also an important determinant of demand, and if there are many wage cuts then demand and prosperity could suffer. The many economists and politicians who regard the main solution to unemployment to be cuts in wages are thus, according to this argument, in error.[4]

A third and final example comes from capital theory. In the

debates that followed the publication of Sraffa's *Production of Commodities by Means of Commodities*, a central issue of controversy was the neoclassical proposition that the rate of profit is determined by the marginal productivity of capital. Amit Bhaduri (1969) produced a devastatingly simple refutation of this proposition and this is summarised in Chapter 3 of this book.

Bhaduri shows that the neoclassical proposition that the rate of profit is determined by the marginal productivity of capital will be valid if and only if the first differential of the distributional function relating wages and profits will be equal to minus the amount of capital per worker. It is quite easy to show using Sraffian techniques that this property will not, in general, hold. The reason is due to the fact that the wage–profit frontier is generally non-linear. Consequently the rate of profit does not, in general, equal the marginal productivity of capital and the aggregative neoclassical proposition is invalid.

Bhaduri's result has this intuitive explanation: Consider a small increase in the magnitude of capital per worker. This results in a small change in the amount of output per worker. Assume that the latter quantity divided by the former does, in fact, equal the current rate of profit, according to the neoclassical theory. However, one change results in another. The change in output per worker must itself be distributed between wages and profits. Remember we are not considering a small firm amongst many, perhaps under conditions of perfect competition, whose increase in output makes no significant change to the aggregate. The overall change in output must itself be taken into account at the microeconomic level of the firm. Clearly, there is no reason to assume that the increased output will necessarily be divided between wages and profits in the proportion required to retain equality between the rate of profit and the marginal productivity of capital.

The aggregative marginal productivity theory is flawed because we have moved away from the microeconomic context of the single firm which has no significant effect on the whole, to the macroeconomic context where output per worker and other key variables are changing.

Rational Expectations and the Fallacy of Composition

The three examples of the fallacy of composition noted above apply to the 'aggregated' version of neoclassical theory which informs much policy-making in economics. They each show that what may be

intuitive or 'common sense' in the microeconomic sphere may not be valid for the (world or national) economy as a whole. Consequently, neither economic theory nor government macroeconomic policy should be necessarily guided by 'common-sense' notions such as overall budget deficits depress economic activity, nor that overall wage cuts will cure employment, nor that the rate of profit is determined by the marginal productivity of capital.

Such counter-intuitive results are difficult to reconcile with the 'rational expectations hypothesis' in economic theory (Lucas, 1972). According to this hypothesis, 'expectations, since they are informed predictions of future events, are essentially the same as the predictions of the relevant economic theory' or, more precisely, 'tend to be distributed, for the same information set, about the prediction of the theory' (Muth, 1961, p. 316). Clearly, this hypothesis assumes that common-sense notions about the workings of the economy are initial approximations to the 'true' theory, and that agents will 'learn' this as new information is presented.

However, when aggregated, such common-sense notions come up against the fallacy of composition. Results for the economic system as a whole can be counter-intuitive in that they do not match ostensible microeconomic relationships. Consequently there is a problem for such typical assumptions about learning with economic phenomena which are apparently contradictory, in that relations at the microeconomic level are different from, or even the reverse of, those at the level of the economic system as a whole.

Arguably, the interpretation of information in such a manner would require a complex cognitive schema (such as Keynesian economics, or systems theory) which is clearly far from omnipresent within the economics profession, let alone the public at large.[5] The fallacy of composition suggests, on the contrary, that a complex systems-theoretic and cognitive problem is involved.

Furthermore, it is well known that rational expectations theorists are prone to assume that the standard microeconomic relationships discussed above (i.e. that savings generate wealth, and wages and employment are inversely related: as well as the age-old and equally questionable relationships between the money supply and inflation) are 'true' and pertain to the economy as a whole. In other words, their basic macroeconomic propositions are formed from mere aggregates of 'common-sense' relationships in the microeconomic sphere.

Beyond the Aggregative Approach

In general, the aggregative approach in economics falls foul of the fallacy of composition because the global effect of microeconomic phenomena is derived merely from their aggregation. Macroeconomic relationships are seen as microeconomic ones writ large. The character of the constituent parts, and even their dynamic relations with their environment, remain essentially unchanged as they are brought together in the whole. The examples above betray an essentially compositive method, proceeding unidirectionally from elements conceived in a microeconomic context to a theory of the economy as a whole.

A first consideration of such interaction leads to a multi-faceted formulation of basic economic categories. Saving, now conceived not simply in relation to the individual or the household but also to the whole, would be both a means of accumulating wealth and a drain on effective demand. Wages would be both a cost to be borne by the firm, sometimes deterring increased employment, and a potential element of market demand for consumer goods, stimulating expansion and growth. Profits would be both an *ex ante* variable affecting the decision-making within the firm and also a distributional *ex post* consequence of preceding investment and employment decisions.[6]

To recognise the fallacy of composition is one step in the direction of a systems approach. By itself, however, it is not sufficient. It could lead simply to a research programme which recognises interaction and interdependence, but still attempts to proceed by building up a picture of the whole from the constituent parts, as in modern neoclassical general equilibrium theory. Arguably, simplistic aggregative propositions as discussed above would follow only from the imposition of highly restrictive assumptions upon general equilibrium models. Indeed, such results have yet to be so demonstrated in a rigorous general equilibrium framework. Thus not all versions of orthodox theory fall foul of the fallacy of composition.[7]

From a systems perspective much more is at stake. It is not strictly adequate to regard the whole as unequal to the sum of the parts. From a systems-theoretic perspective, wholes

> cannot be compared to additive aggregations at all. Instead of stating that in the formation of wholes something more than a summation of parts takes place, it would be more correct to state that summation does not play any part whatsoever in the formation of wholes. In summations the parts function because of their

> inherent qualities . . . On the other hand, when a number of parts constitute a whole, the parts do not enter into such a connection by means of their inherent qualities, but by means of their position in the system. The formation of wholes is therefore not additional to the aggregation of parts, but something of an entirely different order. (Angyal, 1941, p. 256)

Thus a careful general equilibrium theorist may recognise interdependence between the parts. But a systems theorist will go further; the parts change their character and function and are partially constituted by the whole, just as much as the whole is partially constituted by the parts. Consequently, the functions of preference or production are not simply affected by the whole through adjustments in their respective parameters. As well as causing interactive, parametric changes, the effect of the whole is to alter the nature, structure and function of the constituent parts.

This conclusion is especially significant where the signalling of information is a significant feature of the phenomenon under consideration. Clearly this is the case for economics, despite the inadequate treatment of information problems in past years. The transmission and reception of information has consequences both for the behaviour of the agent and the system as a whole. Each affects and is inseparable from the other. As in quantum physics, the tangling of observer and observed undermines the dualism of Descartes where individual units are decomposible into separate parts. David Bohm (1980, p. 11), the theoretical physicist, argues thus: 'relativity and quantum theory agree, in that they both imply the need to look at the world as an *undivided whole*, in which all parts of the universe, including the observer and his instruments, merge and unite in one totality. In this totality, the atomistic form of insight is a simplification and an abstraction, valid only in some limited context'. This same conclusion applies even to the most sophisticated forms of neoclassical theory; at most they are valid or applicable in regard to a narrow and limited type of analysis.

ECONOMICS AND THE SYSTEMS VIEW

Endogenous Tastes and Technique

Whilst there is some recognition of the fallacy of composition (although not the implications of its avoidance) amongst neoclassical

theorists, all versions of neoclassical theory, including the most sophisticated, and indeed the 'Austrian' approach as well (Mises, 1949; Hayek, 1948), remain vulnerable to a related system-theoretic critique. Neoclassical and Austrian theories have some common theoretical roots and they share some common preconceptions: in particular their view of the boundaries of economic analysis and the implicit span of 'the economy' within the social, psychological and natural world.

A systems approach, with its emphasis on the totality, would immediately lead to the observation that key elements were exogenous to the 'economic system' of the neoclassical and Austrian models. Both the tastes and preferences of individuals, and the technological possibilities and constraints that impinge upon the economy, are regarded as exogenous or given, i.e. outside the system. Neither the Austrian School, nor many behaviouralist economists, nor even some Keynesians, diverge significantly from orthodoxy on this point.

Orthodox economics confines its theoretical analysis to the exchange or allocation of resources, and the decision-making thereby involved, neglecting both the moulding of individual preferences by social and economic circumstances and also the continuous transformation of productive technology through time. Thus orthodox theory puts the formation and moulding of individual tastes and preferences beyond the scope of its analysis.

Amongst other things, this is to disregard the impact of advances in psychology and other social sciences in the understanding of the processes and structures governing human action. Particularly, the link between the cognitive processes and the formation of goals and expectations on the one hand, and the social and cultural environment on the other, is downplayed or ignored. Notably, both the pure and applied research that has been done by several scholars on the relationship between psychology and economics is largely dismissed by the orthodox theorist.

When it comes to the determination and transformation of technology, orthodox economics is blind, usually taking technology as given and asocial, as if it had nothing to do with the system of industrial relations and the method of organisation of work within the firm. Technology is treated as a natural fact – beyond the scope of any social science.

As an example, orthodox economist Ivor Pearce (1977, p. 27) has approvingly described the production function of neoclassical theory as being determined by the 'law of physics'. This, of course, ignores

the fact that production is an organised social activity, involving relations between persons themselves as well as between persons and nature.

Nevertheless, he is in august company. In the last century John Stuart Mill (1871, bk. 2, ch. 1, sect. 1; 1965, p. 199) wrote that the 'laws and conditions of the production of wealth partake of the character of physical truths. There is nothing optional or arbitrary in them'. Thus Mill, like most neoclassical economists to this day, sees production and technology as asocial: determined by supposedly fixed physical and physiological laws, and unaffected by the social relations and institutions of production in the real world, with all their manifest variety and change.

At any given stage of technological development a variety of methods of organising production are both possible and obvious even to the casual observer. The workforce will have varied skills and capacities to learn, and there will also be cultural variations and differences relating to trade unions and labour practices. There is no physical or technological law which says that production has to be organised in just one way. And insofar as there is variety in these institutions and relations of production there will be a variety of costs and levels of productivity. Economists are in error if they assume that production is simply determined by technology or the laws of physics.

One consequence of the mistaken, neoclassical view of production is that in over a hundred years orthodox theory has failed to make any significant advance in the understanding of long-run technological progress and transformation. Thus, for instance, it is still standard practice in both microeconomic and macroeconomic models to simply assume a figure for the rate of growth of productivity over time. Thus a crucial economic variable is simply plucked, as it were, from the air. Furthermore, to this day, neoclassical theory has not provided any rationale for its 'well-behaved' aggregate production function, despite the devastating Sraffian critique of the 1960s and early 1970s. The explanation of technology and production has remained a mystery, and orthodoxy still devotes insignificant intellectual resources to research in this sphere. This is no accident, of course, as these phenomena are wrongly regarded as exogenous to the economy at the outset.

In contrast to the orthodox view, the approach here is to regard both technology and individual tastes and preferences, at least in the long run, as part of the economic system and thus phenomena which have to be explained by economists. Unlike orthodoxy, the systems-

inspired approach includes both technology and individual tastes and preferences as part of the economic system to be examined. Furthermore, the term 'socioeconomic system' is used to emphasise the fact that the economy is inseparable from a host of social and political institutions in society at large.

In some very limited respects this broadening of the domain of economic enquiry reflects some pronounced developments in post-war economic orthodoxy. Thus, for example, Anthony Downs (1957) has broadened the orthodox marginalist analysis to cover the political sphere, and his work has been followed in this territory by a burgeoning literature of 'public choice' economics in a neoclassical mould. Second, Gary Becker is famous for his extension of neoclassical theory to cover the home and family in a number of well-known publications. And third, Robert Lucas (1972) and the rational expectations theorists have revolutionised neoclassical theory by making expectations endogenous. In a sense, therefore, we may take encouragement from these three developments, as they are clear evidence of a pronounced tendency, in a fashion, to widen the analytical compass of the subject.

Notably and typically, however, these developments within the neoclassical school stop short abruptly at the boundaries of the terrain mentioned above. There is no attempt or inclination to bring the determination of technology into the system, and a principled reluctance to consider the factors moulding or affecting the tastes and preferences of the individual. Whilst a few of the orthodox signposts are roughly in the right direction, the crossing of this boundary would require a shift of imagination, paradigm and underlying ideology of earthquake proportions.

The main reason for this is that orthodox economic theory is wedded to the classic liberal ideology where the individual is regarded as an autonomous and elemental unit. In adopting a systems view we are in a sense repeating the age-old counter-proposition that the behaviour of individuals is in part formed by the social and general environment. It is an old idea, but central to all the radical counter-attacks to individualism and liberalism through the centuries. Note, however, that we do not have to make the obverse error, frequently committed in the past, that the social environment explains all. We may deny that the individuals are completely autonomous and free, but we do not then have to place them in deterministic chains.

Indeed, it will be argued below that it is neoclassical theory that

takes a deterministic view by making the individual a prisoner, not of the social environment, but of his or her immanent and often invariable preferences and beliefs. These determine behaviour on highly mechanical lines.

In contrast, in the case of the approach that is proposed here, the broadening of the scope of economic enquiry does not mean a widening of a mechanistic or deterministic model: there are niches for uncaused causes. Whilst the theoretical system is here widened, it is changed fundamentally in its character as well.

The latter point is worth emphasising. Much more is involved than simply the widening of the domain of enquiry in economics. Whilst theoretical developments in these areas are sparse, it is already apparent that the inclusion of technology and tastes as endogenous involves a radical shift in the mode and approach of economic theorising. Furthermore, it involves a central challenge to the classical liberal conception of orthodoxy that the tastes of the individual are sacrosanct and immanently conceived.

It is reasonable to describe the approach here as 'holistic' in that it embraces questions of the determination and evolution of tastes and preferences. However, the word has led to much confusion, both by supporters and opponents of a holistic approach. Thus, for example, in reacting against some versions of holism, one individualistic critic describes it as 'the doctrine that we should somehow study wholes directly without considering the workings of parts in a meaningful way' (Langlois, 1983, p. 584). However, this is not what many systems theorists mean by holism. In the present work it is used in a sense that is different from the latter definition, as a loose imperative that social and economic theory should be broadened to embrace all relevant variables and elements. It is not some kind of theoretical short cut towards the understanding of systemic parts without considering their own properties and relations.

The Wider Systems View Briefly Explored

Note, therefore, that the socioeconomic system is here regarded as an 'open' rather than a 'closed' system in the sense originally defined by Ludwig von Bertalanffy (1950). A closed system will reach some kind of steady state because, by definition, it has no connection with or influence from an external environment. An open system may or may not reach an equilibrium or steady state, depending on whether or not its environment itself is unchanging. Normally, systems theor-

ists make the reasonable assumption that the environment is variable and does not reach its own equilibrium.

Neoclassical theory effectively adopts an open system model of the economy, but assumes that its 'environment' consists of given, static functions governing individual preferences and productive technique. Consequently, the model can reach a state of equilibrium. But this is both unrealistic and unacceptable. Not only do real world 'environmental' conditions change, including both the natural environment and the other elements which are exogenous to neoclassical theory, but also, as noted above, the theory is incapable of directing attention at the processes of economic transformation through time.

It is thus a serious mistake to suggest that neoclassical theory is the expression of a systems view in the economic sphere. This error has been made by some neoclassical economists, such as E. Roy Weintraub (1979, pp. 71–2), and by Robert Lilienfeld (1978) (a critic of systems theory). Notably, both these authors focus on neoclassical general equilibrium theory as a culmination of systems theory in economic science. Admittedly, general equilibrium theory does take a view of the economic system where numerous functions determining both individual preferences and productive activities interact with each other. But also general equilibrium theory regards the economy basically as a system of exchange, governing the allocation of resources between autonomous agents. Production is an exogenous 'black box', with processes governing individual tastes and preferences as a theoretical void. At most, general equilibrium theory is an expression of a systems approach only in a very limited and inadequate sense.

Economists and the Systems View

The discussion so far should suggest that a wider systems view does offer something for economics. By way of illustration the influence of a systems view can be traced in the history of economic thought. Adam Smith, for example, developed an idea of an economic system in which the processes of production were endogenous. He placed production at the centre of his *Wealth of Nations* with his dynamic theory of the division of labour. For Smith the technology was not taken as given, but regarded as under continuous transformation partly as a result of changes in economic conditions.

Karl Marx followed this lead in his first volume of *Capital*. He covered much new ground with his examination of the processes of

production, considering changes such as in the length of the working day and in the intensification of labour, and the dynamic transformation of technology under the capitalist system. Marx is also responsible for a sustained challenge to some of the individualistic assumptions behind orthodox economic thought, by repeatedly emphasising the social nature of individuality. Thus, for instance, he wrote that '*man* is no abstract being encamped outside the world. Man is *the world of man*, the state, society' (Marx and Engels, 1975, p. 175). Whilst Marx wrote long before the rise of a modern systems view, as an economist his work reflects systems ideas to an extent rarely matched in other economists.

Whilst remaining a critic of some aspects of Marxian theory, Thorstein Veblen was to some extent influenced by Marx. In addition he reacted strongly against neoclassical theory as it was developing around the turn of the century. In his criticisms he put great stress both on the processes of economic evolution and technological transformation, and the manner in which individual action is moulded by circumstances. He saw the individual's conduct as being influenced by relations of an institutional nature.

A remarkably apposite statement comes from Frank Knight (1924, pp. 262–3):

> Wants are usually treated as *the* fundamental data, the ultimate driving force in economic activity, and in a short-run view of problems this is scientifically legitimate. But in the long-run it is just as clear that wants are dependent variables, that they are largely caused and formed by economic activity. The case is somewhat like that of a river and its channel; for the time being the channel locates the river, but in the long run it is the other way.

Knight is an unusual but apposite economist because he was influenced both by the institutionalists and the Austrian School. A systems view is sustained in the tradition of American institutional economics after Thorstein Veblen, not typically with crisp theoretical statements such as those of Knight, but in the continuing insistence, with plentiful topical illustrations, of the malleability of tastes and the interaction between technology and the economy. Some of the supreme contributions of this genre come, of course, from the pen of J. K. Galbraith.

Gunnar Myrdal, an important dissident economist, and a Nobel prizewinner, has explicitly propounded a systems view. He has

argued that in 'regard to practically every economic problem, scientific study must concern the entire social system, including, besides the so-called economic factors, everything else of importance for what comes to happen in the economic field' (Myrdal, 1976, p. 82). The work of Nicholas Georgescu-Roegen (1954, 1971) is notable in that he has probed the boundaries of orthodoxy in two directions, both in regard to consumer theory and the theory of production, thus breaking down the traditionally narrow range of thought. Another prominent economist influenced by a wider view is Kenneth Boulding (1985).

More specifically there are a number of economists, mainly from the Marxian and Sraffian theoretical traditions, who have stressed the non-autonomy and adaptability of preferences, and implicitly or by implication the social character of individuality itself.[8] Others have insisted on the need to examine further the processes of technological change and the social relations of production.[9]

It should also be noted that the systems perspective outlined above directs attention to the interface between the socioeconomic system and the natural environment. A further positive sign is the recent emergence, in embryonic form, of a heterodox economics which places such matters to the forefront, inspired in the main by Fritz Schumacher's (1973) classic work.[10]

DETERMINISM, PURPOSEFULNESS AND CHOICE

Whilst there is a danger in a systems approach in that the elements of agency and purpose may be overshadowed, in consideration of the overarching structure, there is a literature within systems theory which offers a suitable corrective to unacceptable versions of holism. This literature concerns the theoretical treatment of human agency and the conceptualisation of purposeful and goal-directed behaviour.

Consequently, the emphasis on the wider cultural and institutional conditions of human action does not necessarily lead to a rigid or deterministic outlook. The view is taken that whilst social institutions are important in the processes of learning, in the formation of preferences and generally in the motivation of action, human activity is not completely or mechanistically determined by its institutional integument.

Indeed, it is the deterministic models of preference and action in orthodox economics, where in substance problems of information

and uncertainty are assumed away, that in fact deny real choice. As Brian Loasby (1976, p. 5) has argued: 'If knowledge is perfect and the logic of choice complete and compelling then choice disappears; nothing is left but stimulus and response. If choice is real, the future cannot be certain; if the future is certain, there can be no choice.'

Even with the relaxation of the assumption of perfect knowledge in recent neoclassical models, it is not clear that choice is fully reinstated. Even the probabilistic calculus of risk which often accompanies neoclassical theory today[11] still implies a Bayesian (or other similar) determination of choice. A model which includes a random element does not necessarily admit true sovereignty or spontaneity for the individual concerned. Action enslaved by the dice of the cosmos may not be quite as rigidly determined, but it is no more spontaneous or free.

In a sense, the problem is one of distinguishing between a purposeful human agent and a goal-directed machine. Taking this issue, fault can also be found with some non-neoclassical writers who are rightly keen to emphasise information problems and true uncertainty, and the purposefulness of human action. Thus Friedrich Hayek suggests that machines can be produced to 'show all the characteristics of purposive behaviour'. Although such machines 'are comparatively primitive and restricted in their range of operations compared with the central nervous system' and for this reason 'cannot yet be described as brains', Hayek believes that 'with regard to purposiveness they differ from a brain merely in degree and not in kind' (1952, p. 126).

A similar lapse is found in the writings of Herbert Simon. In one work he regards 'the simplest movement – taking a step, focussing the eyes on an object – as purposive in nature' (1957b, p. 85). In another he sees 'purposive behavior sequences' (Simon, 1956) in simple cybernetic models of adaptive behaviour.

Notably, two systems theorists, Russell Ackoff and Fred Emery (1972), have elaborated a relevant distinction between purposeful and goal-directed behaviour. The difference lies in the set of possible responses to the structural environment faced by the individual. Simpler goal-seeking devices (such as a thermostat) respond in a single and predetermined manner to changes in their environment. The most sophisticated type of goal-seeking behaviour is that of a computer or machine that can 'learn' from its mistakes in pursuing goals, and thus can respond in different ways to the same repeated problem. However, in both these cases, the goals are still themselves

determined or fixed. The purposeful agent is essentially different in that it can change its goals, and furthermore it may actually do this without any stimulus from outside. Human beings are regarded as purposeful systems of this type. The capacity to change both behaviour and goals without external stimulus means that humans have a *will*, and that some of our choices are real.

