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THE EMPEROR'S TAILOR: THE ECONOMISTS AND THE CRASH OF '98

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Abstract

The paper examines the profession of economics in the light of its disarray in the face of the financial crash of 1998

We subject the profession to a theoretical and historical enquiry, examining both its reaction to the empirical facts of its failures, and the manner in which its theoretical categories express the material interests to which it is subjected. The aim is not to dismiss the profession and its products as simple apologetics, but to uncover the internal structure of its thought and to propose an alternative, critical standard of scientific conduct for economic enquiry under a market economy.

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THE EMPEROR'S TAILOR: THE ECONOMISTS AND THE CRASH OF '98

1. Introduction

With the fall of the Soviet Union, official economics believed for a brief if euphoric instant that it had written Marx out of the history books. Not for the first time, a political defeat was mistaken for a theoretical one.

This judgment has proven premature. The August 24th implosion of the Russian financial system provoked even Francis Fukuyama to muse "The past few months have been really the first time since the beginning of the decade that I felt that I could really be proven wrong."¹

A cursory scan of the world press shows a public whose confidence in the economics profession has been shaken to the core. *Le Monde* for September 1st featured a front-page cartoon with an editor waving a manuscript headed 'The World Crash, explained for my daughter'; "Great title," sighs the despairing author, "but I'm bugged if I can write the first two lines." *Die Zeit*'s leader 27 August, headlined 'Die Grosse Unordnung' set the general tone of a press betrayed by its advisers:

The world economy is upside-down. No trace is left of creative chaos: Asian misery, Russian disaster, and Latin American malaise have wrought a global crisis. It is up to the USA and Europe to confront the danger, but where has crisis-management fled? Who, really, concerns themselves with ordering the world anew? All year the economists told us 'a lot more has to happen before we have need worry'. Well, it's happened.

The failure to predict or even remotely comprehend the events of Autumn 1998 is staggering in its extent. On 30th August 1998 *Time* magazine polled 40 economists, of whom 39 concluded there was not going to be a world slump. Though this tells us almost nothing about the economy, it tells us a great deal about economists.

The result was chaos among the pundits. Economics, when it came to a crunch, simply did provide its routine users with an explanation of what was going on. The catechism was dropped with indecent haste. "The reason this is potentially calamitous," says Jeffrey Garten, dean of the Yale School of Management,² "is that no one is in charge." So much for the hidden hand. "The great truth of the stock market," says the Washington Post's Tim Smart,³ "is that no-one knows what will happen Monday." So much for forecasting. "We are already in the so-called capitulation stage," records Christine Callies of Credit Suisse Boston, "the point where people are really throwing in the towel."⁴ So much for incisive scientific analysis. "What is happening in Russia and the Pacific Rim is unprecedented," says Alan Sinai, chief economist of Primark Decision economics, "and the policy-makers in the United States do not know what to do."⁵ So much for the end of history.

To comprehend the extent of the reversal it should not be forgotten that a scant six months ago, globalisation was heralded as virtually unstoppable, a triumph of scientific economics. By September this had given way to the following from the *Independent*⁶

What we may be witnessing is the end of globalisation, or at least a severe setback in the process, lasting possibly many years. Globalisation is all about the free movement of capital; that's its big

¹ Nicholas Kristof, 'It's a bad time for weak leadership', *New York Times* 30th August 1998

² Nicholas Kristof, 'A Scramble for Response to Crisis: weakness at the Top Clouds World's Search for Solutions', *New York International Herald Tribune* 31st August 1998

³ Tim Smart, 'Dow's Saw-Toothed Descent Stirs Fears: Is the Bull Market at an End?', *New York International Herald Tribune* 31st August 1998

⁴ Margaret Doyle and Andrew Cave, 'Market fall brings fears of 1929-style recession', *Daily Telegraph* September 1st 1998

⁵ op cit

⁶ 'Markets hit the Russian Buffers', *Independent* 28 August 1998

driving force, and over the last ten years, financial markets have pushed out the boundaries as never before, feeding the great US bull market on a wave of American triumphalism in the process.

Is this now all coming to an end? That's the real significance of Russia. We must all pray that this alarmist take on events turns out to be wrong or exaggerated. But it's the reason why equities are plunging, bonds are soaring and the pound is once more climbing back to the tree D-Mark level. These are frightening times we live in and the end game is still a long way off. No wonder there's such a flight to safety.

What is left of science when the only remaining policy advice is prayer?

Marx: the loud silence

Marx did return, but to the pages of the press, not the economic journals. The *Die Zeit* headline mentioned above was (the paper carefully explained) a citation from Mao Tse-Tung. The FT Lex column for 28th August was headed 'Das Capital revisited'. And so on.

This too was not new. Already in 20 October 1997 the New Yorker prophetically featured an article entitled 'The Next Thinker: the return of Karl Marx' (later reprinted in the English *Independent*) by John Cassidy, an astute if controversial observer of the contrarian economic scene. Subtitled "Why Wall Street should be consulting the scourge of capitalism" the piece noted that

Many of the contradictions that he saw in Victorian capitalism and that were subsequently addressed by reformist governments have begun reappearing in new guises, like mutant viruses.... He wrote riveting passages about globalization, inequality, political corruption, monopolization, technical progress, the decline of high culture, and the enervating nature of modern existence – issues that economists are now confronting anew, sometimes without realizing that they are walking in Marx's footsteps.

Yet as Cassidy himself notes, the economics profession almost totally ignores the work of Marx. "A new textbook, *Principles of Economics* by N. Gregory Mankiw, a Harvard professor, mentions Marx just once in eight hundred pages," he notes, "and that reference is pejorative."

The excision of Marx from the discipline of economics is as surprising as it is total. Commenting on this in a recent symposium in the *History of Political Economy* Anthony Brewer (1995) writes that

By any normal standard, he should not be accorded a significant position in the history of economics at all. It is not just that his ideas are not to be found in modern textbooks, but that they were never seriously discussed by mainstream economists, either during or after his lifetime. So, for example, the index to Alfred Marshall's *Principles of Economics* which effectively defined the subject for the English-speaking world for many decades, contains only three references to Marx. Two deal with 'his misunderstanding of Ricardo' and the other is to a passing comment in an appendix....the neglect of Marx's work by the mainstream has been so complete and so visible that it would be a waste of space to document it.

This excision by an entire discipline of one its principal founders is without parallel. It is not to be found in history, in sociology or politics where, although Marx is a minority figure and under frequent attack, his presence and his influence are undeniable. In subjects such as biology, Marx's influence on the scientific contribution of figures like Stephen Jay Gould or R.C. Lewontin is well-known.

If economics had shown itself capable of explaining the elementary facts of the world economy, some justification might be found. It might be argued that past thinkers have no contemporary interest, in the same way that, say, Ctesibius or Harrison are respected by historians as founders of the modern clock, but unknown in wider circles.