Typically, much of orthodox economic theory does not include purposeful behaviour in this sense, and its models are of goal-seeking behaviour of the simplest type. Behaviour is regarded as a determinate function of external inputs to given preferences. In recent years there have been more sophisticated developments with models where a kind of learning is involved. But, for the reasons given above, the agent is still not endowed with choice. It is only the Austrian School who have put forward a view of the agent where both purposes and actions are not determined by the external environment and where real choice is involved.

However, the Austrian theorists go too far in the opposite direction. They seem to argue either that action bears no significant influence of the environment, or that it is beyond the scope of economic theory to enquire as to how purposes and actions may be determined. As I have argued elsewhere (Hodgson, 1985b, 1986, 1988), the first view is simply untenable and the second is blinkered.

Consequently, the Austrian approach, despite its important insights concerning purposefulness and choice, is incapable of building any model of the economy which can generate detailed predictions concerning the future. Contrary to many neoclassical theorists, prediction is not all-important. But to ignore it entirely seems to emasculate the science.

The view taken here is that there are external influences moulding the purposes and actions of individuals, but that action is not entirely determined by them. The environment is important but it does not completely determine either what the individual aims to do or what he or she may achieve. There are actions which may be uncaused, but at the same time there are patterns of behaviour that may relate to the cultural or institutional environment within which the person acts. Action, in short, is partially determined, and partially indeterminate; partly predictable but partly unforeseeable, even in terms of the calculus of probability or risk. Human actions can be both routinised and conservative, and display flights of imagination or eccentricity which are beyond rational anticipation and which bring

the greatest surprise. This essential idea was expressed well in a novel by George Eliot:

> Fancy what a game of chess would be if all the chessmen had passions and intellects, more or less small and cunning: if you were not only uncertain about your adversary's men, but a little uncertain also about your own; if your knight could shuffle himself on to a new square by the sly; if your bishop, in disgust at your castling, could wheedle your pawns out of their places; and if your pawns, hating you because they are pawns, could make away from their appointed posts that you might get checkmate on a sudden. You might be the longest-headed of deductive reasoners, and yet you might be beaten by your own pawns. (Eliot, 1972, p. 383)[12]

Notably, it is this measure of unpredictability which makes the economic future uncertain, in the most radical sense. Because the economy is made up of human beings whose behaviour is partially indeterminate, the future can never be fully anticipated or known. We may be able to make useful and meaningful predictions concerning some events but we can never be certain that they will be true. It may be possible to calculate and assign probabilities to future outcomes but these will always be tentative at most, and futile at the least, because the future is essentially indeterminate and unknown. The partial indeterminacy of human behaviour is one major reason for this fact.

COMPLEXITY AND VARIETY

The Impurity Principle

Perhaps some of the more important concepts in systems theory are those of variety and complexity in relation to the system and its environment. One of the most important is W. Ross Ashby's (1952, 1956) derivation of the 'law of requisite variety'.

The shortest and most frequently quoted version of this law is 'only variety can destroy variety': that is, if a stable target outcome is to be attained, then the variety of the controlling system must be at least equal to that of the activity which it is directing. For example, an air-conditioning system which is meant to keep both the temperature

and the humidity of the air within a desired range must have two or more controlling instruments, namely a thermostat and a hygrometer. One instrument will, in general, be insufficient to keep two elements in target range. The general result can be demonstrated mathematically with given premises, using a matrix structure with rows and columns representing the different possible environmental states, and the different possible responses by the system (Ashby, 1956, ch. 11; Emery, 1981, vol. 1, pp. 100–20).

It is not generally recognised, but in form Ashby's law is basically identical to the economic policy rule first derived in the work of Jan Tinbergen (1952). In a book published in the same year as Ashby's original work, Tinbergen showed that the number of policy instruments (for example government expenditure, taxation levels) must be equal to or greater than the number of policy targets (for example full employment, balance of payments equilibrium). In their application, of course, Ashby's law and Tinbergen's rule are not identical, as the former is a more general statement that the latter. Their uncanny formal similarity, however, should suggest a fruitful application of cybernetics and systems theory to economics.

Some management systems theorists, notably Stafford Beer (1964), John McEwan (1971), and Raul Espejo and Nigel Howard (1982), have developed and amended Ashby's law and applied it to human organisations. Espejo and Howard point out that what is involved here is not a mathematical truism with *a priori* validity, but a different proposition which could possibly be false. This is the proposition that every viable system is exposed to environmental contingencies with which it cannot cope. In other words, for each system there is a possible disturbance for which there is no response that will lead to a target outcome. To distinguish this from Ashby's law, Espejo and Howard call this the 'law of insufficient variety'.

Consequently, to minimise the chances of disruption an open system has to contain sufficient variety to deal with all the potential variation in its environment. Complexity and variety within the system is necessary so that the system can survive and deal with complexity, variety and unforeseeable shocks in the real world.[13]

Elsewhere (Hodgson, 1984, pp. 104–9) I have suggested the shorthand phrase 'the impurity principle' to refer to a special case of this corollary. It is a broader idea than Tinbergen's rule, and narrower than Ashby's general law, which applies to all open systems. The impurity principle does not relate simply to economic policy, but also to the composition and complexity of the socioeconomic formation as

a whole. The idea is that there must always be a plurality of economic structures, so that the socioeconomic formation as a whole has requisite variety to promote and cope with change. Thus if one type of structure is to prevail (for example central planning), other structures (for example markets, private firms) are necessary to enable the system to function.

There is a further difference with Ashby's law and its immediate extensions. In Ashby's exposition 'requisite variety' is derived from the variety of the environment which is *external* to the system. In social terms this translates into the proposition that a social system has to contain sufficient variety to deal with potential shocks from its natural and international environment. But in the case of social systems there is a further source of threatening variety: from *within* the system itself, due to the degree of indeterminacy in human action. Consequently there is 'internal' potential variety emanating from these partially indeterminate human acts. Clearly the existence of 'internal' as well as external potential variety is an important distinguishing feature in comparing social with other systems.

The impurity principle is thus substantiated in a double sense, both by the complexity of the external environment and, within limits, the inner indeterminacy of much human behaviour. Human organisations thus present an extra dimension of diversity which is not present in a mechanistic system.

Further support for the impurity principle comes from the examination of economic systems in the present and past. For example, as I have argued elsewhere (Hodgson, 1984, chs 6–7), just as there are practical limitations to the extent of the market, there are similar limitations to central planning as well. And just as the market requires 'imperfections' to operate, central planning may be able to function only through the conjunction of market and other forms (Nove, 1983).

Analogous remarks apply to the role of the family and domestic production within capitalism, the role of the market in the slave mode of production of classical times, and the role of the market and the church under feudalism. In each of the four major modes of production after Christ (slavery, feudalism, capitalism and Soviet-type societies) at least one 'impurity', i.e. a non-dominant economic structure, plays a functional role in the reproduction of the system as a whole. These elements have not simply coexisted through history; the diversity has been *necessary* for the socioeconomic system to function over time.

Policy Outlook

The policy outlook that is implied by the impurity principle has been discussed in the preceding chapter. It differs from a not uncommon Marxist intention to completely suppress all vestiges of markets and private enterprise from a socialist system. Such statist and non-pluralistic versions of socialism are typically inspired by a utopian rationalism which assumes that society can be ordered in its entirety according to the dictates of reason.

Clearly, in such a conception, the problems of gathering and processing information and of cognitive divergences between agents are downplayed or ignored. Otherwise, when such problems arise they are attributed to differences of class outlook and interest which at some future stage will be removed. However, whilst such issues as class are very likely to exacerbate divergences of information and cognition, it is simply utopian to suggest that they will be entirely removed with the abolition of class differences in society.

As mentioned in the preceding chapter, the impurity principle and the derivative arguments for economic pluralism can obviously be directed against the New Right and advocates of a 'pure' market system. An extreme case of the latter is Ludwig von Mises who wrote: 'The market economy or capitalism, as it is usually called, and the socialist economy preclude one another. There is no mixture of the two systems possible or thinkable; there is no such thing as a mixed economy, a system that would be in part capitalist and in part socialist' (1949, p. 259).

Both Friedrich Hayek and Milton Friedman have proposed that the market and capitalist elements in the Western 'mixed economy' should be dramatically increased. Whilst a pure market economy ostensibly involves a decentralisation and parcellisation of economic power, it is non-pluralistic in the important sense that it involves a largely uniform set of social and property relations. In other words, they propose a plurality of economic agencies, but not of economic structures.

CONCLUSIONS

For two centuries, economic theory has been dominated by the classical liberal conception of the atomistic, and usually self-seeking, individual. Its atomistic approach has sometimes been reflected in

misplaced aggregation, and even more generally in a failure to consider the wider contexts of economic action. These include, in particular, the failure to consider the factors that help mould individual preferences and purposes, and the determination and transformation of productive technology.

Whilst there are ideological barriers to the adoption of a wider view, the adoption of a systems view is helpful in illuminating the deficiencies of the orthodox approach, and in suggesting directions for future research.

For example, the systems approach outlined here may prove useful in developing criteria for evaluating the relative advantages and disadvantages of planning and market mechanisms, as well as the performance potential of their combination. Although such an approach is vastly underdeveloped in its application to economics, modern systems theory does explicitly deal with the important issues of information and uncertainty and relates them to system and structure.

Furthermore, a systems approach raises the issue of the relationship between the socioeconomic system and its environment, including, most importantly, the ecosystem upon which all life depends. This represents a challenge for economic theory on such questions where typically it has been over-complacent.

More generally, systems theory may supply even further leads to a progressive reconstitution of economics on non-neoclassical foundations, and with the inclusion of the processes governing the formation and adaptation of preferences and technology within the economic system as a whole.

Notably, the adoption of a systems approach encourages interdisciplinary enquiry and the breaking down of the often artificial and stifling barriers between the social sciences. It has become fashionable for economists to either ignore other social sciences or imperialise them with neoclassical methods. As with all imperial conquests, in some respects it is not simply the oppressed but also the oppressor that loses out.

Notes

1. See, for example, Boulding (1985), Dopfer (1976), Kay (1979, 1982), Nove (1979, pp. 148–52), Thoben (1982), Troub (1983). Earlier discussions relating economics to a systems perspective are found in Lowe (1951) and Sebba (1953).

2. Samuelson (1975). Other economists who have discussed the idea include Kindleberger (1980). Ansoff has defined the effect of 'synergy' as when there is 'a combined return on the firm's resources greater than the sum of its parts' (1968, p. 75) and this idea is taken up by Kay (1984).
3. The existence of overblown claims is not confined to systems theory. Indeed, optimistic exaggeration of the potency of neoclassical theory, with less impressive tangible results, has been a feature of the post-war period; marked more recently by much more modest claims by the more careful theorists such as Kenneth Arrow and Frank Hahn.
4. For some recent presentations of this Keynesian argument see Brothwell (1982), McCombie (1985–6) and Thirlwall (1981).
5. It should be noted that rational expectations theorists generally overlook epistemological or cognitive problems in the transformation of sense-data into knowledge, referring only to 'information' (see Wible, 1984–5).
6. Note the important discussion of the determination of profits by investment, reversing the intuitive approach that puts them the other way round, in the work of Michal Kalecki. For an excellent summary and discussion see Feiwel (1975).
7. Also, in particular, despite his individualistic and compositive approach, the Austrian economist Friedrich Hayek (1967, pp. 70–1) has clearly accepted that the whole is more than the sum of its parts.
8. Namely Samuel Bowles (1985), Herbert Gintis (1972, 1974), Sergio Parrinello (1984) and Ian Steedman (1980). See also Mary McNally (1980).
9. Recent heterodox works on variable productivity (Leibenstein, 1976; Rowthorn, 1974; Nelson, 1981) challenge to varying degrees conceptions of the technological processes of production as exogenous and asocial.
10. See, for instance, Kenneth Boulding (1985), Donnella Meadows *et al.* (1974), Paul Ekins (1986), Bertram Schefold (1985).
11. For an orthodox survey see Jack Hirshleifer and John Riley (1979).
12. A century beforehand, a strikingly similar metaphor was used by Adam Smith in his *Theory of Moral Sentiments* (1759) where he writes of the legislator who 'seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chessboard'. However, according to Smith, 'every single piece has a principle of motion of its own, altogether different from that which the legislature might choose to impress upon it' (Smith, 1976, pp. 233–4).
13. Note that Charles Darwin, in his *Origin of Species*, preceded Ashby and Tinbergen by arguing that the chances of survival for a species are increased by matching the diverse risks of the natural environment by greater variety amongst the species itself: 'the more diversified the descendents become, the better will be their chances of success in the battle for life'. Neil Kay (1984) invokes Darwin's argument to explain product and structural diversification within the firm.

11 Post-Keynesianism and Institutionalism: The Missing Link*

It is not only neoclassical theory that has internal problems. It is now widely argued, even by sympathisers, that there are fundamental problems with post-Keynesian theory as well (Harcourt, 1982; Tarshis, 1980). Whilst one short essay cannot resolve these matters, it can attempt to investigate the difficulties. The first part consists of a critical survey of the contending or possible theoretical foundations for post-Keynesian economics and the second suggests an alternative line of argument which has not as yet been given sufficient attention. It is to build a theoretical foundation for post-Keynesian theory out of some ideas which are associated with the institutionalist tradition.

THE EXISTING FOUNDATIONS FOR POST-KEYNESIAN THEORY

It is now widely accepted that after the publication of *The General Theory* Keynes's ideas were bowdlerised and synthesised with orthodoxy. Economics itself became an amalgam of neoclassical microtheory and the Hicks–Hansen version of Keynes. In part this was because Keynes himself failed to develop adequate theoretical foundations for his system, and he leaned too heavily on the marginalist analysis of Alfred Marshall in his work. The result was what Joan Robinson described as 'bastard Keynesianism'. This, we now know, failed to encompass some of the key ideas in the economics of Keynes: particularly his focus on the potential instability of a monetary economy, affected as it is by decisions in regard to a future about which all agents are profoundly uncertain.

However, this reappraisal of Keynes's ideas (Davidson, 1978;

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Hines 1971; Leijonhufvud, 1968; Shackle, 1974) came too late to salvage the banner of 'Keynesianism' from the barrage of the Chicago artillery. 'Bastard Keynesianism' was shattered, but the fire was not effective in demolishing the central arguments in the economics of Keynes. Nevertheless, by the early 1970s it appeared that the monetarists had routed the so-called 'Keynesians', and Keynes was pronounced dead. The subsequent onslaught of the rational expectations battalion consolidated the victory. Since that time the supporters of Keynes have been fighting a kind of guerrilla war from the hills, but unfortunately they are split into different factions with different perspectives and ideas.

The Question of the Post-Keynesian Theoretical Foundations

A further difficulty is that neoclassical theory, despite its own internal problems, is still claiming great success in extending its microeconomic analysis, particularly to the macroeconomic sphere. Post-Keynesians have not succeeded in changing the terms of this debate away from the search for 'sound microfoundations'. Furthermore, inspecting post-Keynesian theory, 'microfoundations' of equivalent depth are lacking. Whilst there have been important developments in the post-Keynesian theory of the firm (for example Eichner, 1976), and in its macroeconomic theory (for example Sawyer, 1982), these are often concerned with the presentation of alternative views on the behaviour and direction of the causality of economic variables, particularly by dropping the neoclassical assumption of perfect competition, rather than by examining even more fundamental theoretical assumptions. Indeed, post-Keynesian research programmes in this mould have focused mainly on the 'empirical' matter of the shape and nature of key functional relationships, rather than on the theoretical bases of those functions and their associated variables.

Notably, over fifty years after the publication of *The General Theory*, there is still no consensus amongst Keynesians as to what are the basic theoretical foundations of their economics. Indeed, Geoff Harcourt (1982) has noted that post-Keynesian economics is often portrayed as being distinguished more by its dislike of neoclassical theory than by any coherence or agreement on fundamentals by its contributors.

Fernando Carvalho (1984–5) has usefully surveyed this diversity by classifying the utilisation by post-Keynesian theorists of varying concepts of the short and the long run. He comes up with a spectrum

of approaches within post-Keynesianism, ranging from the long-period models based on the work of Piero Sraffa, to the analysis of George Shackle which concentrates on the uncaused nature of imagination and expectation and the indeterminacy of the economic process.[1]

In the present essay we shall not attempt to survey all these alternatives. Indeed, a slightly different emphasis is posed. At the core of neoclassical theory lie a formal theory of prices and resource allocation and a theory of human agency based on rational maximisation. The question is: to what extent do contending approaches offer a coherent and developed alternative to neoclassical orthodoxy at this fundamental theoretical level?

It by no means undervalues the contributions of the many post-Keynesian theorists to suggest that the greater part of their effort has not been in response to this particular question. Even the work of the greatest of the post-Keynesian theorists, including Michal Kalecki, Nicholas Kaldor and Joan Robinson, does not rest on an alternative and fully-developed theory of human behaviour to rival the neoclassical one.

What is on offer as a theoretical bedrock upon which post-Keynesianism can build its alternative to neoclassicism? At present there are three types of analysis which have been said to provide such a theoretical foundation.[2] They are, first, work which has attempted to incorporate the notion of effective demand in the long-period framework developed by Piero Sraffa (Garegnani, 1978, 1979a; Eatwell and Milgate, 1983), second, the behaviouralist analyses inspired by the seminal work of Herbert Simon (1957a, 1959, 1968, 1983), and third, the contribution of George Shackle (1955, 1969, 1972, 1974) which has synthesised elements of Keynes's theory with the subjectivism of Friedrich Hayek and the Austrian School.[3]

The first and third types of analysis have had the closest explicit links with post-Keynesianism, partly for the reason that they have been created with the development of Keynes's work in mind. In contrast, Simon's work has been connected with post-Keynesianism through the efforts of later commentators (Earl, 1983; Garner, 1982). Notably, Carvalho's typology of post-Keynesian theory does not include behaviouralism. It is to the question of the relative adequacy of these three contending approaches that we now turn.

The Keynes–Sraffa Synthesis

A gulf divides the Sraffian theorists from others like Simon and Shackle who emphasise problems of uncertainty and argue that the economy cannot be captured by a static analysis. On one side, Pierangelo Garegnani (1979b, p. 183), echoed by John Eatwell (1979, 1983), denies a 'central role to uncertainty and expectations'. On the other side, Paul Davidson (1978), Alexander Dow and Sheila Dow (1985), Tony Lawson (1985), Brian Loasby (1976), George Shackle (1974) and Hyman Minsky (1976) have all seen uncertainty and expectations as being central both to the work of Keynes and to developments based upon it. The fact that Sraffa's long-period analysis represents a major amendment to Keynes's theory is stated by Sraffian theorists themselves. For instance, Garegnani (1979b, p. 183) insists that the 'short-period character of Keynes's theory' is a weakness. Following this, Eatwell (1983, pp. 271–2) states that there are 'many parts of *The General Theory* which either do not address or . . . directly contradict the notion of long-period theory . . . it frequently appears that Keynes is simply presenting a theory of . . . short-period positions'.

An even more important question is to ask to what extent does Sraffian analysis offer a foundation for post-Keynesian theory. By 1973 Joan Robinson was expressing some misgivings about an exclusive focus on the long-period: 'In reality', she wrote, 'all the interesting and important questions lie in the gap between pure short-period and long-period analysis' (Robinson, 1973, p. 60). In 1980 her differences with the long-period theorists had become even more clear; for 'in her debates with Garegnani, and with Eatwell and Milgate, Joan Robinson used her views on the inadmissibility of long-period comparisons for describing processes, which she developed in her critique of neoclassical theory, to criticise the central stress by these authors on the notion of centres of gravitation or long-period positions' (Harcourt, 1985, p. 106). Sraffian 'values' or 'prices of production' were rejected because they could not be incorporated in a theory which was set in historical time (Robinson, 1974, 1979b, 1980; Bhaduri and Robinson, 1980).

In one of her later publications Joan Robinson (1979b, p. 180) asked directly what was the meaning of the normal rate of profit in long-period analysis: does it mean 'what the rate of profit on capital will be in the future or what it has been in the past or does it float above historical time as a Platonic Idea?'. Garegnani (1979b, p. 185)

replied that the normal rate of profit is located in the present: 'It corresponds to the rate which is being realised *on an average* (as between firms and over time) by the entrepreneurs who use the dominant technique . . . it is also the rate of profits which that present experience will lead entrepreneurs in general to expect *in the future* from their current investment.'

This response suggests that long-period analysis is a short-period one as well, for the long-period average is seen to bear upon short-period decisions. But how do entrepreneurs *know* what the average rate of profit is, or if the rate of profit in their own enterprise is above or below it? They may know quoted market rates of interest, but they are clearly not the same thing. Consequently, how can entrepreneurs form expectations of a future rate of profit on the basis of this present average rate of profit which is unperceived and unknown? Even if it were known, why should entrepreneurs assume that it would remain the same in the future? These questions are neither raised nor answered in the Garegnani–Eatwell–Milgate extension of Sraffian theory.

Second, it is questionable that a Sraffian world of fixed coefficients can represent the long-period if this is meant to include capital accumulation and technological change. Sraffian theorists have suggested that these phenomena can be encompassed by the comparative-static analysis of the switching of techniques. But as Joan Robinson (1980, p. 134) puts it: 'It is a mistake in methodology to compare two technical systems . . . and then to switch from one to the other. A switch is an event in historical time which has to be accounted for by introducing historical causation in the story. This is where Sraffa leaves us and hands us over to Keynes.' Technological change is a process, through time, with future consequences which are rarely known with any precision in the present. It involves, for instance, investment in research and development where the payoffs are essentially uncertain, and changes in the social relations of production resulting from industrial struggles or the reorganisation of work. A static matrix of Sraffian input–output coefficients cannot represent these processes.