But economics continuously acknowledges thinkers who are both historically prior and theoretically poorer than Marx. Smith is the patron saint of markets, and the practical foundation of modern trade theory remains, in all but detail, Ricardo's. Walras's account of general equilibrium has never been superseded but only rigorised and axiomatised by his

successors. Marshall's teachings, as Brewer's remarks suggest, remain the pedagogical basis of almost all high-school and freshman microeconomics.

Moreover the events of August 24th did not initiate the crisis in economics, for which the writing was already appearing on the wall, as a growing body of economists had already begun to accept. Paul Ormerod, by no means a radical, is an Oxford and Cambridge Don, a successful businessman and a former director of the Henley Institute of Forecasting and of the *Economist's* Assessment Unit. "Good economists know, from work carried out within their discipline, that the foundations of their subject are virtually non-existent," he explained in *The Death of Economics* (1994),

Economists from the International Monetary Fund and the World Bank preach salvation through the market to the Third World ... Yet economic forecasts are the subject of open derision. Throughout the Western world, their accuracy is appalling. Within the past twelve months alone, as this book is being written, forecasters have failed to predict the Japanese recession, the strength of the American recovery, the depth of the collapse in the German economy, and the turmoil in the European ERM.

It may be argued (and frequently is) that individual economists and dissident currents did better. But every widespread forecasting technique, from racehorse tipping to astrology, can always find someone who predicted some otherwise unforeseen event, if for no other reason than the enormous spread of such predictions. If we consider mainstream economics as taught in the textbooks, selected in the journals, and practiced by the policymakers, it is hard to find any correspondence at all between the theoretical predictions and the events predicted, as a growing number of critics have noted.

This is a paradox. Alone among the social studies, economics makes a definitive claim to be a hard, exact science on a par with the natural sciences: to be the custodian of a body of positive truth. Yet its wilful refusal to consider almost anything Marx wrote is the hallmark of a fundamentally unscientific character. Scientific endeavour is a systematic critical testing of alternative explanations of the observed facts. But one particular account of economic events has been systematically suppressed for a hundred and fifty years, and this is the very account that is most critical of the orthodoxy which has so catastrophically failed to explain the world we live in. How can the results be taken as serious science?

2. Equilibrium: a paradigmatic principle

Empirical failure in economics is considered by many to be a minor defect of an otherwise healthy science. We differ. The problem lies deeper: to use a Kuhnian phrase, it lies in the imposition of a 'paradigm' whose origins, we shall try to prove, are inherently ideological.

Modern economics sets itself the goal of explaining how markets work. This is an insufficient object of study because they do not always work, or, to put the matter more charitably, a scientific study cannot assume that they work in advance of finding out if they do. Nor is it sufficient to establish that they 'sometimes' work: humans 'sometimes' live, but, so far, they also invariably die. Death is not an exception to life; it is a part of life and, in the same way, market failure is a part of what markets do.

Markets do not just fail now and again; they fail again and again. This cyclic failure is an essential element of their existence. Periodic over- and under-production accompanied by systematic and disruptive capital migrations are not just disturbances in the market but the mechanism by means of which it perpetuates itself. Markets never, therefore, occupy the ideal state which corresponds to the economists' enquiry. The audacious – and, we shall argue, false – claim of official economics is that this ideal state, a state that never exists, nevertheless defines or approximates the average or normative behaviour of markets.

Marx's approach, we will attempt later to show, is *paradigmatically* distinct. It is possibly the only attempt in economic history to examine the market *without the prior presupposition that it works*. This is a far deeper philosophical endeavour than is understood, not just by the

mainstream economists, but by most marxist economists also; Marx's achievement, we will argue, is an analysis in which none of the objects that he describes – value, price, money, profit, employment, reproduction, accumulation, and so on – rely on the prior assumption that the market in which they are contained is capable of reproducing them. Their persistence, therefore, is not an assumption but a deduction. Moreover they exist directly, actually and observably no matter how disturbed the market. They have a real, not an ideal, existence. This is a radically different project from the rest of economics.

The assumption that the market works is more than just an apologetic spin on the facts. It furnishes an ontology, a definition of the facts, and a means of measuring and interpreting these facts, using a set of highly mathematical and rigorous procedures. The distinctive feature of these, taken all together, is that they eliminate *a priori* the possibility that the market can create, from within itself, any forces that impair its own working. The assumption that markets work is an ontological presupposition of economics, and this is precisely why its concepts and categories are incapable of representing in thought the real movement of a market economy.

The above idea may be commonplace but it can be given a precise formulation which affords insights that are not at all commonplace. The presupposition of market functioning is captured in the concept of *equilibrium*, the central organising principle of mainstream economics. This appears in many guises: in classical times as Say's Law, to Walras and his successors as the mathematical foundation of formal General Equilibrium theory, in Marshallian economics as comparative statics, in the Keynesian era as Hick's ISLM interpretation, to modern New Classical economics as Rational Expectations: in short, it appears in a new guise as the central principle of every theory that economics finds acceptable.

Technically, equilibrium is the assumption that all markets clear; actually it is a much more fundamental principle. It asserts, in essence, a *static ontology*: it asserts that, in studying any moving system, we may deduce and define the essential objects of the system by first assuming the system to be at rest or unchanging self-reproduction. We then enquire what properties these objects would need to have, in order to guarantee this unchanging self-reproduction. This then becomes the definition of the objects concerned.

Since nothing is actually static or eternal in the world of real markets, this definition becomes its own negation. It defines an ontology of objects that can never exist, but are defined to be either natural or perfect: 'Natural Price', 'Natural Employment Rate', "Natural Growth Path" and so on. No-one has ever seen a natural price. Employment has never even approached its natural level. The natural inflation rate exists only in the mental fog which shrouds Chicago. Nevertheless, real events are measured against these idealised natural or normative objects, and deemed imperfect: the economists inhabit a disorientating world of "Imperfect Competition", "Market Failure", "Wage Stickiness", "Disequilibrium": everything that exists is a conspiracy against perfection. Irony of ironies, this is then dubbed 'positive science'.

Progression or retrogression? paradigm reswitching in the history of economic thought

Most of the rest of this paper is dedicated to explaining just how radically different Marx's approach is. Its rejection by mainstream economics is not reducible to a simple act of censorship, but to a paradigm clash in which the normal scientific order has been reversed: it represents the overturn of a more scientific, more advanced, and theoretically superior paradigm by an earlier, poorer, theoretically more deficient one. That is, the excision of Marx must be considered as a reversal of the normal order of scientific progress: as symptomatic of a century-long regression in economic thinking: the victory of ideology over science.

This paper aims to understand this ideology by interrogating its reaction to Marx. We understand Marx, for economics, as a heretic, whose views represent the precise content

which economics is most anxious to avoid. In this way we can grasp the real content of this ideology.

The enquiry will be unusual because like all orthodoxies, economics has an official account of its own opponents. There is an official Marx, and an official Marxism, which has for most of this century purveyed the message that Marx himself is irretrievably flawed: that internal inconsistencies in his value-theoretic arguments make it impossible to accept his own theory in the form in which he himself presents it. This view is now challenged via an alternative interpretation of Marx which frontally challenges his official reconstruction as just another equilibrium theorist and views him in an entirely different light as the most radically *anti*-equilibrium thinker of the discipline.⁷ The ‘Marx’ which economics claims to refute has no more reality than the market it claims to understand. Most centrally, it is a ‘Marx’ from which economic motion has been purged. The alleged contradictions in his theory are the contradictions of this construction, not of Marx’s own theory.

The systematic misrepresentation and subsequent suppression of Marx has the same function as the social construction of witches. It shields a dominant ideology from any obligation to question the idea that perfection is an ontological principle. It is the equivalent, in economics, to the Ptolemaic ontology in astronomy, and the Creationist ontology in Biology. Once ‘that which exists’ is identified with ‘that which is eternal’ then ‘that which changes’ is consigned to ‘that which cannot exist’. Since all real things change, and no real thing is eternal, reality itself becomes the devil.

Let us see how this principle applies to the world we live in.

The critique of pure success

Consider the following major facts of the modern world economy, all phenomena which are explained naturally, and centrally, from Marx’s account of modern markets:

- Regular cyclic crisis
- Growing inequality between nations
- Large-scale structural unemployment
- Growing polarisation of incomes in all countries

It would not be fair to say economics has no account of these. Quite the contrary, a great deal of money is spent explaining them. The difficulty is that they are not predicted by the basic theory. The mainstream, rigorously-founded doctrines of economics have little or no coherent explanation for these phenomena.

Therefore, the money goes on a kind of service industry much like today’s third-party computer industry whose job is to repair the damage done by the original manufacturers. Cycles are explained by Real Business Cycle theory, inequality by Endogenous Growth Theory, and so on; it is never the theory itself, but its critics and alternates, which account for the real developments.

Even, so when we examine the account which these variants offer more carefully, a striking fact emerges: insofar as they explain the unexplained, they do so as ‘exogenous’ phenomena; as *deviations* from the expected: cycles are the result of ‘shocks’,⁸ inequality the result of

⁷ As an introduction to this substantial body of work see Freeman and Carchedi [1996] or the IWGVT website.

⁸ “RBC theory was an attempt to remedy the defects of the New Classical business cycle theory of Lucas and Barro, which relied on misperceptions or informational asymmetries that were incompatible with rational expectations. The Lucas and Barro models were not in fact ‘equilibrium’ accounts of the business cycle. In contrast, RBC is indeed an equilibrium account, provided output can be decomposed into a permanent and cyclical component. The cyclical component is then expressed as a sum of exogenous random shocks, which can be done only by arbitrarily imposing a particular lag structure on the exogenous technology shock parameter.” Dore (1993:93)

policy,⁹ unemployment the result of psychology, and in general every departure from ideal perfection is the consequence of something external to the theory: Stripped of sophistications, economics offers non-economic explanations for all the economic events it cannot explain. To put it another way, it offers no explanation at all.

And these are not just any old phenomena. They are the most socially and politically important; that is, the events that matter to anyone but economists are precisely those which economics has the most difficulty accounting for.

What would we say if we encountered a doctor who could account for all of life except sickness, injury and death? We would at least consider his enquiries somewhat incomplete and we would be unwise to take his advice on any practical matter. But what if this same doctor refused us permission to consider second opinions which not only successfully accounted for injury, sickness and death but predicted them a century and a half ago? We would be within our rights to dismiss this charlatan out of hand.

The difference between such quackery and the normal practice of the economics profession is hard to discern.

Economics: the emperor's tailor

Let us examine this failure in more depth. Economics, we see above, responds to every event which it cannot explain with an explanation external to itself; psychological, cultural, political or historical. But this directly contradicts the hegemonic role which economics plays, or seeks to play, in relation to the other social sciences. The distinctive position of economics, in relation to sociology and history and their child disciplines is that it pretends to provide them with their categories. If one wishes to speak of class, of employment, of wealth, or any of the central social categories that distinguish one person from another, it is to the economists that one must turn for sanction.

The empirical incapacity of economics is not merely incidental; it is an organising principle for the social sciences as a whole. Economics organises the ontological structure of the social sciences. It gives them their categories, as it must do in a society in which all purely private relations are transmogrified through alienation into economic social relations. But when these same concepts fail to explain the events these other sciences observe, economics washes its hands of the result.

It plays, pure and simple, an ideological function. Not just economics, but the whole of the social sciences, are voided of scientific content as a consequence. On the one hand, economics cannot explain the decisive phenomena of the epoch; on the other, it stands at the conceptual gateway of all the social sciences and deprives them of access to any alternative categories which might permit them to explain these same events differently, and more scientifically. *Its job is to keep Marx's economic categories out of the social sciences as a whole.*

This highlights one of the most peculiar features of economics' claim to perform as a science: it arrogates to itself the exclusive right to test its own results. There can be no doubt that its conclusions emerge from a process of selection. It applies high mathematics, arcane statistics, vicious peer selection, and a conceptual structure which no serious student can master in less than three years' dedicated study. Indeed this is the basis of Schumpeter's (1994:7) 'proof' that economics is a science, an argument that most practicing economists today would accept without question:

⁹ "Endogenous growth theory developed a variety of models that capture aspects of the economic mechanism with the following common characteristic: policy affects the rate of accumulation of (some) factor of production of which the asymptotic marginal product does not tend to zero. Hence, policy can determine endogenously the economic growth rate, and as policies may differ, sustained divergence in economic performance of countries need not be considered paradoxical from the theoretic point of view". Jacques Vercuill's introduction in Stern (1996)

A science is any field of knowledge in which there are people, so-called research workers or scientists or scholars, who engage in the task of improving upon the existing stock of facts and methods and who, in the process of doing so, acquire a command of both that differentiates them from the 'layman' and eventually also from the mere 'practitioner'.

Since economics uses techniques that are not in use among the general public, and since there are economists to cultivate them, economics is obviously a science within our meaning of the term.

But every specialism has techniques for selecting those results which it finds acceptable – for example the Spanish Inquisition.

The similarity between economics and the Inquisition is this: it qualifies only its *own* specialists to administer the checks. In a nutshell, economics judges its own results, and the idea that the uninitiated might judge for themselves is simply not entertained, as testified by the breathtaking presumption of an *Economist* leader entitled, of all things, the *Failure of Economics* (23 August 1997:11):

Crucial ideas about the role of prices and markets, the basic principles of microeconomics, are uncontroversial among economists. These are the first ideas that politicians and the public need to grasp if they are to think intelligently about public policy.

Perhaps the first idea the economists need to grasp, if they are to think intelligently about anything at all, is that what they take to be uncontroversial might also be wrong.