Third, a fundamental issue is elided in the attempt to build the theory of effective demand on Sraffian foundations. Strikingly, the standard Sraffian model does not include money in the proper sense. True, the equations can include a unit of account or numeraire. But this is not money in the full sense, because *any* commodity could serve as such a unit of account. As Keynes (1930, 1936) made

abundantly clear, money is a *special* commodity. It is, as Marx (1973, p. 221) put it, 'the God among commodities', and it cannot be associated *arbitrarily* with *any* commodity in the system.

The special status of money results in part from the fact that in a monetary economy barter is not the rule; it is money, and generally only money, which is exchanged for other commodities. If any commodity can be chosen as 'money' in the formal model, then this essentially describes a barter economy in which all commodities are 'money' commodities, rather than a true system of monetary exchange (Clower, 1967). As a result the Sraffian equations apply more to a barter rather than to a monetary economy.[4] As Frank Hahn (1980, p. 130) has admitted, the same is true of neoclassical general equilibrium theory as well. The absence of money in these theoretical systems is indeed a serious problem, for without it there can be no adequate formulation of the principle of effective demand.[5]

Finally, the Sraffian approach does not offer a theory of human agency and interaction. It simply suggests that the long-period positions will somehow reflect and affect the expectations and actions of agents, without explaining how the average rate of profit and long-period prices are attained. Whatever the strengths of Sraffian analysis, particularly its destructive critique of neoclassical and Marxian theories of value and capital,[6] this lack is a serious weakness. In consequence it cannot be claimed that Sraffian analysis provides a completely adequate or entirely appropriate foundation for post-Keynesian theory.[7]

Behaviouralism

From the outset, Herbert Simon's behavioural research programme has emphasised the weight of uncertainty and incompleteness of knowledge that bears upon decision-making, and, by comparison with the task of maximising on the neoclassical model, the limited computational capacity of the human brain. A key feature of Simon's work is that he rejects the global maximisation hypothesis but retains a notion of 'bounded' rationality. Thus, for example, agents may not be able to gather and process all the information for reaching global maximisation decisions, but they can make a 'rational' decision within a small set of possibilities. Consequently it is suggested by Simon (1957a, 1959) that firms and consumers are not maximising, but 'satisficing', i.e. simply trying to attain acceptable minima.

Contrary to some neoclassical interpreters, Simon is not simply

proposing that agents are faced with additional 'costs', nor even that information is a problem because it is scarce, but that there is a central problem of computational limitations for the decision-making agent. Consequently, rationality is not simply 'bounded' in the sense that there is too little information upon which reason can be based, but also that there is too much information to compute or assess.[8]

Like Keynes, Simon emphasises problems of information and uncertainty. Furthermore, with the rejection of maximisation and global rationality there is a similar rejection of any economic analysis which is based exclusively on the concept of a partial or general equilibrium. In Simon's (1976) work rationality is 'procedural' rather than 'substantive' or global. One limitation of the behavioural research programme is that it focuses almost exclusively on the decision-making of the individual agent. Unlike the work of Keynes and many other economists, the global or system-wide consequences of individual actions do not come into view. In general, behavioural economists fail to deliberate on the unintended consequences that result from the actions of agents interacting with one another. There is supreme emphasis on the explanation of the behaviour of the single agent. However, the prime goal of social science, as exemplified in the work of Marx, Keynes, and many others, is to explain the unintended as well as intended results of the actions of many actors. For this reason, despite Simon's emphasis on the problems of dealing with information and uncertainty, behaviouralist theory is inadequate as a theoretical foundation for post-Keynesian economics.

Shackle and Post-Keynesian Theory

Shackle has based much of his argument on the treatment of uncertainty and expectation in Chapter 12 of *The General Theory* and Keynes's 1937 article from the *Quarterly Journal of Economics*. Shackle's personal contribution has been to elaborate the argument concerning non-probabilistic uncertainty – with his concept of 'potential surprise' – and to attempt to build links with the subjectivist treatment of uncertainty and knowledge in the work of Friedrich Hayek (1948) and others of the Austrian School.

Like both Hayek and Keynes, Shackle emphasises that the economic future is not predetermined but essentially indeterminate. The future depends on the purposive decision-making of economic agents but the decision-maker is not in possession of anything more than an inkling of the future that has yet to be created. Lack of knowledge of

the future means that decision and action must rest on the imagination and expectations of individuals, which are not predetermined but uncaused. They 'do not rest upon anything solid, determinable, demonstrable. "We simply do not know."' (Shackle, 1973, p. 516). By taking the individualism of much economic theory to its logical limits, Shackle reaches striking and non-mechanistic conclusions: 'In so far as economics is about choice as a *first cause*, that is the coming into being of decisive thoughts not in all respects to be explained by antecedents, it is *essential* to talk in terms of what is foreseen, expected and intended' (Shackle, 1989, p. 51).

Thus Shackle's anti-determinism is based on a conception of the essential indeterminacy of human decision-making: of individual decision and action as a first or uncaused cause. There is no equilibrium in the economic process, nor disequilibrium, because these concepts are based on determinate functions of human behaviour which are seen as theoretically misconceived. Given the capricious imagination and expectations of many uncertain individuals, there is no necessary regularity between periods in historical time.

However, Shackle suggests that actions and expectations are, for the purposes of theoretical consideration, *completely* uncaused, and in this respect he differs from Keynes. It is one thing to suggest that human agency presents uncaused causes, another to claim that there are no factors moulding decision and action at all. Keynes mentions such factors, but his account of them is unclear. Most often he states that expectations of the future are based on the 'psychology' of individuals (for example Keynes, 1936, pp. 147, see Hodgson, 1985a, 1988) but he does not elaborate this much further. What is evident is that the actual formation of expectations and decisions is exogenous to Keynes's economic model (Champernowne, 1963).

In making the formation of expectation and decision exogenous, both Shackle and Keynes conform to the individualistic tradition in economic theory. Just as neoclassical theorists put the formation and moulding of individual tastes and preferences beyond the scope of their analysis, for Hayek (1948, p. 67) the task of explaining them is not a matter for economics or any other social science. In general, Austrian theorists seem to argue either that individuals bear no significant influence of the environment, or that it is beyond the scope of economic theory to enquire any further as to how purposes and actions may be determined. Whilst the analyses may be different they have a common effect: to exclude such matters entirely from the domain of economic enquiry. Despite his theoretical radicalism,

Shackle follows both the neoclassicals and Austrians by taking it for granted that choice is the 'first cause', without asking what are the preconditions of and influences on choice itself.

However, this is to disregard the impact of advances in psychology and other social sciences in the understanding of the processes and structures governing human action, particularly the links between cognitive processes, the formation of goals and expectations, and the social and cultural environment.[9]

In arguing that the forces moulding expectation and decision cannot be explained at all, Shackle's position is different from that of Hayek, who suggests that they could possibly be explained by psychology but it would not be legitimate to do so, and from that of neoclassical theorists, who 'explain' behaviour by reference to all-determining and exogenous preference functions.

By rejecting any determinate explanation of decision-making, both Shacklean and mainstream Austrian theory is incapable of building a model of the economy with a sufficient degree of order and regularity,[10] and as a result can generate predictions concerning the future. Contrary to many neoclassical theorists, prediction is not all-important, but that does not mean that we should ignore it entirely. Consequently, Shackle's work shares a limitation of the Austrian approach: 'it over-emphasises the freedom of the agent and under-estimates the influence of conditions other than his own imagination' (Carvalho, 1983–4, p. 270).

A more plausible view is that there are external influences moulding the purposes and actions of individuals, but that action is not entirely determined by them. The environment is influential but it does not completely determine either what the individual aims to do or what he or she may achieve. There are actions which may be uncaused, but at the same time there are patterns of behaviour that may relate to the cultural or institutional environment within which the person acts. Action, in short, is partially determined, and partially indeterminate; partly predictable but partly unforeseeable. The economic future is still uncertain, in the most radical sense; at the same time, however, economic reality displays a degree of pattern and order.

In contrast, in Shackle's subjectivist analysis the role of institutions and culture in shaping human cognitions and actions is ignored. 'Institutional questions tend to be obscured by the Shacklean approach, losing place to a growing emphasis on the process of imagination' (Carvalho, 1983–4, p. 271). Furthermore, by seeing individual

action and decision as a completely 'uncaused cause', Shacklean analysis takes a one-sided view of the historical process. True, it looks forward and sees the gulf that separates the unknown future from the present. But it does not look backwards and appreciate the full significance of the past. As Shaun Hargreaves Heap (1986–7, p. 276) elegantly puts it: 'Recognition of historical time matters, not only because it forces an acknowledgement of uncertainty, but also because history's legacy to the present is a set of institutions which structure our perceptions and hence influence our behaviour with respect to that uncertain future.'

Nevertheless, as we shall see below, there are passages in Shackle's work which utilise Keynes's notion of the 'convention' in a sense which moves closer to institutional theory. However, to give these ideas full flight it is necessary to abandon subjectivism and the entire project to synthesise the work of Keynes with Austrian theory.

In a similar vein, Robert Dixon (1986) has noted the failure in Shackle's work to draw out the full implications of the concepts of uncertainty and expectation. The fact that we are uncertain of the future, he argues, results from the fact that it is not under our control. The need for expectation and the existence of uncertainty is not a subjective and asocial datum of the human condition; it results from lack of control over our futures and an inability to shelter from the consequences of the decisions of others. Cast in such a mould, 'Shackle's train of thought leads inexorably to a discussion of control and of power' (p. 589).

THE INSTITUTIONALIST FOUNDATIONS

In finding all three contending approaches wanting, we now turn to a possible institutionalist foundation for post-Keynesian economics. Some connections have already been made by institutional economists, particularly Allan Gruchy (1948, 1949), Wallace Peterson (1977), Dudley Dillard (1980) and Warren Samuels (1986). There is also the extensive work of Gunnar Myrdal and John Kenneth Galbraith, which has in both cases spanned the two traditions.

However, it should be admitted at the outset that there is no single, unified body of institutionalist theory. Indeed, as Myrdal (1958, p. 254) has noted, traditional American institutional economics was marked by a flagrant 'naive empiricism' and did not give due precedence to matters of theory. A notable exception in this regard is Thorstein Veblen; and there has been increasing attention to the

theoretical foundations by institutionalists in recent years. The following account is a summary of the eclectic amalgam of institutionalist theory which I have attempted elsewhere (Hodgson, 1988).

Habits

The high degree of relevance of habits to economics was emphasised by Veblen in several of his works. Indeed, according to him, institutions themselves are comprised of 'settled habits of thought common to the generality of men' (Veblen, 1919, p. 239). The significance of habits has also been recognised by the maverick institutionalist Frank Knight (1947, p. 224). He believed that the forces that help to mould human society 'belong to an intermediate category, between instinct and intelligence. They are a matter of custom, tradition or institutions. Such laws are transmitted in society, and acquired by the individual, through relatively effortless and even unconscious imitation, and conformity with them by any mature individual at any time is a matter of "habit".'

One of the functions of habits is to deal with the complexity of everyday life; they provide us with a means of retaining a pattern of behaviour without engaging in global rational calculations involving vast amounts of complex information. In contrast to the neoclassical picture, fully-conscious rational deliberation about all aspects of behaviour is impossible because of the excessive amount of information and the unattainable computational competence that would be involved in processing it. Fortunately, human agents have acquired habits which effectively relegate particular ongoing actions from continuous rational assessment. The processes of action are organised in a hierarchical manner, facilitating monitoring at different levels and rates, and with different degrees and types of response to incoming data. Habits exist in conjunction with a human mind which operates simultaneously at different levels of consciousness and deliberation.

In contrast, and with few exceptions, economic theorists assume that all human action takes place on the same level of reason or deliberation. In a minority view, however, action springs from both deliberative and non-deliberative sources. Below the level of full deliberation there is what Michael Oakeshott (1962) calls 'practical knowledge' and Anthony Giddens (1984) 'practical consciousness'. Such mental activity helps people to 'go on': to act without giving their choices direct discursive expression.

Because the concept of habit suggests that some actions flow from

full, conscious deliberation, whereas others do not, we should expect hostility to this idea from both positivists and classic liberals. Positivism fails to find empirical support for the very idea of consciousness; whereas classic liberals eschew the idea that the individual is not fully in control of all his or her acts. In a place where positivism and classic liberalism meet – in neoclassical economic theory – we find a doubled hostility and a categorical rejection of the concept of habit as it is understood in daily life.

The capacity to form habits is indispensable for the acquisition of all sorts of practical and intellectual skills. At first, whilst learning a technique, we must concentrate on every detail of what we are doing. Eventually, however, intellectual and practical habits emerge, and this is the very point at which we regard ourselves as having acquired the skill. When analytical or practical rules are applied without full reasoning or deliberation then the technique can be said to have been mastered.

In general, neoclassical theory implies that economic behaviour is essentially non-habitual and non-routinised, involving global rational calculation and marginal adjustments towards an optimum. In contrast, the view taken here is that the study of habits is important for economics because it relates to the large amount of routinised behaviour in the economy as a whole.

Whilst inductive reasoning cannot prove that habits exist, a great deal of data can be marshalled to support the idea of the importance of habits in economic life. Regarding consumer behaviour, John Maynard Keynes wrote in *The General Theory* that a 'man's habitual standard of life usually has the first claim on his income' (Keynes, 1936, p. 97). Since then a number of studies have offered support for this general proposition, particularly James Duesenberry's (1949) now neglected theory of the consumption function. In addition, consumer surveys by George Katona and Eva Mueller (1954), Robert Ferber (1955) and Joseph Newman and Richard Staelin (1972) found that most households did not make purchases after extensive deliberation. Evidence such as this led Richard Olshansky and Donald Granbois (1979) to conclude that a substantial proportion of purchases do not involve decision-making in a meaningful sense.

Business itself is bound by informal customs and rules which are acquired by most participants. In addition, from extensive studies of business behaviour Katona (1975, p. 321) concludes that habitual pricing rules may 'extend to such measures as rebates, markdowns, promotions and clearance sales' and argues that rigid pricing mech-

anisms may be operative even if prices are changeable. It is widely accepted that labour markets are built upon a series of rigidities of contract and behaviour, underlined by tradition and the prevailing social culture (Dunlop, 1958; Marsden, 1986).

Work itself involves a degree of practical knowledge or know-how which is both acquired and routinised over time. Indeed, the industrial skill of a nation consists of a set of relevant habits, acquired over a long time, widely dispersed through the employable workforce, reflective of its culture and deeply embedded in its practices. Veblen drew our attention to this fact, and devised a theory of economic evolution based on the conflicting habits and expectations of the workforce and the business community (see Veblen, 1964; Dyer, 1984). Similar ideas have re-emerged in the impressive work on the firm by Richard Nelson and Sidney Winter (1982).[11] Being concerned to show how technological skills are acquired and passed on within the economy, they argue that habits and routines act as repositories of knowledge and skills. In their words, routines are the 'organizational memory' (p. 99) of the firm. Consequently, Nelson and Winter do not simply argue that habits and routines are widespread, in addition they have functional characteristics. It is to some of these we now turn.

Routines, Institutions and Information

An important enabling function of institutionalised routines is to do with the information they provide for other agents. This aspect of routinised behaviour has received very little attention from economists, yet it is fundamental to the analysis of all social and economic institutions. All organisations gather and process some amount of information on a day-to-day basis, and this may be available within or outside the institution. However, the informational function of institutions is much wider and deeper than this. Through their very existence, and the established, visible character of much of the associated behaviour, institutions actually create additional information as well.

Stabilised and routinised behaviour establishes and reproduces a set of rules and norms 'fixed by habit, convention, tacit or legally supported social acceptance or conformity' (Kornai, 1982, p. 79). These are not necessarily inviolable, but the point is that they help agents to estimate the potential actions of others. One early and neglected statement in this regard is as follows:

> One individual can choose or plan intelligently in a group of any size only if all others act 'predictably' and if he predicts correctly. This means, *prima facie*, that the others do not choose rationally but mechanically follow an established and known pattern, or else that the first party has coercive power, through force or deception . . . Without some procedure for co-ordination, any real activity on the part of an individual, any departure from past routine, must disappoint the expectations and upset the plans of others who count on him to act in a way predicted from his past behaviour. (Knight and Merriam, 1948, p. 60)

The critical point is that both routines and formal institutions, by establishing more or less fixed patterns of human action, actually supply information to other agents. Such inflexibilities or constraints suggest to the individual what other agents might do, and the individual can then act accordingly. Whereas if these rigidities or 'imperfections' did not exist the behaviour of others could change with every perturbation in the economic system, and such frequent adjustments to behaviour might be perceived as random or chaotic.

In other words, institutions and routines, other than acting simply as rigidities and constraints, enable decision and action by providing more or less reliable information regarding the likely actions of others. One consequence of this function of institutions is that in a highly complex world, and despite uncertainty, regular and predictable behaviour is possible. The informational function of institutions and routines leads to patterns of action, guided by the information that the institutions provide,[12] and this has been illustrated in a game-theoretic framework by Andrew Schotter (1981).[13]

If we make the less rigid assumption that individual tastes and preferences are malleable and will change or adapt, then the objectives and behaviour of agents can moulded or reinforced by institutions. This is partly because institutions have an important cognitive function (Hodgson, 1985b, 1988; Hargreaves Heap, 1986–7). The information they provide is not transmitted raw; it is affected by the structures of those institutions themselves. Such structures do not simply provide information, they influence the processes through which information is selected, arranged and perceived by agents. Furthermore, social culture embodies habits of thought and cognition which mould perception and action in subtle ways (Douglas, 1973, 1987).

Markets, Prices and Norms

Basing himself on Joan Robinson's (1971, 1974) work, Thanos Skouras (1981, pp. 202–4) has developed a line of argument that raises many questions about the neoclassical theory of prices and suggests an institutionalist alternative. Consider the market for a commodity, and assume that it is evident that the quantity supplied exceeds the quantity in demand. A consequent price reduction may result from changes made by individual agents. But, as Skouras argues, there is no necessary reason why people will automatically reduce prices in this way. If, for example, 'historical experience leads buyers and sellers to expect that this is an abnormally low price and that it will most likely be higher in the near future, then the price will not fall' (p. 203). Given such experience and expectations, buyers will be willing to buy more and sellers will be willing to sell less, so that the gap between supply and demand will narrow, and may even be reversed so that demand is in excess. And all this may occur whilst the price remains constant.

What is crucial in Skouras's argument is the idea of an expected normal or equilibrium price which is formed, in part, from historical experience. Furthermore:

> The quantity that buyers would be willing to buy and sellers willing to sell at a particular price will be different depending on whether, (1) this price is seen as the equilibrium price, (2) this price is lower than the expected normal price, or (3) the price is higher than the expected normal price. It is evident that in cases (2) and (3) the drawing of demand and supply schedules presupposes a knowledge of the equilibrium price and cannot serve for its determination. Traditional demand and supply analysis, even when enriched by reaction functions giving rise to fluctuations, is built on case (1): buyers and sellers are assumed to react as if any price that is considered might be the equilibrium price. It is in this way that their memory of the past and their expectations about the future are eliminated and it becomes possible to construct curves the intersection of which determines the equilibrium price. (p. 203)

It is, of course, widely accepted that decisions to buy or sell at a given price depend in part on expected prices in the future. But future prices may themselves fluctuate, so the expectation is in the form of a norm, or range of possible prices, that are assumed to

prevail at some future period. The question then is how such an expected norm is established.

The obvious orthodox answer would be to suggest some learning experience, based on observations of moving prices. However, if price adjustments were frequent then there are strong arguments to suggest that agents would have difficulty in establishing some expectation of a norm. Ceaseless, incremental, price fluctuations may appear to the observer as little more than 'noise', and even if a sophisticated statistical analysis were readily at hand then it would not necessarily produce a reliable result. Most of the evidence of judgement under uncertainty (Kahneman, Slovic and Tversky, 1982) suggests that people do not make such judgements on the basis of Bayesian probability calculations or statistical regressions. Furthermore, given the amount of information involved and the insufficiency of computational speed and capacity (even in the age of the microcomputer), it is difficult to see how people could carry out such computations.

Yet in the absence of such expected norms, decisions to buy and sell would appear hazardous or uncertain. For markets to work, some mechanism to establish norms in the minds and practices of agents is required. In some cases, crudely interpreted past experience can fit the bill. There are a large number of day-to-day commodities for which prices are more or less stable, and without deliberating upon it we learn the price level and thus come to expect that future prices will be at about a given level. As Shackle (1972, p. 227) argues in his chapter on 'prices as conventions', prices which 'have stood at particular levels for some time acquire thereby some sanction and authority'.[14] And, as Nicholas Kaldor (1985, p. 22) has pointed out, such norms are functional for the system: 'Belief in a long-run normal price of a commodity has always been regarded as an indispensable condition for the reasonable functioning of commodity markets.'

In many cases, however, prices will not be stable; and may seem to vary more or less continuously. But even here a broad or narrow range of prices can serve as a norm or a guide. Prices are then evaluated in relation to their position within or outside this range. We can thus generate expectations on the basis of rough-and-ready experience of price movements through historical time.

Even if the day-to-day price of a commodity shifts decisively above or below its preceding norm, as argued above this does not mean that the expected price norm itself will move automatically in the same

direction. Clearly, however, few prices are permanently stable, and at some time or another price changes will force norms to adjust. The question then is: through what mechanism is the new norm established?

A partial answer proposed here is that market institutions themselves have an important function in establishing norms. This is frequently overlooked because the prevailing conception of a competitive market is one where agents are continuously higgling and haggling, and moving prices incrementally to their mutual advantage. However, even in markets where price alterations are frequent, trading is often structured and information is published so that the formation of norms is possible, so that most agents may accept them as a guideline or convention.

Take the stock market as an example. This is a case of a potentially volatile market where minute-to-minute, incremental adjustments in prices are common. Nevertheless, and even after recent changes, stock markets remain highly structured institutions. There are formal arrangements for gathering and publicising information and for making transactions, and there are extensive informal networks and routines.

We may conclude that even in a potentially volatile market where dramatic price changes are possible, trading is structured and information is published selectively so as to help the formation of price expectations and norms. Indeed, the very complexity and volatility of the price of stocks impels the market institution to publish or sponsor a great deal of guideline information so that agents can cope. Furthermore, informal trading networks between agents also help to establish trading conventions and norms.

In other cases, where prices are less volatile, price information can more directly contribute towards the formation of a norm. It is because prices are stable, and are perceived by agents to be in equilibrium, that the task facing market institutions is less daunting in this respect. Nevertheless, market institutions still have a crucial function: by ordering trade under the aegis of some institution, the price and quality of the product may be legitimated at its given level. There is a kind of stamp of institutional approval which may contribute in a powerful manner to the emergence of price norms.

It is important to note that price norms acquire a moral dimension in the eyes of the purchaser, which further helps to reinforce them in the market. In a random survey Daniel Kahneman, Jack Knetsch and

Richard Thaler (1986) discovered than an overwhelming majority of respondents would regard a price increase as acceptable if it reflects a real cost increase, but not if it is simply a response to scarcity. (See also Frey, 1986.)

In rehabilitating a type of price norm, in a sense we are returning to the classical tradition of Adam Smith and David Ricardo, with their 'normal' or 'natural' price, and to subsequent developments such as Karl Marx's 'prices of production', and Piero Sraffa's (1960) system of 'values' based on matrices of input–output coefficients.

However, there are important differences between this tradition and the argument presented here. In the works of Smith, Ricardo, Marx and Sraffa price norms relate to some kind of long-period stationary state where global profit rates and other adjustments are assumed to be fully worked out. In contrast, 'institutional' price norms are the outcome of a process in historical time, depend in part on expectations, and relate to the legitimising and informational functions of institutions. At best, Sraffian prices are the notional norms which are consistent with a uniform profit rate.

The Impossibility of Perfect Competition

Keynes argues that in a capitalist economy we act very much on the basis of past experience and established convention: 'Knowing that our own individual judgement is worthless, we endeavour to fall back on the judgement of the rest of the world which is perhaps better informed. That is, we endeavour to conform with the behaviour of the majority or the average' (Keynes, 1973, p. 114). This type of argument has clear implications for the question of price and quantity adjustments within market institutions, but these were not developed by Keynes and they remained underdeveloped in economic theory until similar issues were addressed by G. B. Richardson (1959, 1960).

Richardson argues that if neoclassical 'perfect competition' did actually exist it could not function for long, the problem being that no individual agent would be aware of the investment intentions of others. The incentive to invest depends in part on the knowledge of a limited competitive supply from other firms, or the establishment of a belief that others do not possess the information regarding the opportunity that is available to the investor. 'Perfect competition' does not provide this. Precisely because of its 'perfection' it places no limit on the number of firms that can be expected to compete. He writes:

> A profit opportunity which is known by and available to everybody is available to nobody in particular. A situation of general profit potential can be tapped by one entrepreneur only if similar action is not intended by too many others; otherwise excess supply and general losses would result. In other words, a general opportunity of this kind will create a reliable profit expectation for a single entrepreneur only if there is some limitation upon the competitive supply to be expected from other producers. (1959, pp. 233–4)

This turns the conventional, neoclassical view inside out. Richardson argues that '"perfect knowledge" . . . would have been no use to the members of the system even if they could ever be assumed to possess it' (p. 236) and 'the conditions necessary for adequate information are incompatible with perfect competition' (p. 233). He suggests that producers obtain information about the prospective activities of those to whom they are interrelated in a number of possible ways. First, there is explicit collusion or agreement. Second there is implicit collusion: 'a general understanding that no-one will alter what they are doing'. And third, there are 'frictions', 'imperfections' and 'restraints', which, although they appear to stand in the way of 'free competition', are actually in some measure necessary to make the market system function at all.

Thus the model of perfect competition that is found in mainstream economic theory is unconvincing because it does not work. It is readily admitted by neoclassical theorists that perfect competition does not exist. The point, however, is that it would not be viable if it did.

As a consequence, the mainstream view of rigidities and constraints has to be reversed. Far from always preventing the system from working efficiently, they often play a functional role in a modern economy. This idea has been taken up by some modern post-Keynesians. Jan Kregel (1980, p. 46) argues that because of uncertainty regarding the future, 'the information required for rational decision making does not exists; the market mechanism cannot provide it . . . The system reacts to the absence of the information the market cannot provide by creating uncertainty-reducing institutions: wage contracts, debt contracts, supply agreements, administered prices, trading agreements.'

Despite not being developed to the full, a glimmer of this argument is found in Chapter 17 of *The General Theory* where it is suggested that the rigidity of the money wage is not necessarily disadvan-

tageous. Keynes argues that if money wages fell easily then this might create disruptive expectations of a further fall. However, these ideas were not fully developed by Keynes, and his microeconomic theory remains largely on marginalist foundations.

The discussion of price norms is again relevant in this context. Without the informational assistance of such norms it would be difficult to establish meaningful expectations of the future. Price norms thus help the market-based economy to operate in a world where agents have limited knowledge.

Consequently, the (partial) rigidity of prices and wages should not be treated as a restrictive assumption to be imposed upon a 'more general' model. Rigidities are not a 'special case'. These so-called 'imperfections' help to impose coherence and order on the market system. To repeat a point made elsewhere, markets function coherently *because of* institutional rigidities and 'imperfections', and not *despite* them as neoclassical theorists presume.

The Potential for Cumulative Instability

Whilst we carry the burden of the past in the form of the institutions that mould and dominate our lives, institutional economists such as Veblen never overlooked the processes through which institutions and habits may change: 'The situation of today shapes the institutions of tomorrow through a selective, coercive process, by acting upon men's habitual view of things, and so altering or fortifying a point of view or a mental attitude handed down from the past' (Veblen, 1899, p. 190).

Furthermore, in stressing the importance and functional character of habits and routine, it should not be overlooked that conscious choices and purposive action are involved as well, Thus the 'selective, coercive process' is not confined to a fixed groove. Institutions change, and even gradual change can eventually put such a strain on a system that there can be outbreaks of conflict or crisis, leading to a change in actions and attitudes. Thus there is always the possibility of the breakdown of regularity: 'there will be moments of crisis situations or structural breaks when existing conventions or social practices are disrupted' (Lawson, 1985, p. 920). In any social system there is an interplay between routinised behaviour and the variable or volatile decisions of other agents.

This non-deterministic view stresses both the weight of routine and habit in the formation of behaviour and the importance of some

elements of strategic deliberation and their possibly disruptive effects on stability. Such a tension between regularity and crisis is shown in the following quotation from Veblen:

> Not only is the individual's conduct hedged about and directed by his habitual relations to his fellows in the group, but these relations, being of an institutional character, vary as the institutional scene varies. The wants and desires, the end and the aim, the ways and the means, the amplitude and drift of the individual's conduct are functions of an institutional variable that is of a highly complex and wholly unstable character. (Veblen, 1909, p. 245)

With these ingredients it is possible to envisage processes whereby for long periods the reigning habits of thought and action are cumulatively reinforced. But this very process can lead to sudden and rapid change. The very ossification of society could lead to the decimation of the economic system because of more vigorous competition from outside, or there could be an internal reaction leading to a newly modernised order. Conversely, a recklessly dynamic system may suffer from lack of continuity of skill or outlook, and reach an impasse because in its own breakneck pace its members were left without enduring values or goals.

In Veblen's view the economic system is not a 'self-balancing mechanism' but a 'cumulatively unfolding process'. Economic institutions are complexes of habits, roles and conventional behaviour. However, because of the momentum of technological and social change in modern industrial society, and the clashing new conceptions and traditions thrown up with each innovation in management and technique, the cumulative character of economic development can mean crisis on occasions rather than continuous change or advance.

Despite the geographical and intellectual remoteness of Keynes's work from that of the American institutionalists, there are similarities here with the analysis in Chapter 12 of *The General Theory*. Here Keynes emphasises the 'precariousness' of the 'convention' upon which decision and action are based, and the possibility of cumulatively violent changes in mood and expectation. At the same time, however, he cautions that 'the state of long-term expectation is often steady, and, even when it is not, the other factors exert their compensating effects' (Keynes, 1936, p. 162).

The Evolutionary Character of Institutional Economics

Ever since the classic articles of Armen Alchian (1950) and Milton Friedman (1953) neoclassical theory has relied on a Darwinian analogy in its analysis of competition or even individual rationality. However, as Sidney Winter (1964) demonstrates, the appeal to Darwinian notions of evolution is unsuccessful because the mechanisms involved in the sustenance and procreation of such maximising behaviour are not specified. For instance, in the case of the firm the neoclassical 'natural selection' theory lacks a viable mechanism to transmit the characteristics of surviving firms from one generation to the next. In the natural world, according to many biologists, such a mechanism is the gene. This is believed to contain the hereditary information which is passed on from each organism to its successors.

Within an institutionalist perspective, organisational structures, habits and routines play a similar evolutionary role to that of the gene in the natural world. To some degree these have a stable and inert quality and tend to sustain and thus 'pass on' their characteristics through time, and from one institution to another.

For example, the skills learned by a worker in a given firm become partially embedded in his or her habits. Thus these act as carriers of information, 'unteachable knowledge', and skills. The idea that routines within the firm act as 'genes' to pass on skills and information is adopted by Nelson and Winter (1982, pp. 134–6) and forms a crucial part of their theoretical model of the modern corporation.

However, routines do not act as genes in the strict biological sense. In contrast to Darwinian biology, the inheritance of *acquired* characteristics is possible. Thus the evolutionary process in society can find a more adequate analogy in the earlier biology of Jean-Baptiste Lamarck. Unlike orthodox Darwinian biology, economic evolution is not always gradualistic, and rapid 'mutations' are possible as rapid transformations in the social, economic and technological culture lead to the rapid acquisitions of new skills and routines.

CONCLUSION

Three major theoretical perspectives have been offered as a foundation for post-Keynesian theory: the behaviouralist, the Shacklean and the Sraffian. It has been argued here that all three, despite their positive points, have their limitations and flaws. Furthermore, a

relatively unexplored alternative foundation can be found within institutionalist theory, and this may have the benefit of incorporating some of the acceptable features of the other three perspectives.[15]

Interestingly, the research agenda that is promoted by this linkage of institutionalist and post-Keynesian theory includes a focus on the relationship between, on the one hand, the long-period and the durable aspects of habits and routines, and on the other, the short-period and the aspects of cumulative instability and indeterminacy in the system. The differing treatments of the short- and long-period can be related in part to different emphases within the hierarchy of decision and action. Further theoretical work should aim to resolve this issue within a comprehensive theoretical framework.

Notes

1. Carvalho (1984–5) surveys these approaches within post-Keynesianism: (1) the long-run, Sraffian models of Eatwell and Garegnani; (2) the Kaldor–Pasinetti model where long-run growth rates are moveable; (3) the Kaleckian alternative, which combines both long- and short-run models, with an emphasis on cyclical movements; (4) the 'historical' approach of Davidson, Kregel and Minsky where uncertainty undermines the usefulness of long-run or gravity centre models; and (5) the indeterminate economics of Shackle.
2. Harvey Leibenstein is on the editorial board of the *Journal of Post Keynesian Economics* and some may argue that his X-inefficiency theory (Leibenstein, 1976) should be included in this list. However, as Leibenstein (1983, p. 841) himself admits, there is no finished theoretical basis for the X-inefficiency idea in his writings.

   Furthermore, the idea has little to do with the economics of Keynes. Apart from the rejection of the maximisation hypothesis, there is very little that is radical in a theoretical sense. Notably, X-inefficiency itself is defined in relation to neoclassical norms, and the policy imperative is that those norms should be attained as far as possible. Leibenstein argues that neoclassical theorists are wrong because they fail to acknowledge the existence of X-inefficiency, but he then seems to draw the conclusion that policies must be so designed that it is minimised and that reality then conforms to the neoclassical model.

   Whilst the X-inefficiency idea points to the existence of slack and spare capacity, there does not seem to be a recognition that in a world of uncertainty and ignorance some slack capacity is *necessary* to deal with contingencies; a firm that rid itself of slack would be inflexible and less likely to survive. Leibenstein's argument, however, it is that slackness and inefficiency should be abolished or minimised through the competitive pressure of the market. It is implied that any remaining slack or excess capacity is a regrettable residual rather than to some degree a

functional necessity for the firm. For these reasons there are serious limitations in making the X-inefficiency idea a main theoretical foundation for post-Keynesian economics.

3. Note also the synthesis by Peter Earl (1983) which attempts to combine behaviouralism with a Shackle-inspired view of the economic process. Joan Robinson's work has spanned different perspectives by moving away from Sraffian long-period analysis towards a rejection of equilibrium theorising and an emphasis on historical time. (See Robinson, 1974, 1979a, 1980; Harcourt, 1985.)
4. Elsewhere (Hodgson, 1981; 1982, ch. 15) I have attempted to graft some notion of money onto the Sraffa system using a joint-product framework. The attempt was tentative, and the aims of the article were mainly to suggest that there was a problem in the orthodox Sraffian system and to set an agenda for future research. In the single-product model devised by Carlo Panico (1980, p. 376) money appears simply as an interest payment, not as a store of value or as a portion of capital which could be advanced by the industrial capitalists.
5. In fact, without the concept of money, the concepts of supply and demand are inseparable and devoid of independent meaning. This is because *in a barter economy* a 'commodity which is supplied, is always, at the same time, a commodity which is the instrument of demand. A commodity which is the instrument of demand, is always, at the same time, a commodity added to the stock of supply. Every commodity is always at one at the same time matter of demand and matter of supply' (James Mill, 1821, p. 190). In a monetary economy, however, demand and supply are distinguished from one another and, contrary to Mill, Say's Law does not apply. (Hodgson, 1982, pp. 67–8, 122–3).
6. For an account of the Sraffa-based critique of neoclassical theory see Harcourt (1972). For the impact of Sraffa on Marx see Steedman (1977) and the discussion in Hodgson (1982).
7. Recently, G. Duménil and D. Lévy (1987) have attempted to construct a more dynamic model based on Sraffian foundations. However, the objections raised here still remain; crucial problems of information and knowledge are assumed away, and money proper does not exist in the model. For a further discussion of the limitations of the Sraffa–Keynes synthesis see Harcourt and O'Shaughnessy (1985).
8. Note in this context Ronald Heiner's (1983) work on the origin of rules, norms and 'predictable behavior'. Like the work of Simon, one of its valuable features is its stress on the difference between computational capacity or ability and the complexity of everyday choices and problems in economic life.
9. On this and related topics see also Hodgson (1985b, 1986, 1988).
10. In later works Hayek has gradually moved away from other Austrian theorists and given his concept of 'spontaneous order' greater prominence. This is discussed further in Chapter 12 below.
11. Surprisingly, despite some considerable similarity between Nelson and Winter's approach and the theories of Veblen and the early American institutionalists, Nelson and Winter make no reference to any of Veblen's works. In fact, the Nelson–Winter approach is more conventionally

institutionalist than the so-called 'new institutionalism' of Oliver Williamson (1975, 1985) and others.

12. Several writers have made this point. See, for instance, Geoffrey Newman (1976, p. 474), Lawrence Boland (1979, p. 963), Herbert Simon (1983, p. 78) and Richard Langlois (1986a, p. 237).
13. However, in a game-theoretic framework the model of the agent is still that of maximising 'economic man'. Furthermore, true uncertainty does not play a central role in game theory because the actors are assumed to be aware of both the menu of strategic options and the payoffs in each case. As Shackle (1972, ch. 36) points out in his critique, game theory excludes the phenomenon of tactical surprise: 'Surprise is the exploitation of the opponent's lack of knowledge, or of his reliance on what he wrongly believes to be knowledge' (p. 423). In reality, Shackle argues, the 'most powerful resource available to a real-life contestant may be to exploit the ignorance of . . . contestants concerning the ultimate conditions of the contest' (p. 426). For this reason the structure of competition and markets is not adequately represented by the game-theoretic tableau.
14. Shackle (1972, pp. 226–7) notes the work of Hugh Townshend, a pupil of Keynes, in this context. Townshend (1937, p. 168) writes that:

> in regard to actual money-prices, there is nothing save the force of habit, operating through conventional prejudices about the normality, or propriety, of certain price-levels for certain particular variables . . . and through habits and conventions which limit the velocity of circulation of money on the one hand and its volume on the other, to prevent them from varying arbitrarily, even in the shortest period. In long periods they do in fact vary arbitrarily – that is to say, in a way not governed by regular law, and therefore unpredictable. Thus a convention of stability is necessary for any dynamic economic theorising.

Keynes was aware of this article and did not distance himself from it. For Keynes's correspondence with Townshend see Keynes (1979).

15. There are other links between post-Keynesianism and institutionalism which have not been discussed here, particularly in regard to a system-wide or organic view of the world. See Gruchy (1948); Brown-Collier, (1985). For more general discussions of closely related interest see Eichner (1985) and Foster (1987).

12 Institutional Economic Theory: The Old versus the New*

When the history of institutional economics is updated to take account of recent developments, further interest will be added to an already engrossing tale. Remarkably, the Institutionalist School of Thorstein Veblen, John Commons, Wesley Mitchell and others was a very prominent paradigm amongst US economists in the 1920s and 1930s. This was followed by, depending on your point of view, one of the several post-war 'counter-revolutions' in economic theory, or an important moment in the unfolding neoclassical and formalistic renaissance. Yet, since the mid-1970s, there has been an equally remarkable growth in what has been dubbed the 'new institutional economics', not via a re-emergence of traditional institutionalism, but mainly through developments in the heart of modern orthodox theory itself. The irony, of course, is that the original institutionalism of Veblen and others emerged largely out of a critique of orthodox assumptions.

After clarifying some of these orthodox fundamentals, a primary task of this paper is to demonstrate the extent to which the new institutional economics relies upon them. Aspects of the old institutionalist critique will be highlighted, with a view to demonstrating the difficulty in sustaining institutionalist theory upon such orthodox propositions, and the need to surpass them, partly along the lines suggested by Veblen and others long ago. The paper concludes with some remarks on the fate of the old institutionalism and its present potential.

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This is not a comprehensive 'point scoring' exercise between the two institutionalisms. The object is not to suggest that the old institutionalism is in all respects satisfactory, nor to conclude that the new variety has nothing to offer, but merely to indicate that the old institutionalists had good grounds for their critique of orthodoxy in regard to assumptions about human agency, even if Veblen and his followers did not provide an adequate alternative. Consequently, whatever its merits, the 'new' institutionalism is to be criticised for proceeding largely on pre-Veblenian assumptions.

NEW INSTITUTIONALISM, THE ABSTRACT INDIVIDUAL AND 'ECONOMIC MAN'

Despite the claim of its title, the 'new' institutionalism rests upon some long-established assumptions concerning the human agent. These derive from the long tradition of classic liberalism spanning the work of John Locke and John Stuart Mill. Other notable members of this formidable association are Jeremy Bentham, David Hume and Adam Smith. From the outset, classic liberalism has overshadowed economics; it is much easier to identify the few dissenters to this domination – such as Karl Marx and Thorstein Veblen – than the many conformists. It has remained dominant in our discipline, despite its partial eclipse in other intellectual circles in the first two-thirds of the twentieth century. With the rise of the New Right in the 1970s and 1980s, classic liberalism has re-emerged on a wide front.

What unites the mentors of classic liberalism listed above, despite their wide-ranging and sometimes conflicting opinions, is the view that, in a sense, the individual can be 'taken for granted'. To put it another way, the individual, along with his or her assumed behavioural characteristics, is taken as the elemental building block in the theory of the social or economic system. It is this idea of the 'abstract individual' that is fundamental to classic liberalism as a whole. According to this conception, as Steven Lukes (1973, p. 73) puts it, 'individuals are pictured abstractly as given, with given interests, wants, purposes, needs, etc.'. In general, the heyday of this idea in Western thought dates from the seventeenth to the nineteenth century.

Of course, to raise this question is to tread on a philosophical minefield, and it is beyond the scope of this present work to attempt to chart a route across. The notion of the abstract individual can be seen to relate to the doctrine of 'methodological individualism' and

be likewise opposed to their joint enemy: holism. However, these terms are rarely well-defined, and many ambiguities and controversies exist.[1] Consequently, these terms are not adopted here.

We may, however, fire off a few Very lights to illuminate this dangerous terrain. Basing analysis on the abstract individual involves a form of reductionism. Wholes are seen to be explained in terms of this elemental unit. But the individual, as Arthur Koestler (1967, p. 86) puts it, is itself not an 'indivisible, self-contained unit'. Thus there is no primacy in explaining institutions in terms of individuals, as there is no primacy in explaining the behaviour of individuals in terms of institutions. For example, in rejecting the application of the abstract individual to the theory of the firm, Neil Kay (1979, p. 211) remarks: 'The individual is a holistic concept no less and no more than the concept of the corporation.' The individual, as a fundamental unit, 'cannot be taken as obvious' (Giddens, 1984, p. 220). As Solomon Asch (1952, p. 257) wrote several decades ago: 'the unit is not an individual but a social individual, one who has a place in the social order . . . To understand the individual we must study him in his group setting; to understand the group we must study the individuals whose interrelated actions constitute it.'

What has to be made clear, however, is that an economist is not necessarily absolved from criticism if he or she is found to admit that individuals, or their wants and preferences, are changed by circumstances. Indeed, all intelligent economists, from Smith to Hayek inclusive, admit that individuals might so be changed. What is crucial is that the classic liberal economist may make such an admission but then go on to assume, *for the purposes of economic enquiry*, that individuals and their preferences must be taken as given. Thus the demarcating criterion is not the matter of individual malleability *per se*, but the willingness, or otherwise, to consider this possibility as an important or legitimate matter for economic enquiry. The oft-repeated statement by orthodox economists that tastes and preferences are not the *explanda* of economics thus derives directly from the classic liberal tradition, and is an object of criticism for this paper. It involves, as quoted above, taking the individual 'for granted'.