Why is Galileo, justly or unjustly, recorded in history as the founder and hero of the modern rational and scientific tradition, while Cardinal Bellarmine – with his epitaph 'With my sword I have subdued the brains of the mighty' – has come down to us as the principal obstacle to its progress? Because Galileo's simple telescope placed the capacity for independent verification in the hands of every educated member of the public, and took it out of the hands of the scholars and priests. It turned scientific activity into a universal principal of human organisation; it denied the right of the experts to judge their own conclusions.

The scientific and the democratic principle are justly allied in post-Renaissance history. The device of the experiment, in the natural sciences, has a political and social significance: anyone can do it. The experiment is in principle a universal human capacity. With the rise of 'expertise' and the end of Renaissance man, it is increasingly difficult *technically* for everyone to conduct every experiment. But, nevertheless, the essence of the right remains with the general public: we can check the work of the scientists by reference to independently-observable facts. The Popperian principle of falsification, as normally stated, requires the vital extension that the theories can be checked by people other than those who create them. The emperor's tailor cannot be the judge of the emperor's suits – unless the tailor is an economist.

We can judge the engineers by whether their bridges stay up, the meteorologists by whether it rains, the astronomers by whether the stars, planets and comets appear as forecast. The medical profession is highly specialised, but offers an independent test of its methods, namely whether they cure patients. Economics has never been known to cure anything. But not only is it permitted to practice; its remedies reign supreme. Incarnated as IMF and World Bank packages, and increasingly as WTO trade doctrine, official economics is a uniquely powerful source of authority over the political programmes of most countries in the world.

The problem is that economics is never challenged from the outside, because it has persuaded the world to accord it a privilege hitherto only achieved by the most exalted priesthoods (to be more precise, those who pay for its services have deemed it prudent to make it so). It has arrogated to itself the sole right to judge its own conclusions.

3. The theoretical crisis in economics

The re-birth of heterodoxy

A profession which produced no dissenting voice in the face of such striking failures would not only be unscientific but inhuman. What we need to ask, however, is whether dissidence is capable of provoking self-reform.

Heterodox paradigms have shown stubborn persistence. Evolutionary and Institutionalist schools have a healthy life. Post-Keynesian and Kaleckian economics thrive. Schumpeterian and Neo-Austrian schools have revived or survived. Leading figures in econometrics such as David Hendry and Mary Morgan critically analyse its roots, dissident figures such as Paul Krugman and Paul Ormerod enjoy a subterranean public existence. The non-equilibrium Walrasian contributions of Benassy, Brody and others or the Complexity school of Brian Arthur and the Santa Fe Institute, in which Kenneth Arrow is also involved, are enjoying some support.

There is a growth of heterodox economic associations, for example the European Association for Evolutionary Political Economy, the Brazilian Society for Political Economy and Mexico's Encuentro Nacional. In the US the Eastern Economic Association (EEA) has made itself a home to dissident and heterodox currents and one of its former presidents, John Adams, took the initiative some years ago of founding ICARE (International Confederation for the Reform of Economics), an umbrella grouping with some 70 affiliates.

However this does not make economics a science; after all, churches have dissidents. The decisive issue is, first, to what extent the profession engages in a thoroughgoing re-examination of its theoretical categories, and second, what treatment does it accord to those who engage in such a re-examination? Faced with even a few minor problems, where the fundamentals of the science were concerned, other major disciplines pass through the great convulsions which Thomas Kuhn terms 'paradigm changes' or changes in that which the lesser-known Bachelard terms their 'problematic'; they revise their underlying structure of concepts and methods from the bottom up. In my view economics shows no sign of such a thorough-going revision, and those laudable works which urge it to proceed in this direction remain marginalised and largely suppressed.

Most decisively, economics – even its heterodox branches – has yet to undertake a re-examination of its most central category of all, namely that of value.

It is at this point that the long-standing issue of Marx's role in economics becomes germane. Despite some sympathy with Marx's insights, Marx's actual *work* is ignored by all but a tiny minority. As one economist once remarked to me: 'The discussion turns to Marx after the dessert wine has been served.'

It is time to discuss Marx with the main course.

4. Does it matter what Marx really said?

Let us suppose we were offered a refutation of Einstein's special theory which supposed a fixed frame of reference. Would this constitute a refutation of relativity? Since Einstein does not suppose a fixed frame of reference, we would have to conclude that the refutation was manifestly false. No matter how valid or cogent the logic, the 'refutation' would refer to a different theory. No conclusions concerning either Einstein or relativity could be drawn from it. Of course, one would have to demonstrate that Einstein does not suppose a fixed frame. This would not be difficult, since he insists on this point in many places.

Of course also, he could be wrong for other reasons. To reject a refutation is not the same as accepting that which is refuted. One would at least have to show that his was a rigorous and coherent theory of space and time in its own terms. The issue would then be only: how well

does this theory explain the observable world? Relativity could not be discarded on *purely logical* grounds. Only one procedure could ascertain its validity, namely to test them against rival theoretical systems to see how well each such system explains observed reality.

But suppose physics systematically refused to contemplate anything issuing from the pen of Einstein, and likewise refused to conduct such tests, on the basis of the above ‘refutation’, rejecting relativity as a viable option on the basis that it was illogical? We would have to conclude that physics had ceased to function as a science and had become a dogma.

Marx in many places clearly insists that he does not presuppose equilibrium, and indeed polemicises violently against it, particularly in relation to Say, to Proudhon, to James Mill and not least in reference to Ricardo’s deference to Say.

Nevertheless, the literature on Marx universally attributes to him a concept of value which does, in fact, presuppose equilibrium. Moreover on this basis it *does* discard him on purely logical grounds. It refuses to subject his theory to the normal scientific test of asking whether it explains the world we live in. It rules his theory out of court *before* such a dialogue is permitted.

This could be excused as a mere omission, were it not for the following: a substantial literature, dating back at least a decade, offers an alternative, non-equilibrium interpretation of Marx. Moreover there is an earlier history, dating back to the late 1970s, of systematic silence towards this interpretation, from the marxists in academia as much as from the non-marxists.

We believe this silence is not an oversight but arises from the nature and requirements of the profession of economics itself. In short, we do not confront a ‘normal’ scientific debate because the profession for which we work is not a science, but a machine for suppressing science, to whose methods it is all too easy to assent unconsciously, unless their mechanism is laid bare. In order to assess Marx’s relation to economics, Marx’s own ideas must themselves be re-appropriated from the marxists.

5. A simple illustration concerning the falling rate of profit

In the literature on Marx’s ‘tendency of the rate of profit to fall’ it is universally asserted that he made a logical error, because he failed to take into account the cheapening of inputs. Indeed this proposal is generally put in an extremely strong way:

Our conclusions are negative to Marxian *Gesetz des tendenziellen Falls der Profitrate* (Okishio 1961:95)

It cannot be shown in general that a rise in the organic composition of capital leads to a fall in the rate of profit...A falling-rate-of-profit crisis is not a theoretical *necessity*; indeed, it is not even a *possibility* under conditions of competitive capitalism (van Parijs 1980:1)

In the absence of sufficient accumulation, capitalist-using labor-saving technical change, and, further, technical change in which the organic composition of capital rises, induces a *rise* in the rate of profit (Thompson 1995:97)

By any normal usage of the English language, such statements assert:

- (a) that Marx’s own profit rate cannot possibly fall as he predicted – as a necessary consequence of a rise in the organic composition of capital in the absence of a change in the mass of surplus value.
- (b) moreover the *actual* profit rate in the economy cannot fall for the same reason.

Almost nowhere do we find the much more scientifically correct statement: “The profit rate which the economists attribute to Marx does not behave as Marx predicted.” When correctly stated, such findings are open to a much simpler explanation, namely, that Marx and the economists are talking about two different things. The ‘proof’ of his error, and of the alleged actual course of the profit rate, depends on a *definition*. The proof applies only if value, price

and profit are defined, even when the economy is changing continuously, as those magnitudes which *would* pertain *if* the economy were to become miraculously static. The ‘refutation’ depends on a distinct value concept, which we term the *simultaneous* or *equilibrium* value concept. This concept is alleged to be Marx’s, and on this basis, his theory is alleged to be false.

This is not an insignificant or merely hermeneutic issue, of interest only to historians. Ultimately at issue is what happens to the actual profit rate in the actual world economy – that is, why crises happen. Economics rules out of court, by this device, the one explanation that accounts for what any averagely-educated person may plainly see.

As we shall now show, the simultaneous definition of these magnitudes is not the only one possible. An alternative set of definitions, corresponding to a distinct value concept which we term *temporal* or *non-equilibrium*, arises if the presupposition of a static economy is dropped.

The example

To illustrate these two concepts we begin by supposing a market economy producing a single good. Since this idea has given rise to spurious objections, we note in passing that there are two commodities, the good itself and labour-power.

We suppose that this economy undergoes steady technical change, such that with a constant labour force, that outputs and inputs rise constantly but that outputs rise faster than inputs. For simplicity we also suppose that the workers consume nothing.¹⁰

We also suppose, again for simplicity, that it is possible to invest the entire product each year (maximum expanded reproduction).

To fix ideas we have chosen a sequence of outputs that gives whole numbers; the reader can easily obtain the same qualitative results for any sequence satisfying the assumptions above. Table 1 then gives the sequence in terms of use-values:

| Period | C (use-value) | L (use-value) | Produces | X (use-value) |
|--------|---------------|---------------|----------|---------------|
| 1 | 10 | 10 | → | 12 |
| 2 | 12 | 10 | → | 15 |
| 3 | 15 | 10 | → | 20 |
| 4 | 20 | 10 | → | 28 |

Table 1: use-value, maximum expanded reproduction

C = means of production consumed as constant capital,

L = quantity of labour power

X = output

The simultaneous value calculation

Now calculate the values which correspond to this sequence in the normal, simultaneous manner. The basic methodology which all ‘official marxism’ employs was first introduced by von Bortkiewicz. It is well-known that Bortkiewicz criticised Marx for an alleged ‘failure to transform inputs’. Less widely known is a preceding, and supposedly more fundamental criticism of Marx, that in Marx’s transformation procedure the outputs are sold for a *different*

¹⁰ if the reader finds this uncomfortable, s/he may suppose that a fixed proportion of the input is used to feed the workers; the results are numerically the same.

price from the inputs. Borkiewicz's argues that such an economy would not be stable. He 'corrects' this with a quintessentially Walrasian supposition, asking what values would, in each period, reproduce the economy without changing its proportions, if such values acted as actual exchange rates and if profit rates did not equalise.

He produces a second system in which prices are still required to reproduce the economy, but with equal profit rates. The 'transformation problem' then consists in stating an algebraic relation between these two unrelated systems. Not surprisingly, it has no solution.

But Borkiewicz has subtly changed the concept of price and value determination; neither values nor prices are determined in the normal temporal manner of all material things, as a consequence of the combination of all past factors which have brought them into existence. They are 'determined' by the requirement that they should reproduce the economy in an unchanged form. They are in effect determined by their future. Walras's 'mutual and simultaneous determination' has replaced Marx's temporal determination.

We must then suppose that the value at the end of each period is the same as the value at the beginning of the same period, and solve the simultaneous equation that results.¹¹ Hence for the first period, we can solve for the value v_1 by writing

$$10 \times v_1 + 10 = 12 \times v_1$$

that is

$$v_1 = 10 / (12 - 10) = 5$$

We can calculate values in each period in the same way and so convert all magnitudes to values:

| Period | v | C hours | L hours | Equals | X hours |
|--------|------|----------------|----------------|--------|----------------|
| 1 | 5 | 50 | 10 | = | 60 |
| 2 | 3.33 | 40 | 10 | = | 50 |
| 3 | 2 | 30 | 10 | = | 40 |
| 4 | 1.25 | 25 | 10 | = | 35 |

Table 2: simultaneous values

From this follow a number of conclusions that are taken as 'standard' conclusions in the normal interpretation of Marx:

Conclusion 1: values are directly determined by the physical structure of the economy.

In each period, there is one and only one possible row in table 2, completely given by the corresponding row in table 1. Values are 'redundant'; use-values determine all the properties of the economy.

Conclusion 2: organic composition falls, and the rate of profit inevitably rises, with technical progress. Values are as just observed irrelevant to this conclusion; profit is directly given by the physical structure of the economy. We just subtract the physical input from the physical output and divide by the physical input.

| Period | C (use-value) | X (use-value) | X - C (use-value) | $R = \frac{X-C}{C}$ |
|--------|----------------------|----------------------|--------------------------|---------------------------------------|
| 1 | 10 | 12 | 2 | 0.2000 |
| 2 | 12 | 15 | 3 | 0.2500 |

¹¹ The time at which any variable is measured will from now on be represented with a subscript: for example C_t is constant capital at time t . For period (discrete) systems t indicates a measurement made at the beginning of period $[t, t+1]$.

| | | | | |
|---|----|----|---|--------|
| 3 | 15 | 20 | 5 | 0.3333 |
| 4 | 20 | 28 | 8 | 0.4000 |

Table 3: physical profit rate

These conclusions are quite conventional in the simultaneous paradigm. However, a number of stranger conclusions spring to the eye.

Conclusion 3: values so defined cannot function as prices. Although values are defined as rates of exchange, that is, actual prices, in fact they cannot be so given the sequence we have specified. The product at the end of period 1 is *sold* for 5 hours per unit. But when used as an input in period 2, it would be paid for at the prices of period 2, so it would have to be *bought* for $3\frac{1}{3}$ hours per unit. If this were a real exchange, it would be impossible. A commodity cannot be sold for one price, and bought for another.

Conclusion 4: the value added to the total product is not equal to the time worked. At the beginning, we had 50 hours worth of input. Consider the combined effect, now, of periods 1 and 2. No product was consumed except in production. The living labour added in both periods was 20 hours. We should have $50 + 20 = 70$ hours worth of product. But we don't; we have 50. 20 hours have been lost. It is hardly surprising that the organic composition falls, if we throw away half the value created at the end of every period.