Whilst the idea of the abstract individual is fundamental to the standard versions of 'economic man' in the textbooks, additional assumptions are involved. These concern the nature and exogeneity of individual preferences, a pre-twentieth-century disregard for serious real-world problems of information and knowledge, and the adoption of rather mechanical, equilibriating models of economic

phenomena which are redolent of classical mechanics (which, of course, prevailed at a similar time to classical liberalism itself). The Austrian offshoot of the classic liberal tradition does not share these assumptions, but it retains the idea of an abstract and purposeful individual. In all cases the processes governing the determination of individual purposes, tastes and preferences are disregarded.

The important point to be established here is that the assumption of the abstract individual which is fundamental to classic liberalism is fundamental to the 'new institutional economics' as well. Furthermore, standard conceptions of rational 'economic man' are commonplace. These propositions will be supported by examining some key contributors to the 'new institutionalism'. One of the latter is Oliver Williamson (1975, 1985), who was one of the first to popularise the term. Other contributions include Andrew Schotter's (1981) developments in the realm of game theory. In addition we shall examine some recent work by Friedrich Hayek (1982). These three authors can be taken as representative of some key developments in 'new institutionalist' theory.[2]

Notably, these three authors have not been selected because of any closeness to neoclassical orthodoxy. Indeed, their views differ from orthodoxy in several respects, most dramatically in the case of Hayek. It would thus stretch the term too far to define Hayek as a neoclassical economist. The three are selected because they are prominent but, to different degrees, atypical. It is relatively easy to demonstrate the links between neoclassical orthodoxy and classical liberalism. What is important is to find those themes that link up with these significant outliers as well.

A wider survey would include other 'new institutionalist' writers such as Douglass North and Robert Thomas (1973), Mancur Olson (1965, 1982) and Richard Posner (1973) and their contributions spanning such diverse issues as economic history, economic growth and the economics of law. All these writings share a prominent 'new institutionalist' theme: to explain the existence of political, legal, or more generally social, institutions by reference to a model of individual behaviour, tracing out its consequences in terms of human interactions. However, in terms of theoretical fundamentals, Williamson, Schotter and Hayek have been more innovative. In contrast, North, Olson, Posner and Thomas are the closest to orthodox neoclassical theory, particularly in the adoption of standard, mechanical versions of maximising rationality, without regard to serious problems of information.

Thus it should not be overlooked that the 'new institutionalism' has this prominent neoclassical wing, reflecting the enduring hegemony of Walrasian and Marshallian ideas in economic theory.[3] At the other extreme are Austrian theorists such as Hayek who depart from the prevailing neoclassical approach, by recognising the gravity of information problems in real-world decision-making, and by eschewing equilibriating models of the economic process. However, both Austrian and neoclassical institutionalists share an attachment to the fundamental assumptions of classical liberalism as outlined above.

Williamson and Orthodox Theory

Williamson's work largely derives, of course, from the seminal paper of Ronald Coase (1937). Superficially, Williamson's work seems to be a departure from much of orthodoxy. First, he claims to be influenced, in addition, by Herbert Simon and the behaviouralist school, and if this influence were substantial it would suggest a break from the neoclassical axiom of maximising behaviour, even if the work of Simon offers only a partial retreat from classic liberalism itself. Second, the central aim of Williamson's theory, to explain the nature and existence of key economic institutions such as the firm, is an innovation of radical importance and contrasts with the earlier tendency of orthodox theory to regard institutions simply as given rigidities or constraints.

However, on closer inspection it is evident that Williamson's break from neoclassical theory is partial and incomplete, and much of the core neoclassical apparatus is retained. In fact, Williamson's claimed departure from orthodoxy sits uneasily alongside his repeated invocation that agents are marked by 'opportunism' (i.e. 'self-interest seeking with guile'). Self-interested behaviour, of course, is a typical feature of 'economic man'.

Williamson argues that the existence of firms and their internal supersession of the market mechanism is due to the significant transaction costs involved in market trading. In Williamson's (for example, 1985, p. 32) hands this Coasian idea is repeatedly linked with that of Simon: 'Economizing on transaction costs essentially reduces to economizing on bounded rationality.' This awkward formulation is characteristic of its author's prose, and, like much jargon-ridden language, obscures as much as it explains. Essentially, a problem is that Williamson has taken only part of Simon's (1957)

argument on board and he is influenced too much by common but inaccurate interpretations of behaviouralism.

Simon's argument, of course, is that a complete or global rational calculation is ruled out, thus rationality is 'bounded'; agents do not maximise but attempt to attain acceptable minima instead. But it is important to note that this 'satisficing' behaviour does not simply arise because of inadequate information, but also because it would be too difficult to perform the calculations even if the relevant information was available.[4]

Given this point a prevailing orthodox interpretation of Simon's work can be faulted: the recognition of bounded rationality refers primarily to the matter of computational capacity and not to additional 'costs'. Furthermore, 'satisficing' does not amount to cost-minimising behaviour. Clearly, the latter is just the dual of the standard assumption of maximisation; if 'satisficing' was essentially a matter of minimising costs then it would amount to maximising behaviour of the orthodox type.

Basically, Williamson adopts the orthodox, cost-minimising interpretation of Simon and not the one which clearly prevails in Simon's own work. In Williamson's work 'economizing on transaction costs' is part of global, cost-minimising behaviour, and this is inconsistent with Simon's idea of bounded rationality. Whilst Williamson recognises some of the informational problems, the fact that the cost calculus remains supreme in his theory means that he has not broken entirely from the orthodox assumption of maximisation.

Consistent with the retention of the basic orthodox model of optimising behaviour, Williamson assumes that individual preferences are unchanged by the economic environment and the institutions in which individuals are located. Elsewhere (Hodgson, 1988, ch. 9) I argue that an important difference between the market and the firm is that actors tend to behave in a different manner with differing goals. To some degree the firm sets up a 'trust dynamic', as Alan Fox (1974) puts it. The whole point about trust is that it is undermined by the cost calculus. As Kenneth Arrow (1974, p. 23) remarks: 'If you have to buy it, you already have some doubts about what you've bought.' Trust is thus not best explained as a phenomenon resulting simply from the rational calculation of costs and benefits by given individuals. In any social order based on a degree of trust, the regime affects the preferences, goals and behaviour of the individuals concerned. Trust is thus both a cause and a consequence of individual plans and purposes. The existence of such an order

cannot be explained satisfactorily by arguing in one direction only, by starting from the abstract individual.

To conclude, therefore, Williamson's work retains orthodox assumptions of maximising behaviour with given preferences and reflects some of the still-prevailing presumptions of classic liberalism. Despite its apparent novelty, Williamson's work lies close to the neoclassical pole of the 'new institutionalist' spectrum.

Schotter and the Critique of Free Markets

The style and approach of Schotter's (1981) work is very different from that of Williamson. First, Schotter attains high standards of rigour, clarity and elegance, using the mathematical tools of game theory. Second, unlike the conservative and apologetic flavour of much 'new institutionalism', Schotter develops a forceful critique of 'free market' economics. He thus breaks with classic liberal policy conclusions. However, as in all game-theoretic models, the abstract individual is retained.

In Schotter's models, agents have the choice of different strategies to obtain the maximum payoff. The conception of the agent is still that of maximising 'economic man': the only slight difference is that there is not necessarily a single, determined outcome. Agents maximise, but they may, for example, mix strategies randomly in certain proportions as they seek to optimise.

Schotter's argument is based on games that are played over and over again. It is argued that as the games 'are repeatedly played, the players develop certain societally agreed to rules of thumb, norms, conventions and institutions which are passed on to succeeding generations of players' (p. 12). Within this framework, Schotter shows that institutions and routines are, far from being market 'imperfections', actually necessary to supply vital information, particularly about the future stratagems of other agents. Whether through evolution or conscious design, institutions provide rich information upon which agents can develop expectations regarding the future behaviour of other actors.

In contrast, if action was unstructured and completely fluid it would be much more difficult, by observing behaviour that was subject to continuous change, to form such expectations. The orthodox model of price adjustment under perfect competition is a case in point. In this ideal case, information is signalled principally through the price system. In contrast, if there are market restrictions and

'imperfections', much more information is transmitted, and other than through price. The web of institutions within and around the market-place serve as 'mechanisms that supply information about the potential actions of other economic agents' (p. 157).

Consequently, the rigidities in a market system should not be treated as a restrictive assumption to be imposed upon a 'more general' model. Rigidities are not a 'special case'. These so-called 'imperfections' help to impose coherence and order on the market system. As argued elsewhere, markets function coherently *because of* these 'imperfections', and not *despite* them as mainstream theorists presume.[5]

In a later work, Schotter (1985) highlights the important policy conclusions of his theory, in terms of a critique of the 'free market' economics of the New Right. Clearly, his argument that institutions and rigid conventions are actually functional to the decision-making process, both inside and outside the market, is a counter to the New Right view that as much as possible all such rigidities and conventions should be dissolved.

In this later (1985) work his analysis is described as an 'immanent critique' of orthodox theory, because it shares some of its basic assumptions but draws untypical conclusions. It is as an internal critique that Schotter's work is best appraised. Arguably, game theory cannot serve as a wider foundation for an economic theory of social institutions, partly because of its continuing adoption of the assumptions of maximising 'economic man'. Thus there is a tension in Schotter's work between his adoption of orthodox assumptions and his attempt to describe some of the informational functions of institutions.

For instance, despite a brief reference to bounded rationality (1981, pp. 148–9), Schotter underlines a standard assumption of game theory that agents make use of '*all* relevant information', and nothing is ignored in the determination of their optimal strategy (p. 160). However, as Herbert Simon argues, such global calculations are impossible because of the limited computational capacity of any computer or human brain. A function of institutions that is not encompassed by Schotter's model is that they facilitate actions when such global calculations are impossible.[6]

It is typical of game theory to take the individual, and his or her purposes and interests, as exogenous or given. The factors influencing the formation of the individual's purposes and goals are not taken into account. Of course, no example from life can show conclusively

that individual preferences and purposes are moulded by culture and institutions. It is simply suggested that the orthodox view is handicapped by its refusal to investigate these possible influences and processes and may ignore some important features of the phenomena at hand.

Consider for example the situation facing the soldier in battle. Should he go into attack with his comrades and risk death, or desert and risk capture and punishment? It is quite possible, following Edna Ullmann-Margalit (1977) and others, to present the options in game-theoretic terms and consider the payoffs of the various eventualities. What this payoff matrix analysis seems to leave out are factors such as training and leadership in the formation of the soldier's own perceptions and preferences, and the blind routinisation of many actions before and during battle. As the film *Full Metal Jacket* depicts with dramatic effect, the training process is designed to subliminate many actions and responses in a battle situation: to condition the soldier so that they become reflexes or habits. Furthermore, it is difficult to encompass the function of charismatic leadership in war without accepting that it may actually mould and develop individual motivation (Keegan, 1976). The experience of army discipline and war itself actually changes the person, making him capable of intentions and acts that he would not have entertained before.

Another prominent example in the discussion of the emergence of behavioural norms is why (nearly all) people drive on the left in Britain and on the right in most other countries (for example, Sugden, 1986). Clearly the emergence and reproduction of this norm can be explained in terms of the obvious dangers and disadvantages in driving on the 'wrong' side of the road. Likewise, there are similar reasons for the acceptance of priority conventions for traffic at crossroads (Schotter, 1981). Whilst the game-theoretic explanation of these phenomena has a superficial attractiveness, other closely related examples cannot be explained so easily and they result in a challenge to the utilitarian or game-theoretic explanation.

Take, for instance, the introduction of the law making the wearing of seat belts compulsory in Britain in 1983. Contemporary surveys show that a large number of drivers did not wear seat belts before the law was enacted, but afterwards this number was reduced to a tiny minority. Of course this switch of behaviour can be explained by reference to the penalties of breaking the law, the disutility of being singled out for the disapproval of others, and so on. There is also the

matter of the prominent information campaign on the safety benefits of the seat belt which may have drawn the drivers' attention to the benefits of wearing the seat belts and the 'costs' of doing otherwise.

But are these explanations entirely convincing? After all, the chances of being detected not wearing a seat belt by the police are relatively small. In addition the information campaign was well under way before 1983; its independent effects do not seem to have been so great as the enactment of the law.

A more convincing explanation is that the law itself had a powerful legitimising influence on the drivers. Consequently their goals and preferences actually changed in favour of a safer course of action. The authority of the law had the effect not simply of changing behaviour by the introduction of penalties or the perception of costs and benefits. In addition it changed those individuals themselves and their goals. The practice of wearing seat belts became embodied in habit and widely rationalised by a widespread belief in their contribution to reducing injury and death.

In addition, Schotter's theory highlights some of the important functions of institutions and conventions, but throws insufficient light on the processes through which an institution grows and dies. It is simply assumed that an institution will arise because it is efficacious in the context of rational behaviour by agents. By excluding such matters as uncertainty and tactical surprise,[7] 'new' institutional models such as Schotter's do not involve the possibility of institutional breakdown through the disruption of conventions and routines. This matter will be raised further in the discussion of the 'old' institutionalism below.

Hayek and Spontaneous Order

The economists of the Austrian School contrast with the majority, neoclassical view in several very important respects, particularly in the rejection of equilibrium theorising and in the greater emphasis given to problems of information and the role of knowledge in the economic process. However, in other respects the neoclassicals and Austrians share common ground. This is particularly the case in regard to their inheritance of classic liberal ideology. Whilst the Austrians do not endorse the rigid preference functions of neoclassical theory, economic agents are still regarded as rational maximisers, in a sense. Indeed, for the Austrians, action is purposeful and by

definition rational (Mises, 1949). They are 'maximisers' in the obvious sense that they are pursuing their own purposes to the greatest possible extent.

Furthermore, in making the formation of expectation and decision exogenous, Hayek again conforms to the individualistic tradition in economic theory. Just as neoclassical theorists put the formation and moulding of individual tastes and preferences beyond the scope of their analysis, for Hayek (1948, p. 67) the task of explaining the springs of conscious action is a matter for 'psychology but not for economics . . . or any other social science'.

In general, Austrian theorists seem to argue either that individuals bear no significant influence of the environment, or that it is beyond the scope of economic theory to enquire any further as to how purposes and actions may be determined. Whilst the analyses may be different they have a common effect: to exclude such matters entirely from the domain of economic enquiry. Despite his theoretical radicalism, Hayek takes the orthodox view that choice is the 'first cause', without asking what are the preconditions of and influences on choice itself. *De gustibus non est disputandum* is a slogan behind which both neoclassicals and Austrians can unite.

A consequence of this insular attitude is to disregard the impact of advances in psychology and other social sciences in the understanding of the processes and structures governing human action. Particularly, the intermediary role of cognitive processes in linking the formation of goals and expectations, on the one hand, and the social and cultural environment, on the other, is downplayed or ignored.

A view advanced here is that there are external influences moulding the purposes and actions of individuals, but that action is not entirely determined by them. The environment is influential but it does not completely determine either what the individual aims to do or what he or she may achieve. There are actions which may be uncaused, but at the same time there are patterns of behaviour that may relate to the cultural or institutional environment within which the person acts. Action, in short, is partially determined, and partially indeterminate; partly predictable but partly unforeseeable.

This line of discussion is relevant to Hayek's (1982) concept of 'spontaneous order'. Much of his argument that norms and conventions can arise, as it were, spontaneously, through the interaction of individuals is interesting and instructive. Note, however, that it is still based on the idea of the abstract individual. An order is defined essentially as a state of affairs in which people can '*form correct*

expectations' because of the existence of some pattern or regularity in social life. (Hayek, 1982, vol. 1, p. 36) Thus when Hayek writes that 'a spontaneous order results from the individual elements adapting themselves to circumstances' (p. 41) he means that behaviour may adapt given the information and constraints that are presented. The adaptation in behaviour results primarily from a change in information or perception, not from a change in the fundamental nature of the given individual or of his or her preferences.[8]

Hayek's recent work is an advance on much orthodox thinking, in that norms and conventions do not appear mysteriously from outside, and he attempts to explain them in a sophisticated way as the unintended consequences of interrelated individual acts.[9] But, characteristically, he still regards individual purposes and preferences as being exogenous to the system. Nevertheless, order does not simply affect perspectives and expectations, it affects individuals themselves.

Similarly, Robert Sugden (1986, p. vii) argues that 'if individuals pursue their own interests in a state of anarchy, order . . . can arise spontaneously'. However, it is not considered that the individual's 'own' interests may themselves be moulded and structured in a social process. As Anthony Giddens (1982, p. 8) puts it, *both* human subjects and social institutions are '*constituted in and through recurrent practices*'. Thus, despite their laudable appeals to an evolutionary conception of the emergence of social institutions, Hayek, Sugden and others do not consider the evolution of purposes and preferences themselves.

For the purposes of their theoretical enquiry, individuals are regarded as if they are born with a fixed personality; they are not constituted through social processes. The analysis has then to proceed from these given individuals to examine the spontaneous order that may emerge; it does not consider the kind of individual that may emerge from a social order of a given type, and contribute further to the evolution of the social order in the future.

Once the preferences and purposes of the individual are taken as endogenous, then the idea of the 'spontaneous order' can take different forms. A process of cumulative, or circular, causation is possible. There can be a 'virtuous' circle where civilised behaviour is both built up by, and contributes to, cohesive social norms. But also the circle can be 'vicious', in that a shortage of solidarity and trust may accelerate a propensity for individuals to further diminish their tolerance or altruism, thus advancing the process of social decay.

The fact that an order may appear to be spontaneous, and resulting from individuals pursuing their ends, itself gives it no sanctity or moral priority over any other order that may arise. The fact that a given order has emerged and reproduced itself through time indicates that it is moulding and forming individual goals and intentions as much as it is a reflection of them. More than in the limited sense of forming expectations, the order helps to form the individual, just as the acts of the individual help to form the order.

A fully evolutionary view would take into consideration both the emergence, and effect of, the cultural and institutional framework on the purposes and actions of the individual. In this richer sense we are able to appreciate the significance of the past in structuring the present, as well as the intended or unintended consequences of present acts in forming the institutions of the future.

OLD INSTITUTIONALISM VERSUS THE OLDER ORTHODOX ASSUMPTIONS

It is beyond the scope of this work to give a full critique of the orthodox assumptions outlined above. For instance, given some well-known defences of the maximisation hypothesis (Friedman, 1953; Boland, 1981) it is not sufficient to retort that it is 'unrealistic', even despite profound misgivings by neoclassical theorists themselves (for example, Arrow, 1982) when faced by the difficulties of reconciling the hypothesis with data on choices in situations of uncertainty or risk.

As many defenders of orthodox theory have pointed out, no scientific theory can ever be fully realistic. Some simplifying assumptions must be made. It should be added, furthermore, that 'facts' do not speak for themselves, and are always infused with the concepts and theories of the observer. This does not, of course, mean that the orthodox assumptions are valid. The argument here is that orthodox theory cannot be refuted or dislodged simply by pointing at 'facts' or the 'real world', despite an acceptance that facts have a role in theoretical discourse and evaluation.

Veblen's Critique of Economic Man

Veblen's famous (1919) critique of economic man as 'a lightning calculator of pleasures and pains' is sometimes dismissed as a carica-

ture. However, as well as displaying rhetorical force, Veblen does foreshadow some of the later and more elaborate theoretical critiques. The ironic 'lightning calculator' phrase suggests that the problems of global calculation of maximisation opportunities are ignored by the neoclassical theorists. This reminds the modern reader of Simon's (1957) idea of limited computational capacity and 'bounded rationality'.

In describing economic man as having 'neither antecedent nor consequent' Veblen identifies the inert and mechanistic picture of the agent in neoclassical theory. Of course, he was off the mark to associate this picture with Austrian theorists such as Carl Menger, but regarding neoclassical theorists and the utilitarian calculus of pleasure and pain his strictures are accurate. What Veblen failed to create was an adequate alternative picture, reinstating choice through a recognition of uncertainty and indeterminacy. In places Veblen's argument veers back towards determinism, in others there is scope for the individual as a 'prime mover'.

What is not widely recognised is that Veblen gave further grounds for rejecting orthodox assumptions, other than on the basis of their unrealism. As Thomas Sowell (1967) points out, Veblen (1919, p. 221) accepted that to be 'serviceable' a hypothesis need 'not be true to life'. He understood that 'economic man' and similar conceptions were 'not intended as a competent expression of fact' but represented an 'expedient of abstract reasoning' (p. 142).

Veblen's crucial argument against orthodox theory was that it was inadequate for the theoretical purpose at hand. His intention was to analyse the processes of change and transformation in the modern economy. Neoclassical theory was defective in this respect because it indicated 'the conditions of survival to which any innovation is subject, supposing the innovation to have taken place, not the conditions of variational growth' (Veblen, 1919, pp. 176–7). But what Veblen was seeking was precisely a theory as to why such innovations take place, not a theory which muses over equilibrium conditions after technological possibilities are established. 'The question', he wrote, 'is not how things stabilise themselves in a "static state", but how they endlessly grow and change' (Veblen, 1954, p. 8).

Thus in his criticisms of orthodox theory Veblen put great stress both on the processes of economic evolution and technological transformation, and on the manner in which action is moulded by circumstances. He saw the individual's conduct as being influenced by relations of an institutional nature: 'Not only is the individual's

conduct hedged about and directed by his habitual relations to his fellows in the group, but these relations, being of an institutional character, vary as the institutional scene varies' (Veblen, 1909, p. 245). He rejects the continuously calculating, marginally adjusting agent of neoclassical theory to place stress on inertia and habit instead: 'The situation of today shapes the institutions of tomorrow through a selective, coercive process, by acting upon men's habitual view of things, and so altering or fortifying a point of view or a mental attitude handed down from the past' (Veblen, 1899, p. 190).

It is particularly in regard to the medium- and long-period that tastes and preferences, as well as technology, must be seen to change. Although it may be legitimate in the short run to treat wants as fundamental data, in the long run they are, as Frank Knight (1924, p. 262) put it, dependent variables, 'largely caused and formed by economic activity'.