Conclusion 5: value can be created from nothing. It is common for the problem of value *loss* to be dismissed, or even welcomed, because it does not make *extra* value appear. Somehow, people feel happier with the idea of something disappearing without trace than appearing without reason. Strangely enough, this happiness is confined to value; when money or people disappear without trace, it is a great deal more alarming than when they appear without reason.

Nevertheless, if we simply reverse the figures, the above reasoning creates value from nowhere. If we suppose a *decrease*, instead of an *increase*, in productivity, then the inputs to each period will be magically *greater* than the output of the last period. Moreover, the greater the decrease, the more value from nowhere, so that the most productive activity of all is to do nothing at all but simply wait for nature to make inert copies of itself.

Conclusion 6: profits are independent of money: that is, they are independent of the numéraire. This is an extraordinary result, though it fully accords with neoclassical general equilibrium. In a real economy the monetary profit rate depends on the money used. If the dollar is rising relative to the pound, then the profit rate in pounds will be lower than the profit rate in dollars.

The only circumstance in which the profit rate really is independent of the numéraire is if the numéraire is constant, that is, in equilibrium.¹² Otherwise, there are as many profit rates as there are moneys or numéraires. But, according to the presentation above there is only *one* profit rate; this is 'the' profit rate, and Marx's great error was in failing to understand that it has to rise. But there are in fact as many different profit rates as there are value concepts. There *is* therefore no unique profit rate. Before deciding either if Marx was wrong, or assessing what really happens in the economy, we must first enquire *which* profit rate is under discussion.

Monetarising the simultaneous value concept

We can enquire further into all these results if we ask the following question: how *could* such an economy function according to sensible market rules, that is, in such a way that the money

¹² This point was first made by Townshend (1937)

paid for a commodity is equal to the money received for it? This would happen if, for example, at the end of period 1 we exchanged one hour of labour for $60/40 = \$1.5$; if at the end of period 2 we devalued by a further $50/30$, at the end of period 3 by a further $40/25$, and so on. Defining the *monetary expression of labour* to be the ratio between dollars and hours and calling this also e we have

$$e_0 = 1$$

$$e_1 = 60/40 = 1.5$$

$$e_2 = 60/40 \times 50/30 = 2.5$$

$$e_3 = 60/40 \times 50/30 \times 40/25 = 4$$

and we can write a table of *money* transactions in this money, thus:

| Period | \$p per unit | \$C | \$L | Equals | \$X |
|--------|--------------|-----|-----|--------|-----|
| 1 | 5 | 50 | 10 | | 60 |
| 2 | 5 | 60 | 15 | | 75 |
| 3 | 5 | 75 | 25 | | 100 |
| 4 | 5 | 100 | 40 | | 140 |

Table 4: corn-money; monetarising simultaneism

Now we have a set of transactions that makes complete monetary sense. The money paid for everything is equal to the money received for it; all the figures add up, and so on. It also yields the exact same profit rates as the 'value system' exhibited at the beginning. But how has this been achieved? What we have actually done is to revalue the value contribution of labour-power in each period, by an amount exactly equal to the increment in its productivity. In consequence, the prices, down the lefthand side, are simply 'corn-prices'; they use the commodity itself, instead of labour, as numéraire. In short, we have a use-value measure of value. The only difference, therefore, between a 'labour-value' system calculated simultaneously, and a straightforward system of corn-values, is the numéraire; moreover, when we adopt a numéraire which is correctly adjusted, in each period, to permit monetary exchange, simultaneous 'labour values' are identical to corn-values.

We summarise this by the assertion that simultaneous valuation yields a *use-value* concept of value.

The temporal calculation

The temporal calculation follows from the following, simple idea: outputs have a different value from inputs. While production takes place, values change. The value of outputs is then given, not by solving a simultaneous equation but a difference equation corresponding to the temporal order of the circuit

$$M-C-P \dots C'-M'$$

We have to suppose an initial value v_0 , as with any difference equation. This initial condition reflects the whole of a past history that we do not know. It can be demonstrated that the errors that might result from an incorrect initial condition decay exponentially. Here, for illustration, we suppose it to be the simultaneous value, 5.

In period 1, we then calculate v_1 as follows:

$$10v_0 + 10 = 12v_1$$

that is

$$10 \times 5 + 10 = 12v_1$$

giving

$$v_1 = 5$$

So far this is the same as the simultaneous value since we chose v_0 this way, to achieve a level playing field. However in the next period we find

that is $12 \times 5 + 10 = 15v_2$

giving $v_2 = 4^2/3$

This is greater than the simultaneous value, but less than the old value. Value, according to this concept, has declined but has not fallen as far as it would in the ideal, simultaneous, economy of table Table 2. We can now reproduce a different table of values in which we will write, in a separate column, the *value* rate of profit.

| Period | v (hours per unit) | C hours | L hours | X hours | X-C hours | $R = \frac{X-C}{C}$ |
|--------|----------------------|---------|---------|---------|-----------|---------------------|
| 1 | 5 | 50 | 10 | 60 | 10 | 0.2000 |
| 2 | $4^2/3$ | 60 | 10 | 70 | 10 | 0.1667 |
| 3 | $3^1/2$ | 70 | 10 | 80 | 10 | 0.1429 |
| 4 | $2^6/7$ | 80 | 10 | 90 | 10 | 0.1250 |

Table 5: temporal values

Values still fall, but more slowly, and so the profit rate falls exactly as Marx suggests, despite the steady cheapening of commodities. The ‘experts’ are wrong; there is no logical error in Marx’s idea. Moreover this system has several much more satisfactory features than the previous one:

- (a) Goods are bought for exactly the amount of money for which they sell. This system is compatible with an exchange economy.
- (b) No value is ‘lost’ and no value can appear from nowhere. The only source of value is living labour.
- (c) A variable numéraire is not required for the economy to behave in a reasonable monetary manner. In consequence, the value contribution of labour-power is always exactly given by the time of labour.

Monetarising the temporal value concept

Value, calculated temporally, is a measure of productive activity which obeys the laws of exchange, that is, it is capable of serving as a money of account. This does not mean that it functions as actual money; for this, a distinct commodity is required against which all commodities may exchange, and which may thus become the measure of all commodities.

Abraham-Froix and Berrebi (1979) first expressed a widespread prejudice of the marxist literature, that price and value are *dimensionally* incompatible: price is money, value is hours. As Ramos and Rodriguez (1996) clearly explain, Marx’s concept was quite distinct; value possesses two measures, its intrinsic measure in hours and its extrinsic measure in money. The *Monetary Expression of Value* or the *Monetary Expression of Labour Time* (MELT) already referred to is the ratio between the two, and is a universal (though variable) coefficient of the economy. It may be thought of as the purchasing power of money, in terms of abstract labour time.

Price is a transformed form of value, and it also possesses these two measures: We may express any money magnitude as a number of hours, dividing by the MELT, and vice versa any number of hours as a money magnitude, multiplying by the MELT.

Suppose, as an example, that goods actually exchange at the prices of table 4. The MELT is the ratio, at the end of each period, of the price of the stock of capital to the value of the stock

of capital. Since in this illustration all capital is consumed in each period, this is the ratio of \$X to X hours; if fixed capital is involved it is the ratio between the money price and labour-value of this same capital. Note that as a consequence, Marx's first equality is necessarily true.

| Perio d | v (hours/ unit) | p (\$ /unit) | MELT (e) \$/ hour | \$C | \$X | \$L | $\$r = \frac{\$X - \$C}{\$C}$ |
|------------|----------------------|-------------------|---------------------------------------|-----|-----|------------|-------------------------------|
| 1 | 5 | 5 | 1 | 50 | 60 | 60-50=10 | 0.2000 |
| 2 | $4\frac{2}{3}$ | 5 | $5 \div 4\frac{2}{3} = \frac{15}{14}$ | 60 | 75 | 75-60=15 | 0.2500 |
| 3 | $3\frac{1}{2}$ | 5 | $5 \div 3\frac{1}{2} = \frac{10}{7}$ | 75 | 100 | 100-75=25 | 0.3333 |
| 4 | $2\frac{6}{7}$ | 5 | $5 \div 2\frac{6}{7} = \frac{7}{4}$ | 100 | 140 | 140-100=40 | 0.4000 |

Table 6: temporal money prices

It can be seen that the 'use-value' profit rate, far from being the definitive and only profit rate, corresponds to a specific and distinct sequence of prices; a sequence in which, as already observed, the price of a unit of output remains constant, that is, a use-value measure of value.¹³

But this is only one of an infinity of possible price sequences. What happens to the rate of profit when a different price sequence arises? According to simultaneist theory, this *cannot* affect the profit rate, because money is a veil. But it is easy to see that the profit rate depends on the sequence of prices at which goods are actually sold. Our seventh table illustrates this by supposing an inflationary régime in the sense of unit prices which double in each period:

| Perio d | v (hours/ unit) | p (\$ /unit) | MELT (e) \$/ hour | \$C | \$X | \$L | $\$r = \frac{\$X - \$C}{\$C}$ |
|------------|----------------------|-------------------|---------------------------------------|-----|------|----------------|-------------------------------|
| 1 | 5 | 5 | 1 | 50 | 120 | 120-50=70 | 1.4000 |
| 2 | $4\frac{2}{3}$ | 10 | $10 \div 4\frac{2}{3} = \frac{15}{7}$ | 120 | 300 | 300-120=180 | 1.5000 |
| 3 | $3\frac{1}{2}$ | 20 | $20 \div 3\frac{1}{2} = \frac{40}{7}$ | 300 | 800 | 800-300=500 | 1.6667 |
| 4 | $2\frac{6}{7}$ | 40 | $40 \div 2\frac{6}{7} = 7$ | 800 | 2400 | 2240-800=14400 | 1.8000 |

Table 7: temporal money prices

Money is not at all a veil; the faster prices rise, the higher are money profits. A régime of rising prices produces a speculative element of profits which arises precisely from the fact that the product is sold, temporally, after the inputs are consumed, and that prices have risen in the meantime.¹⁴ This is precisely because prices are not, contrary to the simultaneist view, the same at the beginning as at the end of a period, and the change makes a difference. Monetary circuit theory has insisted on this from the outset, in our view quite rightly (see Bellofiore, Graziani).

There are as many possible profit rates as there are possible price régimes. To speak of 'the' profit rate without specifying which one is meaningless, and no deduction about reality can be made by selecting one particular rate – such as the use-value rate – above any other. Least of all can it be asserted that Marx was 'wrong' about the profit rate because his choice of profit rate is different – and, in our view, superior – to the use-value rate.

¹³ The *money value added* (\$L) is not equal to the hours worked by living labour multiplied by the MELT as in the New Solution. (see Duménil 1983, Foley 1982). It is the difference between the price of the outputs of a period and the price of the inputs of the same period. When the MELT is not changing, the new solution \$L is equal to the temporal \$L but not once the MELT starts changing.

¹⁴ In general if e is the MELT, r the value rate of profit and $\$r$ the price rate of profit, $r = \$r + \frac{e'}{e}$

However, it is also evident that in some sense that has to be defined, the ‘real’ profits of the economy cannot be raised simply by inflating the currency. A distinction is needed, between an underlying, real element of profits, and a secondary, nominal element. The crisis of ’98 demonstrated this fact in spectacular fashion, since (as always) the money profit rates that were being recorded on stocks and in general on financial assets collapsed with the bull run, that is, as soon as the inflationary price sequence in fictitious capital came to an end.

But even to make this distinction, we need to select out one particular profit rate as being more ‘real’ than any others, which means we need to distinguish one particular measure of the worth of a commodity from all others. We need, in short, a concept of value.

The requirement for a concept of value, and a comparison of the various concepts of value which exist in economics, is the topic of the next section. At this juncture however we want to make one final and vital point: the unique property of the value measure which we have defined, and which we believe to be Marx’s value measure, is that the value profit rate may *only* be positive as a consequence of production.

To see this consider first an ‘economy’ which merely preserves a commodity unchanged. If this commodity is rising in price, then it will yield a speculative profit because as time goes on its price will rise. In this special case, the use-value rate of profit, and the value rate of profit, coincide and yield a profit rate of zero. But now consider the following ‘economy’ in which no labour is deployed.

| Period | C (use-value) | Produces | X (use-value) |
|--------|---------------|----------|---------------|
| 1 | 10 | → | 12 |
| 2 | 12 | → | 15 |
| 3 | 15 | → | 20 |
| 4 | 20 | → | 28 |

Table 8: use-value, maximum expanded reproduction

This is typical, for example, of natural production in the wild – the unaided reproduction of nature. The use-value profit rate is exactly as in table 3. But the value profit rate is zero. Whatever value was in the original 10 units of C, is simply preserved despite the increasing fecundity of nature. If, and only if, labour is added will profits be observed, in value terms. This is moreover a quantitatively exact ‘fundamental marxian theorem’ and not a mere inequality.

For the ‘use-value’ measure, all increases in the volume of output are treated as an addition to profits, even when they involve no additional productive resources. This conflates natural or mechanical production with human or social production; and also conflates rises in productivity (increases in the amount of use-value that can be produced by the same amount of labour) with increases in output (increases in the labour embodied in the product).

The temporal determination of value by the magnitude of labour time therefore provides a value measure of the profit rate which is ‘canonical’ in the following two senses:

- (1) every possible monetary profit rate can be expressed as the sum of this canonical rate and a term equal to the rate of increase in the monetary expression of value
- (2) the value profit rate, and only the value profit rate, is zero if and only if production takes place.

The value profit rate thus provides a precise measure of the appropriation of the *productive resources* of a capitalist society, in a sense which no other profit rate can do. Moreover, this

profit rate does indeed fluctuate with the organic composition of capital, *exactly* as Marx proposes. There is *no* logical flaw.