Habits, Genes and Evolution

Habits play a crucial role in Veblen's theory that is worthy of examination here. Economic institutions are seen as complexes of habits, roles and conventional behaviour. Habits are essentially non-deliberative, and even unconscious, contrasting with the Austrian view that all action is purposeful, and with the neoclassical idea that all action is determined by single-valued preference functions. To some extent the idea of habits conflicts with the presuppositions of classic liberalism, in the sense that it undermines notions such as 'the individual is the best judge of his welfare', and of 'consumer sovereignty' and of the general inviolability of individual judgement.[10]

Notably, Veblen, modern neoclassical theorists and new institutionalists such as Williamson all appeal to a Darwinian evolutionary analogy. In particular, since Armen Alchian's classic (1950) article, the basis for the supposition that firms are maximising profits has often been the suggestion that such firms are 'fittest', more likely to survive, and more likely to become typical as less able firms drop out.

However, as Sidney Winter (1964) argues, the neoclassical appeal to Darwinian notions of evolution is unsuccessful because the mechanisms involved in the sustenance and procreation of such maximising behaviour are not specified. As yet, no neoclassical theorist has explained satisfactorily how a firm, once it happens to maximise, will continue to do so. Generally, neoclassical theory has failed to explain

how the characteristics of a 'fit' firm are passed on to other, succeeding, new firms. Consequently, the neoclassical invocation of Darwin fails.

According to modern biology, in the natural world the mechanism through which characteristics are passed from one generation to the next is the gene. The neo-Darwinian argument is that particular genes contribute to characteristics and behaviour which are conducive to survival. Through 'natural selection' genes aiding survival will tend to become more prominent in succeeding generations. In contrast, in neoclassical theory, there is no explicit and equivalent mechanism to pass on analogous characteristics from one firm to the next.

However, once we move outside the confines of orthodox economics, and incorporate some of the features of the above discussion of social institutions, we can find mechanisms which play a similar evolutionary role to that of the gene in the natural world. Such mechanisms are organisational structures, habits and routines. Whilst these are more malleable and do not mutate in the same way as their analogue in biology, structures and routines have a stable and inert quality and tend to sustain and thus 'pass on' their important characteristics through time.

Furthermore, habits and routines can enable the survival and transmission of behavioural patterns from one institution to another. As an important type of example, the skills learned by a worker in a given firm become partially embedded in his or her habits, and these will survive if the person changes employer, or if they are 'taught', explicitly or by imitation, to a colleague. Thus the habits of employees, both within the particular firm and the social culture, act as carriers of information, 'unteachable knowledge' (Penrose, 1959), and skills.

Veblen's ideas on this topic became part of his critique of orthodox capital theory. Not only did he criticise the orthodox failure to distinguish between capital-as-goods and capital-as-money, but also he made some relatively undeveloped remarks concerning the nature of production. For him, production was not a matter of 'inputs' into some mechanical function, but an institutional ensemble of habits and routines: 'the accumulated, habitual knowledge of the ways and means involved . . . the outcome of long experience and experimentation' (Veblen, 1919, p. 150).

The idea that routines within the firm act as 'genes' to pass on skills

and information is adopted by Nelson and Winter (1982, pp. 134–6) and forms a crucial part of their theoretical model of the modern corporation. Despite making no reference to the earlier work of Veblen, their work is much closer to the 'old' institutionalism than to the 'new'.

As Nelson and Winter suggest, routines do not act as genes in the strict biological sense. In contrast to Darwinian biology, the inheritance of *acquired* characteristics is possible. Thus the true analogue to social and economic evolution in the science of biology is not the work of Charles Darwin – as Veblen believed – but the earlier notion of Jean-Baptiste Lamarck. He argued that mutations occur because an organism passes on newly acquired adaptations of behaviour to its offspring through heredity. Lamarckian theory has fallen out of favour in biology because of its failure to explain or find evidence for a mechanism through which acquired characteristics could be passed on to offspring. However, in contrast, in the social world acquired characteristics, i.e. the changed features of habits and routines, can be inherited. Thus in some senses Lamarckian theory applies to social and economic evolution. Ironically, only by abandoning orthodox presuppositions can a tenable evolutionary analogy find in economics a proper place.

The Fate of Institutional Economics

Several limitations of the 'old' institutionalism have been briefly mentioned already. It has been noted for instance that for Veblen and his contemporaries, problems of knowledge and uncertainty are not given the central place as in the later writings of Keynes, Hayek or Shackle. In addition, Veblen's duality between institutions on the one hand and technology on the other contains many problems and dangers. For instance, institutions can be regarded merely as constraints on some pre-eminent and unqualified technological progress, giving science and technology an objective and hallowed quality and an unproblematic source of social evaluations concerning worth and welfare.

Such pitfalls are evident in Veblen's work, and perhaps even more
that of some of the later institutionalists. But perhaps the
iency in Veblen's work was his failure to develop
e fundamentals of an alternative economic theory. This
y important in regard to the absence of an alternative
f human agency to replace the neoclassical one he was so

keen to reject. In facing the fundamental problem of all social theory – the relations and articulations between action and structure – Veblen's rather nineteenth-century view of science got him into some contradictions and tangles which David Seckler (1975) has enumerated. This, however, is not too surprising. Most of Veblen's work was completed before Albert Einstein, Werner Heisenberg and other theoretical physicists shook modern science to its foundations.

In evaluating Veblen as an economic theorist it should be noted that his works are not as innovative or path-breaking as those of the founding fathers, such as Adam Smith; they do not contain a highly complex and comprehensive, interconnected structure of concepts and arguments, as in the economic writings of Marx; nor the intense flashes of insight and understanding which change, irreversibly, one's perception of the world once they are understood, as in the *General Theory* of Keynes; nor the extended, diligent effort to reconcile formal arguments and assumptions with the perceived facts of the world, as in Marshall's *Principles*; nor the sustained development of a single, crucial theme, as in the work of Simon. Indeed, Veblen had an explicit hostility to intellectual 'symmetry and system-building' (1919, p. 68). In sum, as Sowell (1967, p. 198) concludes, 'Veblen can neither be dismissed nor classed among the immortals'.

Veblen's hostility to theoretical system-building opened the door for an even more impressionistic approach to economics amongst his followers. Thus it is not difficult to see how institutionalism eventually became bogged down after Veblen's pioneering work. After establishing the importance of institutions, routines, and habits, it underlined the value of largely descriptive work on the nature and function of politico-economic institutions. Whilst this was of value it became the predominant practice for institutionalist writers. They became data-gatherers *par excellence*. Gunnar Myrdal (1958, p. 254), an institutionalist himself, has gone so far as to state that traditional American institutional economics was marked by a flagrant 'naive empiricism' and did not give due precedence to matters of theory.

The error here was largely methodological and epistemological, and committed by many institutionalists with the exception of Veblen himself and a few others. It was a crucial mistake simply to clamour for descriptive 'realism', by gathering more and more data, or by painting a more and more detailed picture of particular economic institutions. Contrary to the empiricist view of many institutionalists, the facts do not speak for themselves. There are no perceived facts without pre-existing concepts or theories.

Whilst empiricism remained the dominant implicit and explicit philosophy for Anglo-American theory, the theoretical development of institutionalism became frozen. It reached a plateau in the United States, and in Britain it never became established. In some quarters institutionalism became synonymous with a naive descriptive approach, by both practitioner and critic alike. When formalistic and mathematical developments in economics accelerated rapidly after the Second World War, the 'old' institutionalism was left behind. It had no alternative, comprehensive theoretical system to challenge the neoclassical renaissance.

However, with economics today in a degree of disarray, there is an opportunity for renewed theoretical development. This is particularly in regard to modern developments in social theory which overcome the pitfalls of either abstract individualism or crude holism.[11] These have been pictured by Tony Lawson (1987, p. 969), who rightly remarks that 'individual agency and social structures and context are equally relevant for analysis – each presupposes each other. Thus any reductionist account stressing analytical primacy for either individual agents or for social "wholes" must be inadequate.'

Both the 'new' and the 'old' institutionalism have something to offer, but, above all, the 'old' warnings about proceeding on classic liberal assumptions should not be ignored. In this respect the 'old' institutionalism retains some advantages over the 'new'.

Notes

1. For discussions and critiques of methodological individualism see Hodgson (1988, ch. 3) and Lukes (1973, ch. 17).
2. Langlois's (1986) important collection of essays in the 'new institutional economics' includes works by Schotter and Williamson, whilst for Langlois himself the work of Hayek in particular is formative. However, the collection also contains essays by Heiner and Nelson. Heiner's is highly innovative and does not easily fit into either the 'new' or the 'old' institutionalist category, and Nelson and Winter's (1982) evolutionary theory of habits-as-genes is very close to the 'old' institutionalism, particularly of Veblen.
3. The 'neoclassical institutionalism' of North, Olson *et al.* has been critically discussed by Field (1979, 1981, 1984) and Mjoset (1985).
4. Hence Simon's fascination with the analysis of the game of chess. In principle, the players have all the information with which to calculate an optimal strategy, leading to a win or at least a draw. However, the game-theoretic analysis is so complex that it cannot be completed even with a mammoth computer, and the devised computer algorithms to play

chess do not attempt to derive the optimal solution but to obtain one which is 'good enough'. (See, for example, Simon, 1976.)

5. Unfortunately, Schotter does not refer to other theorists that have reached this conclusion. See in particular the work of Richardson (1959, 1960).
6. Cognitive theory deals with cases where, due to both computational limitations and radical uncertainty, individuals are forced to use pre-existing conceptual schema to be selective and reject much of the given information. Cognitive anthropologists argue that these schema are moulded by culture and social institutions. For related discussions on imperfectly used information see Heiner (1983), on the role of culture see Hargreaves Heap (1986–7) and for references to cognitive theory see Hodgson (1988). Despite the neglect of such information problems by Veblen and others, they are regarded as crucial by many modern contributors to the 'old' institutionalist *Journal of Economic Issues* (Melody, 1987).
7. See the discussion of game theory in Chapter 11 above, including, in particular, note 13.
8. Of course, the (slightly) hidden agenda behind the theory of 'spontaneous order' is to provide further liberal arguments for the minimal state. Whilst in some important cases, such as the emergence of language, the theoretical argument carries considerable force, in others, such as the evolution of money, the legitimising and statutory functions of the state are downplayed. A similar neglect of the state is found in Williamson's (1985) treatment of contracts and exchange. For a critique see Hodgson (1988, ch. 7).
9. The characterisation of Hayek's recent work does, however, contain some problems. In the 1970s and 1980s Hayek has put increasing emphasis on the evolutionary aspect of his theory, stressing the role of 'cultural selection' on the basis not of individuals but of groups (Hayek, 1982, 1988). Whilst this to some extent undermines Hayek's earlier commitment to the 'abstract individual' (see Gray, 1984), it creates problems for, and internal contradictions in, his thought. In particular, to embrace any genuine notion of socioeconomic evolution must be to undermine Hayek's (1948) earlier view that tastes and preferences are not to be explained. For further inconsistencies created by Hayek's increasing attachment to evolutionary explanations see Viktor Vanberg (1986).
10. Note, however, that Michael Polanyi (1957, 1967) manages to retain a good dose of classic liberal individualism whilst putting great stress on the function of habits and tacit knowledge. Hayek in particular has been influenced by Polanyi's work. Whilst the stress on habits and tacit knowledge is positive, its function in Polanyi's and Hayek's work is to rule out any attempt to assemble such uncodifiable information for the purposes of a central plan. They go too far, however, in ruling out the possibility and desirability of *some* cautious central planning and state intervention, to establish guidelines and conventions for the economy as a whole, as in the case of industrial policy, indicative planning, and Keynesian demand management, for example.
11. See in particular Giddens (1984).

13 Institutional Rigidities and Economic Growth*

> 'If we object that . . . historicizing, psychologizing and sociologizing are not the business of economics, then we must conclude that the objector thinks that long-term growth theory is not the business of economics.' (Herbert Simon, 1984)

One of Nicholas Kaldor's most notable contributions to economic science is his theory of growth, initially developed to explain the relatively poor performance of the UK economy (Kaldor, 1966). Whilst modifications were made to this argument in the light of debate,[1] his enduring thesis was that differing national growth rates were to be explained by processes of cumulative causation based on 'increasing returns to scale', with the manufacturing sector as 'the engine of growth'.[2]

Briefly, Kaldor argued that manufacturing output growth promotes further growth in manufacturing productivity and productivity in the economy as a whole. In addition, growing manufacturing productivity helps to promote exports, further stimulating manufacturing output, as well as shifting the balance of payments constraint. This feedback closes a loop and provides a rationale for the notion of cumulative change. Furthermore, as the manufacturing sector grows in absolute terms, in its relative importance in the economy as a whole, and in its average level of productivity, it is deduced that both output and productivity will grow for the entire economy.

Despite the fact that much evidence has been marshalled in its support,[3] Kaldor's theory has not found universal favour. At least two alternative theories have been proposed. The first is the theory of technological diffusion, proposed by Stanislaw Gomulka (1971, 1979). According to this idea, productivity growth is a function of the varying rates of diffusion of technology from lead to laggard nations,

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depending in turn on the 'technological gap' involved. Explicitly rejected by Kaldor (1975a), but viewed more sympathetically by John Cornwall (1976, 1977), Bob Rowthorn (1975a), Bernard Stafford (1981) and others, this alternative theory has been supported by some econometric evidence.

A second alternative can be found in the recent work of the American neo-Marxists Samuel Bowles, David Gordon and Thomas Weisskopf (1984) and their explanation of the slow growth of productivity of the US economy, again with supportive econometric tests. We are thus faced with an unresolved dispute of central importance both for economic theory and policy.

It shall be suggested below that all these rival approaches point to unresolved problems in the underlying theory of the production process. An examination of the theoretical foundations of the different analyses reveals several flaws and suggests a search for a different framework. Fortunately, a promising alternative paradigm has already begun to emerge, based on the work of several economic theorists and historians, which suggests that growth and development is affected by inherited institutional structures and social practices. Whilst faults are found in parts of Kaldor's theory, the emerging alternative endorses some conclusions which are similar to his.

The following section of this article involves a critical discussion of the contending theories. A subsequent section introduces an alternative approach with an empirical test of the type of theory that it implies. A conclusion is that an institutionalist model, based on indices of institutional flexibility or rigidity, is at least as successful, in both theoretical and empirical terms, as other available theories.

FOUNDATIONS OF THE DIFFERENT ANALYSES

Cumulative Causation and Increasing Returns

At the core of Kaldor's analysis of economic growth is the idea of economic success breeding economic success, and failure breeding failure – or the 'survival of the fastest'. This is, of course, a direct challenge to the equilibrium theorising of orthodoxy, where it is often supposed that the market economy contains self-righting mechanisms to bring recovery from any downturn, and an effective price mechanism to compensate for imbalances in development. This central methodological difference accounts in part for the reluctance of

orthodox theorists to embrace Kaldor's arguments.

Kaldor acknowledges two major influences on his formulation of this principle of cumulative causation. The first is the work of the institutionalist Gunnar Myrdal,[4] who initially formulated a model of cumulative causation in his *Monetary Equilibrium* (published in Swedish in 1931) and repeated the idea in his classic studies of racial discrimination (1944) and of uneven regional development (1957).[5]

The second influence is an article by the American economist Allyn Young (1928). Emphasising that economic change 'propagates itself in a cumulative way' (p. 533), Young based this conclusion on the notion of increasing returns to scale. Kaldor seized upon this idea, seeing the failure to recognise increasing returns as a crucial weakness of orthodoxy. The main function of markets, argued Kaldor and Young, is not merely to allocate but to create more resources by enlarging the scope for specialisation and the division of labour. Kaldor saw these increasing returns as particularly prevalent in the manufacturing sector, thus providing a justification for regarding manufacturing production as the engine of growth.

Third, there is the parallel between the work of Kaldor and the so-called 'Verdoorn Law' (1949). In his famous inaugural lecture Kaldor (1966) gave two specifications of this law, arguing that both the rate of growth of employment and the rate of growth of labour productivity were both positively correlated with, and functions of, the rate of growth of output. Kaldor saw this as resulting from 'learning by doing' and economies of scale resulting from general industrial expansion and the enlargement of markets. These important propositions have given rise to an enormous literature, and a number of unresolved issues, which are impossible to survey in detail here.[6]

Nevertheless, we may briefly consider some aspects of this work. Following the criticisms of Rowthorn (1975a), Kaldor (1975b) was to argue that output was determined by demand and that this should be taken as exogenous. In response, Erkin Bairam (1987) and others have pointed out that this assumption of exogeneity conflicts with the principle of cumulative causation. Furthermore, given that demand itself was a product of growth, single equation estimates of the Verdoorn law are likely to be biased and inconsistent. A. Parikh (1978) attempted a simultaneous equation approach to the estimation of the Verdoorn Law, but John McCombie (1983) has pointed to some of its serious limitations.

Another line of enquiry has been to examine the underlying

structure of the Verdoorn Law (Rowthorn, 1979; Thirlwall, 1980; Verdoorn, 1980; de Vries, 1980). Notably, Verdoorn's original (1949) formulation of the Law is based on neoclassical foundations and features a static Cobb–Douglas production function. There is no disembodied technical change, nor any 'learning by doing'. Clearly this contrasts with Kaldor's idea of 'dynamic economies of scale'.[7]

McCombie (1982) has shown that *if* the foundation of the Law is a production function of the Cobb–Douglas type then the degree of returns to scale from both static and dynamic equations should be equal. In other words, the coefficient relating the levels of productivity and output should be identical to that relating their growth. However, estimates of the static and dynamic Verdoorn coefficients (McCombie, 1982; McCombie and de Ridder, 1984) lead to an alleged 'paradox'. The static specifications give no evidence of increasing returns to scale, whereas there are significant and increasing returns in the dynamic case. Consequently, this evidence suggests that the assumption of an underlying production function of the Cobb–Douglas type is unwarranted.

Of course, Cambridge itself has produced a number of arguments against the aggregate production function, in the famous capital controversy (Harcourt, 1972). Less well known are the earlier reservations advanced by Alfred Marshall, concerning the notion of increasing returns. In Appendix H of his *Principles*, he noted that increasing returns could undermine the conditions for an equilibrium of supply and demand.[8] An increase in the scale of production could mean a dramatic reduction in the supply price undermining the established normal or equilibrium price.[9] Notably, in the case of heterogeneous inputs or outputs, without a price framework it is difficult to establish any notion of changing (increasing or decreasing) returns.

Marshall's attempted solution was to make a distinction between 'internal' and 'external' economies of scale. The former related to a single firm, the latter to the gains made from the extension of markets and demand. Whilst Young drew inspiration from the 'external economies' idea, Frank Knight (who, like Kaldor, was one of Young's students) pointed out that they are dynamic in character, accruing in Smithian fashion through the growth of the market. Consequently, it is quite inappropriate to situate them in a static or equilibrium price theory.[10] Indeed, for Knight, as it was for Piero Sraffa (1926), the very concept of 'external economies' was problematic.

Young's response was to stress the notion of disequilibrium, as consummated in his 1928 article, and in various letters to Knight in that year (see Blitch, 1983). However, Young gave no indication as to how to dispense with the fundamentals of equilibrium price theory. Sadly, a few months later Young was dead, leaving such theoretical problems unresolved to this day.

In addition to this theoretical difficulty, it is sometimes argued that the theory of cumulative causation is incomplete because it lacks a 'first cause': in terms of initial divergences in rates of growth. In the second section of this article it is argued that both initial and persistent differences in growth rates can be partly explained by reference to differences in institutional ossification in the countries concerned.

The Productivity Enigma

For a long time the orthodox 'production function' model has faced a nagging problem in explaining considerable interplant and international differences in productivity. Much of this evidence has been reviewed elsewhere (Chapter 7 above; Nichols, 1986). Despite productivity growth that is lower than in other developed capitalist countries, absolute US productivity levels are still higher than elsewhere, and in particular still well ahead of those in the United Kingdom and Japan (Maddison, 1982, 1987). Even more striking is the evidence for single industries, showing big sectoral productivity gaps between different countries (Prais, 1981).

A typical orthodox response is to suggest that such differences in productivity must be due, in the main, to differences in the inputs of the production function. In fact there is considerable evidence portraying relatively low levels of capital investment in the United Kingdom (Blackaby, 1978; Caves and Krause, 1980). However, there are serious problems in isolating these as the main cause of low productivity. For instance, studies show that the average increase in output resulting from a unit of investment expenditure has been much lower in Britain and Japan than in France, Italy, West Germany and the USA (Brown and Sheriff, 1978; Blume, 1980). Pratten (1976) found that differences in the amounts of hardware and other machinery appeared to be responsible for no more than one-fifth of the average difference in productivity found in comparable plants in Britain, the USA, West Germany and France. Prais (1981, p. 269) argued that low UK productivity could not be attributed to low investment in machinery but to inadequate 'knowledge of how to create and operate modern machinery efficiently'. We are led to the

conclusion that varied amounts of capital equipment per employee are not the main factor explaining internationally diverse levels of productivity.[11]

Of course, an inferior labour input could be blamed as well, but the 'production function' model is still in some difficulty in explaining the lack of a clear relation between outputs and capital inputs. Instead of further attempts to fit this awkward evidence into this 'meat grinder' model, where production results from the automatic or mechanical transformation of given inputs, the process of production should be conceived in a different manner. Instead of the orthodox symmetry of 'factors of production', labour should be seen as an active agency with capital goods as passive instruments. Production is a social process involving people with aspirations of their own, in structured social interaction with each other. As Richard Nelson (1981) argues, the firm is a 'social system' and not 'a machine'.

Most importantly, productivity is not mechanically dependent on the number of hours of work that is agreed between employer and employee. Due to uncertainty and imperfect knowledge, the amount and efficiency of work has to be imperfectly specified in the contract; it depends not only on the given technology but also upon both the motivation and skill of the workforce and the organisation and supervision of management. These, in turn, depend on complex institutional structures and routines and on cultural norms that are inherited from the past. This is not, however, a deterministic view: there is space for the partial indeterminacy of action and will. In particular, the fact that the employment contract cannot be fully specified in advance means that outputs are not completely or mechanically determined by inputs.

A 'Social' Model of Production

In the 1980s some alternative formal models of the production process have emerged. Bowles's (1985) analysis focuses on the (costly) processes through which employers exercise power over labour, and the ability of workers to resist employer directives. An econometric test of this type of model appears in a study of the US economy by Bowles, Gordon and Weisskopf (1985). They regress productivity growth against several variables including indices of 'employer leverage over workers' and the 'quality of working conditions', using post-war annual US data. These variables are found to be highly significant.

On close inspection the Bowles–Gordon–Weisskopf model is not

as radical as claimed.[12] For instance, Bowles's (1985) analysis is virtually identical, in formal terms, to that of Carl Shapiro and Joseph Stiglitz (1984): both employ the standard neoclassical assumption of maximising behaviour to determine an (unemployment) equilibrium outcome. Notably, in the Bowles–Gordon–Weisskopf model the role of effective demand in promoting productivity does not have a clear and central place.[13]

An attempt by Weisskopf (1987) to extend this type of econometric analysis to eight OECD countries gives chequered results. He focuses on the level of unemployment which is supposed to increase employer leverage and work intensity. A significant short-run effect of unemployment on productivity is found in three countries only (the USA, the United Kingdom and Italy) and a positive long-run effect simply in the case of the USA. In four countries (Canada, France, Germany and Sweden) a statistically significant and *negative* relationship between unemployment and productivity growth is discovered, contrary to the Bowles–Gordon–Weisskopf analysis of the USA. Weisskopf tries to explain this anomaly by suggesting that the 'threat' of unemployment may not be as effective in Canada, France, Germany and Sweden because of a more developed welfare state. But this auxiliary hypothesis is not tested or examined closely.

In addition, despite justified criticism of the neoclassical 'meat grinder' conception of production, the Bowles–Gordon–Weisskopf model replaces this with a 'stick and carrot' conception of the labour process which is only marginally more sophisticated. It relates to a the model of management proposed by Frederick Taylor (1911) which has over-influenced Marxists, particularly in the USA.[14]

Production, Institutions and Knowledge

One major reason why Taylorism is of limited efficiency is that 'scientific management' ignores the difficulties and costs involved in gathering and processing the information that is required to monitor and motivate workers. Furthermore, it ignores the importance of the information that the workers may themselves possess, and the fact that their 'practical knowledge' is highly significant but difficult to codify or evaluate. Productivity, especially in a complex process of production, is closely related both to the development of practical knowledge and to the signalling and interpretation of information within the firm.[15]

As Thorstein Veblen has elaborated,[16] labour is made up of con-

gealed habits or skills, which may take some time to acquire and which depend upon their institutional integument. Later writers have stressed that it is difficult to codify or readily communicate such skills, hence the references of Edith Penrose (1959) to 'unteachable' and Michael Polanyi (1957, 1967) to 'tacit' knowledge. The general social importance of routinised behaviour has been more recently emphasised by Anthony Giddens (1984) and Richard Nelson and Sidney Winter (1982). Contrary to the treatment of 'information problems' by neoclassical theorists, 'tacit' or 'unteachable' knowledge cannot be reduced simply to 'information' because it is partly embodied in routines or unconscious reflexes, and it cannot be reduced to, or transmitted in, a codified form.

Given that the productivity of an economy is crucially related to the transmission and interpretation of information, and the growth of different kinds of knowledge, there are important consequences for the theory of economic growth. For instance, improvements in work organisation are often designed to facilitate both the communication of information and the enhancement and transfer of skills within the plant.[17] Significant increases in productivity can result from better deployment of tasks, a reduction of waste, and improved organisational or other skills. These developments are not necessarily associated with an increase in the intensity of work.

This argument contrasts with a view which is found across the political spectrum: it is the idea that increases in productivity, with given capital goods and technology, are generally associated with enhanced managerial control and subsequent work intensification. As Craig Littler and Graeme Salaman (1982) have argued, the depiction of virtually unqualified managerial control means that the performance of the worker is essentially predetermined, thus removing the major reason for sustaining a distinction between labour and labour-power, and denying many subtleties in Marx's (1976) account of the production process.

Littler and Salaman point out that even under Taylorist managerial regimes, and even with the most menial or routinised jobs, there is a real zone of discretion for the workers, involving alternative courses of action and degrees of conscientiousness or consent. One of the reasons for the existence of this zone is that the gathering together of all relevant information and knowledge in management's hands is, contrary to Taylor, an impossible task.

A consequence is that the behaviour of the firm is not, within the given constraints, entirely determined by, or entirely subject to, the

decisions of its managers. Because much of the 'expertise' of the firm is embedded in the firm's routines and the habitual skills of its workforce, it is neither completely codifiable and communicable, nor completely manageable from the apex of the organisation. As Richard Nelson (1981, p. 1038) puts it: 'management cannot effectively "choose" what is to be done in any detailed way, and has only broad control over what is done, and how well. Only a small portion of what people actually do on a job can be monitored in detail.'

Thus any model of productivity growth which is centred on the application of, and resistance to, 'employer leverage' will give us only part of the picture. As Nelson and Winter (1982) and Veblen (1964) argue, the behaviour of the firm is largely routinised. For this reason economic development can appear, for significant periods of time, with exceptions discussed below, to be subject to inertia. An adequate theory of the development of productive capabilities must take into account both the social culture and institutions within which habits and routines are reproduced, and the conditions which lead to their disruption or mutation.[18]

These considerations give us grounds to reject Kaldor's (1966, pp. 12–13) argument against the possibility that productivity growth may be the driving force behind output growth. He contends that the 'usual hypothesis is that the growth of productivity is mainly to be explained by the progress in science and technology', and points out, quite rightly, that the levels and growth rates of productivity can vary greatly from plant to plant, and from country to country, even when the plants are controlled by common multinational corporations. But 'these must have had the same access to improvements in knowledge and know-how', so if productivity growth determined output growth we should presumably expect productivity and output to be growing at more uniform rates than are evident.

The error in this argument is clear. Plants cannot have the 'same access to improvements in knowledge and know-how' because much relevant knowledge is 'tacit', 'unteachable', parcellised, embodied in habit or routine, and non-codifiable. Furthermore, even codifiable information does not become knowledge independent of the context of its transmission or the cognitive framework of the receiver.[19] Knowledge and information are not readily storable, nor transmissible from agent to agent as water flows in a pipe.

The Diffusion Hypothesis

Such considerations lead us directly to Stanislaw Gomulka's (1971, 1979) theory of productivity growth and economic development. He argues that the dominant factor in determining productivity growth is the degree of 'diffusion of innovations' from technologically more advanced countries to the relatively less developed, using productivity levels as a proxy for technological development. In addition, the impact of this diffusion depends upon the 'absorptive capacity' of the country in question. This is allegedly determined by education levels, the institutional framework and 'a variety of social, cultural, institutional and political factors' (1979, p. 186). Thus, for example, productivity growth in Japan is said to be greater because of its remaining productivity gap with the leading nations, and because of its superior ability to absorb new technology, and its encouragement of, rather than resistance to, innovation and change.

Although the literature on technological diffusion cannot be surveyed here, it can be pointed out that one feature is almost universal; the term 'technology' is related almost exclusively to technical innovations for which there is codifiable knowledge or a 'blueprint'. Thus, given the will to assimilate the technique, there are few remaining barriers other than technical competence and education. Technology is treated as a kind of substance, whose meaning and content is independent of culture, institutions, and cognitive frames. This empiricist and technicist conception of information and knowledge is, however, unacceptable.

Contrary to the assumptions of the diffusion theorists, production does not simply depend upon well-specified innovations such as hybrid corn or the silicon chip. Productive advance is also a matter of countless ways of understanding, interpreting and doing, which are embedded in the social culture and reinforced by its routines. Furthermore, production is a social process, depending on social institutions, relations, customs and rules. Consequently, the level of productivity in a nation is not uniquely or closely related to its technological development as an exclusive emphasis on technological diffusion would suggest.

A crucial feature of non-codifiable knowledge is that it is not simply accessible like blueprints in a file; its full acquisition can never be immediate, nor independent of its progressive application in practice. In such instances it is crucial to recognise that knowing and doing are inseparable.

Thus Nelson (1980) has criticised the common idea that 'technological knowledge is in the form of codified how-to-do-it knowledge

which provides sufficient guidance so that if one had access to the book one would be able to do it' (p. 63). He rejects also the notion that such knowledge is expanded in volume largely by expenditure on research and development: 'If the salient elements of techniques involve special personal skills, or a personalized pattern of interaction and cooperation among a group of individuals in an important way, then one cannot easily infer how it would work from an experiment conducted elsewhere' (p. 67).

Looked at in this way, the validity of the diffusion hypothesis would depend upon considerations such as: (i) the extent to which the lead countries are developing and transmitting codifiable technical knowledge, (ii) the propensity of the laggard countries to absorb the knowledge, and (iii) the extent to which codifiable technical knowledge is representative of skill and technique as a whole.

For example, the hypothesis would be invalid in a situation where the country at the top of the absolute productivity league (say the USA) was relying largely on substantial non-codifiable knowledge which had been accumulated and dispersed over the years, and a laggard country (say Japan) was achieving high rates of productivity growth largely by generating its own codifiable knowledge (through research and development or whatever) which had not been brought in from elsewhere. The *prima facie* evidence would then suggest that the diffusion hypothesis was valid, but the main source of advance would not in fact be diffusion itself.

The validity of the diffusion hypothesis depends on the 'balance' between codifiable and non-codifiable knowledge in the economy. Our conclusion must be that the assumed model of technological development in the diffusion hypothesis is too simple, and does too much violence to the complexities of knowledge and technology, and to the conditions of productive advance.

Manufacturing as the Engine of Growth

A crude distinction between codifiable and non-codifiable knowledge, as suggested by Nelson (1980), may provide insights regarding different rates of productivity growth in different industries or sectors of the economy. Before we consolidate this point we shall consider alternative arguments as to why manufacturing, in particular, should be regarded as the leading sector of the economy.

Kaldor's (1966) proposition to this effect is partly based on the

assertion that it is in the field of manufacturing that the phenomenon of increasing returns is likely to be more prevalent. Other sectors, such as mining and agriculture, are presumed to exhibit diminishing returns. However, as indicated above, there are theoretical problems with this argument, and a strong empirical case for the presumed pattern of returns to scale has yet to be made.

Being influenced by Kaldor, John Eatwell (1982, pp. 52–3) endorses the engine of growth idea, asserting that the income elasticity of demand for manufacturing products remains high, compared, for example, with agriculture. However, whilst there may be limits to the consumption of food, there are no equivalent limits elsewhere, particularly in the service sector. There is no apparent reason why higher incomes should condemn such sectors to relative decline.

Much of Eatwell's remaining argument is based on a false reductionism; he asserts that manufactured goods are essential for other sectors of the economy and concludes that manufacturing thus has a primary importance. However, just as manufactured goods are essential to the agricultural and service sectors, so too are services and agricultural goods essential to manufacturing. To say that X is essential to Y does not necessarily give X primacy, especially if Y is also essential to X. Consequently, a good part of his argument is flawed.

Yet there are reasons for giving manufacturing some distinctiveness. Nelson (1980, p. 67) suggests that differences in productivity growth might be affected by 'hardware versus human organization' which in turn relates to the question of codifiability of knowledge. Codifiable knowledge is likely to be relatively more significant in a highly-mechanised sector than in one depending more on traditional craft skills and routines. Consequently, highly-mechanised sectors will be relatively more responsive to research and development initiatives and technological diffusion, even if much knowledge is still non-codifiable in this sector.

Furthermore, manufacturing is generally associated with a compact spatial organisation. Productive activities are often gathered together, with relatively easy communications between the persons involved. In contrast, spatial dispersion is wider in agriculture and communications are inferior. And in services there have traditionally been smaller-scale production units. Thus manufacturing may enjoy the greatest and fastest diffusion of skills and technique.

If this argument is correct, and manufacturing has a higher 'proportion' of codifiable knowledge than other sectors, as well as more

compactness facilitating diffusion or communication of skills, then its importance stems not from a causal primacy or structural position in the economy but from its ability to respond to the diffusion or internal generation of codifiable knowledge.

On the other hand, circumstances may arise in which other sectors increase their dependence on modern science and technology, and make more use of codifiable knowledge. The rapidly increasing use of codifiable knowledge in a sector which has traditionally been dominated by embedded habits and skills may partly explain the higher productivity growth in agriculture since the Industrial Revolution. Currently, productivity growth in the service sector is increasing as it makes greater use of information technology and compact spatial organisation.

Manufacturing, however, has advantages in these terms which have yet to be surpassed. It still may be potentially more responsive to any development and communication of codifiable technique that is promoted by the policy-makers, and act as a kind of 'engine of growth' for this reason. But in the absence of flows of codifiable knowledge to the manufacturing sector, Kaldor- or Verdoorn-type relationships would break down. This could occur, for instance, in the country in the technological lead, or in the event of a world slowdown in innovation or demand.

Kaldor's theory may also break down in conditions of recession for another reason. It is widely accepted that one effect of a slump may be to cause a relatively higher bankruptcy rate amongst low-productivity firms. A consequence is 'degenerate' productivity growth, where average productivity is rising but the economy as a whole is contracting in size. It is possible, therefore, for the rates of growth of productivity in both manufacturing and the economy as a whole to be *inversely* related to the rate of change of manufacturing output for a limited period. This would be in defiance of two out of three of Kaldor's laws.[20] Consequently, whilst these laws may find some empirical support in periods of sustained economic expansion, there may be problems in applying Kaldor's theory to periods of severe recession.

In this survey of ideas and theories concerning economic growth, the role of social institutions, and the transmission of different forms of knowledge, have been highlighted. We now turn to the development and application of this approach.

TOWARDS AN INSTITUTIONALIST ALTERNATIVE

This section commences with a discussion of the concept of institutional ossification, followed by an econometric test of the theory outlined here. Although no statistical test should be taken as conclusive, the preliminary results are good.

Since 1960 there has been much research by historians as to the causes of the slow growth of the American and British economies and of the much faster growth in France, Germany, Italy and Japan. A prominent theme is to explain much of the difference in growth rates by the different degrees of cultural or institutional ossification of the countries involved.

Institutional Ossification

There are two aspects to these processes of ossification. The first is to do with the timing of the industrial revolution in different countries. During this period of rapid economic and social transformation, habits and patterns of work are laid down which endure after industrialisation is accomplished. Hence, in general, the most flexible period for the more rapid development of new skills and routines is during the period at which industrialisation is proceeding at the fastest pace. Consequently, the countries which industrialised some time ago pay 'the penalty of taking the lead', to use Veblen's (1915) phrase.

Marxist historians, amongst others, have initiated much of the debate about the ossification of British political and economic institutions. Thus Perry Anderson (1964, p. 50) sees Britain as 'a sclerosed, archaic society, trapped and burdened by its part successes'. Similarly, Eric Hobsbawm (1969, p. 188) argues that Britain's early industrialisation used 'methods and techniques which, however advanced and efficient at the time, could not remain the most advanced and efficient, and it created a pattern of both production and markets which would not necessarily remain the one best fitted to sustain economic growth and technological change'.

Non-Marxist analysts repeat a similar theme. For example, Ronald Dore (1973, p. 419) argues that: 'The way a country comes to industrialization can have a lasting effect on the kind of industrial society it becomes. It will be a long time before Britain loses the marks of the pioneer, the scars and stiffnesses that come from the searing experience of having made the first, most long-drawn-out

industrial revolution.' Also Sir Henry Phelps Brown (1977, pp. 25–6) writes of practical minds that 'became bounded by the processes and products that they mastered in long apprenticeships'. Past success in the old methods, whilst being cosseted by the old imperial trading system, made managers and administrators reluctant to learn the new. Britain in the twentieth century remained bounded by the methods, processes and products of the nineteenth century.

Perhaps the most extensive development of these ideas to date comes in a collection of essays edited by Bernard Elbaum and William Lazonick (1986a, p. 2) who attribute the relative decline of the British economy in the twentieth century to 'rigidities in the economic and social institutions that developed during the nineteenth century, a period when Britain was the world's leading economic power and British industry was highly atomistic and competitive in organisation'. These institutional rigidities, they argue, obstructed efforts at economic renovation. Examples include entrenched shop-floor unionism (see also Kilpatrick and Lawson, 1980), rigid financial institutions and inflexible corporate structures. Clearly, all these have since undergone considerable change, but in all cases the pace and extent of advance have been affected by the structures which were laid down in the formative years of the nineteenth century.

If the ossification argument is accepted then a country in the throes of industrial revolution will be more flexible and open to new techniques than either a nation which industrialised long ago, or a predominantly agricultural economy which has yet to escape from its immobile traditions and structures. We are not referring here mainly to the advantage that accrues to laggard industrialising nations in their ability to learn or import (codifiable) techniques from the leaders. Instead the emphasis is on the non-codifiable aspects of economic transformation, and to the flexibility that accrues to the country that is experiencing the most disruptive phase in the transition from an agricultural to an industrialised society.

Another aspect of institutional ossification is the extent to which it has been temporarily arrested and reversed by the upheaval of revolution or war, leading to new regimes and institutions, often of a more dynamic or less conservative hue. This theme is also found in historical studies of the reasons for Britain's relative economic decline. For instance, Anderson (1964, p. 37) notes that: 'Alone of major European nations, England emerged undefeated and unoccupied from two World Wars, its social structure uniquely untouched by external shocks or discontinuities.' Whilst Anderson recognises

the convulsive and reforming effects of the two World Wars, Britain was not shattered by invasion or revolution on the Continental scale.

Similarly, Phelps Brown (1977, p. 20) sees British institutions, such as trade unions, suffering from 'the extraordinary continuity of their history: they have had no revolution, no defeat in war and no foreign occupation to give them a fresh start'. Consequently, in the British case, advanced institutional ossification was not alleviated by any major disruption on home soil in modern times.

Mancur Olson (1982) proposes that 'countries whose distributional coalitions have been emasculated or abolished by totalitarian government or foreign occupation should grow relatively quickly after a free and stable legal order is established' (p. 75). In contrast, the absence of these disruptions from Britain 'made it easier from the firms and families that advanced in the Industrial Revolution and the nineteenth century to organize or collude to protect their interests' (p. 84). Like many other authors, Olson argues that sweeping radical change, particularly resulting from internal revolution or defeat in war, has helped to promote economic growth by overcoming the inertia of ossified, growth-retarding institutions.

The two aspects of institutional ossification – relating to the timing of the Industrial Revolution and the degree of major disruption – are observed most graphically in Britain. Relatively speaking, the United States has enjoyed a superior economic performance. But the prime concern here is to explain differing degrees of dynamism and growth. The USA faces the problem of the slowdown in productivity growth and the erosion of its share of world trade. In this case the institutional arguments again seem convincing. The United States was one of the first countries to follow Britain into industrialisation. The American Revolution was two centuries ago, followed later by the Civil War. Consequently, post-industrial ossification is relatively advanced, with few periods of major disruption to increase flexibility.

In contrast, countries such as Belgium, France, Germany, and Italy have been disrupted both by several revolutions in the past two centuries and by extensive invasion and occupation. In each of these cases, industrial transformation was later than in Britain. Japan's social and economic transformation was later still, developing during a period of fascism, to be greatly accelerated after the foreign occupation of 1945. From the point of view of the timing of industrialisation, Japan's economic institutions should be the most flexible, although the degree of disruption has been the greatest in Belgium, France, Germany and Italy.[21]

Much of the historical literature on institutional ossification captures the underlying and more durable features of the institutions and routines in a capitalist country. The particular emphasis and interpretation offered here is on the function of non-codifiable knowledge and deeply-embedded structures and routines. This provides a counterpoint to the theory of technological diffusion which is more relevant to codifiable knowledge and technique. However, before we proceed to a statistical test of the theories discussed here, it is necessary to briefly evaluate Olson's argument to which the present discussion concerning institutional ossification bears a superficial similarity.[22]

Considerations regarding the creation and transmission of knowledge are not significant in Olson's theory, neither are habits or routines given pride of place. Instead of a focus on the development and mutation of industrial skills, attention shifts onto the allegedly 'growth retarding' effects of 'interest groups' and 'distributional coalitions'. Implicitly, Olson is making the same classical liberal assumptions that lie at the core of neoclassical theory: that the market is an elemental or natural order, and that institutional rigidities play a largely negative and restrictive role. These assumptions are inconsistent with a perspective which sees markets themselves as institutions, and in which institutions in general have features which enable as well as restrict economic activity. In particular, institutionalised or routinised behaviour provides information on likely outcomes for decision-making agents.[23]

In a rather *ad hoc* manner, however, Olson considers the possibility of an 'encompassing' interest group which stands at the pinnacle of society and prevents other feuding interest groups from being formed. In this manner he explains the relative success of social democratic countries such as Sweden. Furthermore, and in conflict with his liberal presumptions, positive virtues have to be given to fascist countries or similar regimes, which have prevented other 'distributional coalitions' from emerging. However, as Frederic Pryor (1983) has shown, a statistical test of Olson's theory with a sample of capitalist and communist-led countries fails to confirm that the supremely 'encompassing' interest group of a Communist Party has a positive or statistically significant effect on growth. Whilst being useful in its stress on institutions, when applied to capitalist countries Olson's theory ends up being a reworked argument for the benevolent Hobbesian sovereign: one who will ensure that markets work but who will break up interest groups and coalitions whenever they may occur.

Hypotheses for Statistical Testing

It is rare that theories of economic growth can be applied equally without qualification to both capitalist and non-capitalist countries. Unlike the theories of Kaldor, Gomulka or Olson, the present analysis takes differences in the knowledge-transmitting functions of economic structures and institutions directly into account. Consequently, it is not intended to be applicable, at least without major modification, to centrally-planned economies. A statistical test must be applied to capitalist economies only.

Available OECD data reduced the sample to 16 major capitalist countries (namely Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, the United States). The foregoing discussion of institutional ossification suggests a slow, long-term process, thus cross-section data were used, with periods of more than ten years; namely 1960–73 and 1973–84, i.e. before and after the oil price shock of 1973. Four data sets were thus generated; (i) 1960–73, (ii) 1973–84, (iii) 1960–84 as a whole, and (iv) a composite sample of 32 observations made up by juxtaposing the data from 1960–73 and 1973–84 with the addition of a dummy variable to indicate pre- and post-oil shock conditions.

The OECD data presented a limited choice of dependent variables. The annual rate of growth of real gross domestic product per person employed was selected as an index of productivity growth, and denoted by *PROD*. (Source: OECD, 1986, table 3.7)

Four types of hypothesis were tested:

(a) that productivity growth was dependent both on the degree of institutional flexibility – the inverse of ossification – and the degree of institutional disruption (the derivation of these variables is discussed below);
(b) that productivity growth was dependent on the 'technological gap' between each country and the lead country – the United States – measured by the relative productivity levels involved;
(c) that productivity growth was dependent on the level of investment in each country, measured by gross fixed capital formation as a percentage of gross domestic product;
(d) that productivity growth reflected Kaldor's third law, i.e. being positively correlated with the growth rate of the manufacturing sector and negatively with the growth rate of employment outside manufacturing.[24]

The Institutional Data

The derivation of the institutional data in (a) presents several difficulties and a degree of over-simplification is unavoidable in any such test. A precedent exists in the work of Kwang Choi (1983) but this is built upon Olson's conceptual framework. Choi uses a rising logistic curve to reflect the 'sclerosis' resulting from the growth of interest groups. Cyril Black's (1966) typology and dates are used to provide the timing of the logistic in each case.

Of course, any such periodisation of history is problematic and highly questionable.[25] An advantage of Black's dates is that he demarcates two relevant periods for a large number of countries: that pertaining to the 'consolidation of modernizing leadership' followed by the period of 'economic and social transformation'. The former marks the transition into modernity, and the second is taken to represent a number of political, social and economic changes of which industrialisation is a part. Choi chooses the date that is said to mark the beginning of the consolidation of modernising leadership, but in the present study it is suggested that the start of the period of economic and social transformation would best locate the years when socioeconomic change was proceeding apace.

Choi's use of a logistic curve reflects the Olsonian assumption that history is progressing from a market-based and interest-group-free 'state of nature' to the sclerosis of a coalition-ridden world. Instead, a curve which would more accurately reflect the arguments concerning institutional flexibility would be hat-shaped. The peak level would correspond to the period when industrialisation was most rapid, when the capacity for promoting and absorbing new routines and skills was highest, and existing routines were at the highest level of malleability.

Once established, routinised actions and non-codifiable knowledge have an inertia of their own. As the pace of transformation declines, the system tends to ossify and reinforce existing routines. Thus for routines it is relevant to consider their 'date stamp', marking the time at which they were derived or laid down. The more ossification, the less the inclination to, and the greater the difficulty of, further transformation and change.

In addition, the older the institutions and routines the less the receptiveness of the system to flows of codifiable knowledge and technique that are generated elsewhere. For instance, current research and development may not relate to older techniques and

practices. Restructuring has to take place to improve the absorptive capacity for new ideas. Consequently, in the absence of major crises or disruptions which would promote the search for, and creation of, new institutions and routines, it is reasonable to assume that their contribution to productivity growth declines progressively through time after the transformational peak.

To present this idea in mathematical terms it was decided not to use a normal frequency function because it tailed off too rapidly at the extremes. Instead, the variable representing institutional flexibility (*FLX*) is defined as follows:[26]

$$FLX(t) = 100/(1 + 0.002(t\text{–}EST)^2)$$

where *EST* is the year at the start of the period of economic and social transformation and *t* is the year.

Choi's measure of disruption is derived from summing the number of 'years of major disruption'. Unfortunately, as well as including revolutions and foreign occupations, Choi assumes that each year under a totalitarian government constitutes an instance of major disruption, whereas democracy is given no such accolade. The assumption that simply the presence of fascism and totalitarianism constitutes major disruption is consistent with Olson's argument but not with the thesis presented here. Contrary to Olson, totalitarianism is normally associated with multiple interest groups and nepotism on a grand scale. Disruptions worth including are revolutions or occupations leading to totalitarianism, and those leading to its removal. During such disruptions, but not in the intervening period, new habits and routines can be more easily established.

The conditions here chosen to represent periods of major disruption are more restrictive than Choi's. To qualify, a period of major disruption (*PMD*) must be:

(i) an extensive foreign occupation of home soil, or revolution, or civil war, or year of national independence, in either case leading to significant social changes;
(ii) at least 10 years from any other *PMD*;
(iii) at or after the beginning of the period of 'consolidation of modernizing leadership'.

The second criterion prevents over-weighting of single major disruptions which span more than one year. The third excludes disrup-

tions which precede the inauguration of the modern socioeconomic system, which are too early to affect modern institutions and structures. Disruptions, like information, are structure-specific.

Of course, these strict criteria exclude many other disruptions which have had significant effects. However, their inclusion would involve difficult problems of relative weighting. This statistical study is mainly designed to indicate the general value of the approach, so only the most important disruptions have been included here.

It is argued above that a large-scale disruptive event will generally create the opportunity to recast social relationships and routines and lay down more modern and progressive habits and routines. Disruption on this scale gives the opportunity of ridding the system of many old methods and arrangements and of adopting new ones.

It is assumed that major disruptions would have greater effect the more that economic and social transformation has advanced. Thus disruption in a less developed country would have less impact than in one which was developed. Each period of major disruption is assumed to have an impact according to the following formula:

$$DIS_i = \exp(0.002\ (PMD_i - EST))$$

where DIS_i is the degree of disruption resulting from the given *PMD* and exp is the exponential function. The index of total institutional disruption is simply the sum of the appropriate DIS_is for each country. Black's data, and the chosen *PMD*s, are shown in Table 13.1.

Regressions

To test the technological diffusion hypothesis the following variable was taken from Maddison (1982, p. 212). Where required, an estimate was made by linear interpolation:

RPR = relative productivity level (GDP per man-hour) as percentage of US level.

The level of investment was captured by the following:

INV = gross fixed capital formation as a percentage of GDP. *Source*: OECD (1986, Table 6.8).

Table 13.1 Institutional data

	EST	*CML*	<---------- *PMDs* ---------->				
Australia	1901	1801	1901				
Austria	1918	1848	1848	1918	1945		
Belgium	1848	1795	1813	1830	1848	1918	1945
Canada	1867	1791	1867				
Denmark	1866	1807	1945				
Finland	1919	1863	1918				
France	1848	1789	1789	1814	1830	1848	1871	1945
Germany	1871	1803	1805	1848	1918	1933	1945	
Italy	1871	1805	1805	1848	1860	1922	1945	
Japan	1945	1868	1868	1945				
Netherlands	1848	1795	1795	1810	1945			
Norway	1905	1809	1905	1945				
Sweden	1905	1809						
Switzerland	1848	1798	1803					
United Kingdom	1832	1649	1688					
United States	1865	1776	1783	1865				

EST: Beginning year of 'economic and social transformation'.
Source: Black (1966, pp. 90–2).
CML: Beginning year of 'consolidation of modernizing leadership'.
Source: Black (1966, pp. 90–2).
PMD: Period of major disruption, denoted by the last or most crucial year.

Kaldor's third law was tested using these variables:

MAN = annual percentage change in real value added in manufacturing. *Source*: OECD (1986, Table 3.5). Data for Switzerland estimated from World Bank sources.

ENM = annual percentage change in non-manufacturing employment. *Source*: OECD (1986, Tables 1.7, 1.10 and 2.11).

SHOCK is a dummy variable that takes the value of 0 for the 1960–73 data and 1 for 1973–84.

As a comparative test of a relatively large number of independent variables was involved, a sequential nested testing procedure was chosen, to eliminate insignificant variables one by one. The results, for all variables that are significant at a 10 per cent level, are shown in Table 13.2.

Table 13.2 Regressions

1960–73 period (N = 16)

PROD	=	3.06	+	0.0465*FLX*	+	0.172*DIS*	−	0.0168*RPR*	+	0.242*MAN*	−	0.335*ENM*
		(0.54)		(0.012)		(0.057)		(0.0076)		(0.059)		(0.094)

$R^2 = 0.978$ Adjusted $R^2 = 0.967$

1973–84 period (N = 16)

PROD	=	−0.691	+	0.0762*FLX*	+	0.225*DIS*	+	0.0833*INV*	−	0.233*MAN*	−	0.324*ENM*
		(0.65)		(0.027)		(0.050)		(0.033)		(0.094)		(0.12)

$R^2 = 0.897$ Adjusted $R^2 = 0.846$

1960–84 period (N = 16)

PROD	=	3.10	+	0.0784*FLX*	+	0.327*DIS*	−	0.0248*RPR*
		(0.39)		(0.0069)		(0.028)		(0.0048)

$R^2 = 0.973$ Adjusted $R^2 = 0.965$

1960–73 period combined with 1973–84 (N = 32)

PROD	=	2.92	+	0.0885*FLX*	+	0.242*DIS*	−	0.393*ENM*	−	2.12*SHOCK*
		(0.27)		(0.0090)		(0.051)		(0.10)		(0.17)

$R^2 = 0.936$ Adjusted $R^2 = 0.926$

Method of estimate: ordinary least squares.
Standard errors in brackets.
Levels of significance (two-tailed test): **** 0.1% *** 1% ** 5% * 10%

The results shown in Table 13.2 are a confirmation of the institutionalist hypothesis (a) in all four cases. Notably, neither the country with the lowest productivity growth rate (the USA) nor the one with the highest (Japan) are outliers in the regressions, nor are the results significantly affected by their removal.

The technological diffusion hypothesis is confirmed for 1960–73 and 1960–84, but not for the other two regressions. This could mean that the diffusion of codifiable knowledge has slowed down since 1973. Explanations of productivity growth in terms of levels of investment receive confirmation for the 1973–84 period only; in other cases the investment variable is not significant.

Kaldor's third law receives strong confirmation in 1960–73; the years of economic boom. However, during 1973–84, whilst the *MAN* and *ENM* variables are both significant, *MAN* has the wrong sign. Growth in productivity is thus associated with a contraction of manufacturing. This could be explained in terms of the 'degenerate' productivity growth associated with the post-1973 recession. *MAN* is not significant in the other regressions. It could be that whilst *MAN* and *PROD* are correlated in the period of boom, in the post-1973 recession a Kaldor-type relationship has broken down.

The fourth regression suggests that the overall effect of the 1973 oil shock and its deflationary repercussions is to lower the growth rate of productivity by about 2 per cent per year. Arguably, much of the post-1973 growth slowdown is explicable in terms of the contraction in effective demand, as well as supply-side factors.[27]

CONCLUDING REMARKS

In this work an important distinction has been made between codifiable and non-codifiable knowledge. The latter is related to embedded skills and routines, and their development depends upon the transformation and degree of flexibility of socioeconomic institutions. For connected reasons it was argued that both the technological diffusion hypothesis and Kaldor's theory of economic growth must be qualified.

A statistical test has confirmed a very strong relationship between the institutional variables and the rate of growth of productivity. Both the technological diffusion hypothesis and Kaldor's third law fare worse after the oil shock of 1973.

It is interesting to project the regression-generated equations into

the future. Taking the third regression, and making the heroic assumption that the coefficients in the model remain fixed, *RPR* is recalculated annually according to the derived productivity growth. The projection suggests that France will overtake the United States in terms of overall levels of productivity in the 1990s.[28] After its steep climb, Japan's productivity level reaches a peak of about 76 per cent of the French level in about 2006, and then begins to decline. British relative productivity rises, then peaks at about 67 per cent of the French or American level in about 1990.

As $FLX(t)$ declines over time, and assuming that no further periods of major disruption ensue, the variable of increasing relative influence is *DIS*. Eventually, countries begin to assume a rank order according to the degree of disruption they have experienced in modern times. Bearing the greatest degree of disruption, France thus emerges as the lead nation, followed by Germany, Italy, Belgium, Austria and the Netherlands.

Of course, these projections ignore variations in performance that may result from changes in effective demand and from the transformation of the socioeconomic institutions themselves, as well as the degree of statistical variability that is suggested by the regressions. However, what they do indicate is a process which assumes the form, but not the specific dynamic, of Young–Myrdal–Kaldor models of cumulative causation. Whilst the rank order changes, and some countries overtake others, the gap between the leading and the laggard nations eventually widens in absolute terms. Thus the effect of the institutional variables is to replicate some aspects of the cumulative causation process, and nullify any convergence that is implied by the diffusion hypothesis. We have, to use an old phrase, a process of 'combined and uneven development'.

Regarding policy conclusions, the argument points to an eclectic stance. First, at the international level, it endorses a worldwide expansion in effective demand. There is also some scope for policies to increase investment and to generate and infuse technological knowledge.

Whilst war and revolution may have the effect of increasing institutional flexibility, the first, at least, is not to be recommended. In addition, whilst New Right regimes, such as that experienced in the USA and Britain, may promote some restructuring, including work practices and the ownership of industry, key areas remain untouched, and are protected by a strong residual conservatism. Furthermore, New Right restructuring relies on a crude and misplaced Darwinism

and often fails to promote long-term initiatives, in contrast with an interventionist policy in a more favourable economic environment.

Instead, the emphasis must be the kind of 'deep' institutional transformation that is implied by a radical industrial policy, but its outlines will have to await the results of further study.[29] As far as policy recommendations for Britain are concerned, institutional economic integration with more dynamic Continental Europe is a desirable, and perhaps inevitable, outcome.

There is a challenging epilogue. Maddison's sweeping (1982) study of three centuries of capitalist development suggests all too precise correlations between the overall level of productivity within a country and its world hegemonic position in politico-economic terms. We must thus anticipate the political disruption that may result from a loss of economic leadership by the United States, and the shift of the focus of capitalist development back again to its ancient Western European homeland.[30] And if disruption is to result, who can foretell the institutional outcomes? We are condemned, as the Chinese say, to live in interesting times.

AFTERWORD

Later reflection and additional empirical research – which I hope to publish elsewhere – has led to a revision of some of the ideas in the above article. In particular, a long-term analysis of productivity data stretching back to the early 1900s suggests that flexibility (*FLX*) may not decline as significantly as the above results suggest. Similar doubts about the supposed onset of economic sclerosis with age are reached by Wallis and Oates (1988). With its abandonment of the assumption of declining flexibility, my more recent analysis is even further distanced from that of Olson (1982). However, the effect of the disruption variable (*DIS*) is still strongly confirmed over the longer period.

Regrettably, my earlier computations for the value of *DIS* overlooked the short civil war in Switzerland in 1847. Although this event lasted only twenty-five days it is generally judged by historians to have had major political and social effects. Furthermore, on reflection, there is a strong case for adding national unification to the list of criteria, so that in particular the German unification of 1870 should be included, placing the post-war degree of disruption in Germany on a par with that in France. Nevertheless, these slight alterations to the

values of *DIS* do not alter the published or unpublished regressions to any significant extent.

On the grounds mentioned above, a further unification of Germany in the 1990s will increase its *DIS* value to an amount in excess of that relating to France. The model then predicts that German productivity will be the highest in the world by the year 2000. In addition, there will be similar and additional disruptional effects for the countries involved from the future creation of a federal European state. The disruption of Eastern Europe during the momentous events of 1989 should also be noted.

All this reinforces the conclusion of the above essay that the locus of world economic dynamism is not about to move to Japan, but is returning to Europe from the United States. It is now all the more likely that the most dynamic core of capitalism in the opening decades of the twenty-first century will be located in Western Central Europe, in an area uncanningly similar to that of the old Holy Roman Empire. In the early part of the third millenium a new and wider union will arise, but this time it will be worshipping God less than Mammon.

Notes

1. After criticism from Wolfe (1968), Kaldor (1968) retracted his (1966, 1967) view that 'inelasticity in the supply of labour', due to a comparatively rapid and early exhaustion of the supply of labour power from the rural hinterland, was the 'main constraint' limiting the growth potential of the UK economy. Subsequently he was to put greater 'emphasis on the exogenous components of demand, and in particular on the role of exports, in determining the trend rate of productivity growth' (Kaldor, 1975b, p. 896). On this issues see Thirlwall (1978, 1979, 1983).
2. See, for instance, Kaldor (1972, 1975a, 1985).
3. For a sympathetic survey see Thirlwall (1983).
4. Myrdal himself dates his conversion to institutionalism to after the Second World War (Myrdal, 1978). Veblen argued as early as 1898 that the economic process should be viewed in terms of 'cumulative causation' (Veblen, 1919, pp. 64–70). Institutional economists (for example, Kapp, 1976) have typically stressed cumulative causation as an alternative to equilibrium theorising.
5. As Shackle (1967) has argued, Myrdal's *Monetary Equilibrium* has extensive parallels with Keynes's *General Theory*.
6. For recent surveys and evaluations see Bairam (1987), McCombie (1983) and Thirlwall (1983).
7. Verdoorn (1980, p. 385) has stated that the law that has been given his name now appears 'to be much less generally valid'.

8. In addition, Marshall anticipates an aspect of Sraffa's famous (1926) critique by noting that under increasing returns 'whatever firm first gets a good start will obtain a monopoly of the whole business of trade in its district' (Marshall, 1920, p. 459n.). On this see Shackle (1967, ch. 3).
9. In fact Marshall had exposed a general logical problem with neoclassical theory: of assuming what it is required to prove. The schedule of 'normal supply prices' which lies behind the supply curve requires some assumption of stability for each price, which in orthodox theory implies some notion of equilibrium for each point on the curve. In other words, the idea of equilibrium is tacit in the reasoning through which it is meant to be established.

   Skouras (1981, pp. 202–4) finds a similar argument concerning the logical difficulties of supply and demand analysis in the work of Joan Robinson. For further discussions of this issue see Chapter 11 above.
10. For an account of this controversy see Blitch (1983).
11. See the further references in Chapter 7 above and Hodgson (1984). Davies and Caves (1987) found a significant but slight relationship between productivity and the value of gross fixed capital stock per employee. In his comprehensive study Denison (1979) found that 'factor inputs' including capital stock, the educational level of the workforce, and the amount of expenditure on research and development, explained no more than a small fraction of the US productivity slowdown in the 1970s. Note, however, the criticism of the definition of investment in Denison's work by Scott (1981).
12. Some of the ostensible radicalism of the Bowles–Gordon–Weisskopf account results simply from the use of revolutionary-romantic language. For instance, one of their significant independent variables is the relative cost of non-agricultural crude materials with respect to the price of finished goods. This is described as the level of 'popular resistance', suggesting that the price of oil, for example, has more to do with the struggles of the oilfield workers and less to do with the fortunes of geological exploration and the state of the OPEC cartel.
13. See the criticisms of the Bowles–Gordon–Weisskopf model in Nell (1984a, pp. 246–7) and the remarks on the relationship between the pressure of demand and productivity by Matthews (1982a) and Worswick (1982).
14. For critiques of Taylor's (1911) theory of 'scientific management' see Vroom and Deci (1970). For Marxist correctives to Braverman's (1974) over-emphasis on Taylorism see Friedman (1977) and Burawoy (1985). Braverman's deskilling hypothesis is criticised in Cutler (1978) and Wood (1982).
15. Informational considerations should be at the centre of explanations of why worker participation can improve productivity (see Hodgson, 1984; Jones and Svejnar, 1982; Stephen, 1982).
16. See in particular Veblen (1964) and the discussions in Dyer (1984) and Hodgson (1988).
17. Williamson (1975, 1985) has taken on board some of these points. For differing approaches see Beer (1972), Emery (1977), and Rice (1958).
18. Note also that the Veblen–Nelson–Winter idea of habits and routines

amounts to some 'unity of knowing and doing'. This is incompatible with Braverman's (1974) stress on the 'separation of conception and execution', and his idea that managers appropriate the decision-making process while the worker becomes 'an appendage to the machine'. Capitalism displays elements of both managerial dominance and (limited) worker autonomy, and it would be incorrect, therefore, to put exclusive stress on either idea. As Burawoy (1985, p. 41) puts it: 'Rather than a separation of conception and execution, we find a separation of workers' conception and management's conception, of workers' knowledge and management's knowledge.'

19. Contrary to the Austrian view, these considerations do not necessarily imply a subjectivist, nor a purely relativist, view of knowledge. See Lawson (1985, 1987) and Hodgson (1988).
20. Some members of the French Régulation School have suggested that Kaldor–Verdoorn type relationships may have broken down since the oil shock of 1973 (Boyer and Petit, 1981).
21. This brings to mind the words of Harry Lime in the film *The Third Man*: 'In Italy for thirty years under the Borgias they had warfare, terror, murder, bloodshed: but they produced Michelangelo, Leonardo da Vinci and the Renaissance. In Switzerland they had brotherly love; they had five hundred years of democracy and peace, and what did that produce? The cuckoo clock.'
22. Critiques of Olson (1982) are found in Barry (1983), Bowles and Eatwell (1983), Kindleberger (1983), Mjoset (1985), Pryor (1983), de Vries (1983), Wallis and Oates (1988) and Whiteley (1986).
23. For a full discussion of this point see Hodgson (1988).
24. The third law is chosen because it has productivity growth as the dependent variable. Note, however, McCombie (1981) where its economic significance is challenged.
25. Inspired by Rowthorn and Wells (1987), another possible approach would be to take shifts in employment to or from industry, agriculture and services as time-series indicators of institutional flexibility (FLX) for each country. This would peak when the total rate of transition to or from these sectors was at a maximum, and this would substitute for the year EST. However, the Rowthorn–Wells data cover thirteen countries only.
26. The coefficient in the denominator of $FLX(t)$, and that in DIS_i (see below), were both crudely estimated by ordinary least-squares regressions on the institutional data for the 1960–84 period. Experimentation suggested that the results were not over-sensitive to changes in these coefficients. Nevertheless, some arbitrariness inevitably remains. For each period, mid-point values of these functions were used in the regressions. All data are available from the author.
27. The impact of effective demand on productivity growth is endorsed by contributors to the Matthews (1982b) volume and by Fagerberg (1987), Lindbeck (1983) and Giersch and Wolter (1983).
28. Recent data in Maddison (1987, p. 651) suggest that French and Dutch productivity levels exceeded 97 per cent of that of the USA as early as

1984. Japan, still behind the United Kingdom, was at 56 per cent of the USA.

29. Interventionist industrial policies are discussed by Best (1986), Carter (1981), Cowling (1987), Gruchy (1984) and Hughes (1986).
30. This possibility, amongst others, is considered in Kennedy (1988).

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