Is this approach to economic analysis ‘correct’? The fact that Marx has been ‘proved not wrong’ in no sense implies that he has been proven right. It is not our objective to establish a new dogma or a new universal source of truth. However, once it is clear that he is not in logical error as charged, economics has absolutely no excuse for failing to subject his ideas to the *same* test that should apply to its own: namely, do they explain the generally-observed facts. What we have demonstrated is that a perfectly coherent and consistent formulation of the ‘law of motion of capital’ is possible on the basis of the TSS interpretation of Marx and therefore there is no excuse for failing to test Marx’s own theory against the facts. The exclusion of Marx from the general domain of economic discourse is, scientifically speaking, wholly illegitimate.

6. The Church of the Market Immaculate

Economics, as we have demonstrated, founds its rejection of Marx on two false claims. It is not true that modern economics explains the world better, and it is not true that Marx’s logic is flawed. Since the given reason for rejection is false, what is the true reason?

It cannot be reduced to a simple oversight. The very definiteness and thoroughness of the rejection, and the very extent of the effort involved in securing it, rules out such a conclusion.

In the first place the results we just demonstrated have been known for twenty years and in the public domain for at least ten years. Moreover the idea of temporal values, or temporal calculations, is not difficult, and anyone could have ‘discovered’ it at any time in the past eighty years. The results involve no difficult mathematics; the calculations are so simple a child can perform them. The same applies (see Freeman and Carchedi 1996) for Marx’s alleged failure to transform inputs.

In the second place, notwithstanding its failure to examine what Marx actually said, economics has actually diverted some considerable attention to extolling his errors; indeed the dispassionate observer would be forgiven for concluding it reads him for no other purpose. This systematic tradition established by Böhm-Bawerk has drawn in some of the finest brains of economics. There is every reason, therefore, to reverse entirely Ian Steedman’s (1977:49n) famous question:

The present type of argument has been examined in various forms, by many different writers over the last 80 years. The same conclusions have always been reached and no logical flaw has ever been found in such arguments.

Since there is a logical flaw, since it is very straightforward, and since ‘so many different writers’ have examined the issue in so many forms, what must now be explained is why they got it wrong. How did the finest brains of economics, including Nobel Prize winners whose logical and mathematical capabilities are beyond question, either fail to notice this logical flaw, or reject it out of hand? What does this tell us about their profession?

We believe more is involved than a mere trick of arithmetic or choice of model. Any attempt to understand the differences between temporal and simultaneist results in such terms is more or less doomed. The problem is that in order to adopt a temporal value concept one must actually *think differently*. Temporal concepts corresponds to a different way of looking at the world, and call for a conceptual leap every bit as great as that involved in passing from Ptolemaic to Copernican astronomy or from Newtonian to Einsteinian mechanics.

To understand and employ temporal value concepts, we must overturn our ideas, not just about how we calculate value or price, or profit, but what these words actually mean. Such changes always the most difficult for established thinking to accept. As Kuhn notes:

Consider, for another example, the men who called Copernicus mad because he proclaimed that the earth moved. They were not either just wrong or quite wrong. Part of what they meant by 'earth' was fixed position. Their earth, at least, could not be moved. Correspondingly, Copernicus' innovation was not simply to move the earth. Rather, it was a whole new way of regarding the problems of physics and astronomy, one that necessarily changed the meaning of both 'earth' and 'motion.' Without those changes the concept of a moving earth was mad." (Kuhn 0000:149-150)

A paradigm difference does not reduce to a clash of models or calculations. Each paradigm gives a different meaning to the concepts it employs, expresses the laws governing their mutual relations differently, and hence conducts their empirical study using distinct methods.

Our conclusions are difficult to accept, not because they are mathematically complex but because they involve a complete conceptual revolution. It seems, when one begins to think along these lines, as if nothing that one ever considered to be certain, can be trusted any more. One must rethink absolutely everything, from the very beginning – as is always the case in any major scientific revolution.

7. Gresham's law of economic thought: economics as counter-reformation

Paradigmatic clashes in economics are not uncommon. There is however a decisive difference in comparison with all other sciences where knowledge normally progresses, as new paradigms, with greater explanatory power, transcend and supersede others.

In economics the reverse occurs. The temporal paradigm in fact surfaces again and again, not just in the field of Marx's value theory but in every branch and every school. The history of the subject shows that in these circumstances it moves backwards. The simultaneous concept drives out and marginalises the temporal concept, as the participants themselves testify:

On the plane of theory the main point of the 'General Theory' was to break out of the cocoon of equilibrium and consider the nature of life lived in time, the difference between yesterday and tomorrow, here and now, the past is irrevocable and the future is unknown. This was too great a shock....In the Keynesian theory after the war this simple point is lost. The whole of Keynes's argument is put to sleep. Keynes is smothered and orthodox equilibrium theory is enthroned once more. (Joan Robinson 1980:12)

There was no obvious intellectual victory in the debate, yet there is no doubt that process analysis was effectively squashed out of econometrics. (Mary Morgan 1994:225)¹⁵

Indeed as Pascal Bridel's (1997) brilliant exegesis of Walras' and Pareto's monetary theory demonstrates, this retrogression, this *reversion* to the implicit internal logic of equilibrium, presents itself even in the evolution of the thought of a single person:

Trapped from his first edition by the logic of an equilibrium model congruent only with a purely static approach, and despite heroic analytical efforts, Walras (and his monetary theory) eventually fell victim to his relentless search for an internal coherence from which any claim of describing a price formation process is finally excluded. And money as a medium of exchange, but not as a numéraire, was the prime victim of this first (but not last) victory of the internal over the external coherence of general equilibrium analysis, the epitome of all *rational* economic models [emphasis in original]

The process by which economics rejects temporalism is not at all confined to its treatment of Marx. It is recorded, by the actual participants, in every major school or field of study. In every case, it is the equilibrium variant that triumphs: General equilibrium over Austrian marginalism, simultaneous equations econometrics over process theory, the ISLM presentation of Keynes, and so on and so on.

The supplanting of temporal by equilibrium theories in economics is thus neither accidental nor specifically directed against Marx. Marx is the principal object of suppression only because he is the most coherent exponent of the alternative. In every meaningful sense, he *is* the alternative. But the process which excludes him from economic thinking extends to every

¹⁵ For a full account of the temporal tradition in econometrics see Louça (1996)

path that leads back to his theory. We confront a general, not a specific, institutional process of suppression.

What is involved is profoundly regressive: a Gresham's law of selection for economic theories, which systematically promotes more backward and less general equilibrium variants over more general, and more advanced non-equilibrium variants, whenever there is a clash. As Morgan records, this rejection is not the outcome of any scientific evaluation.

The history of economics is not one of scientific revolution but of ideological counter-revolution. Economics functions as an organised machine for promulgating the divinity of the market. It does so by promoting equilibrium not as a hypothesis but as the foundation of an ontology: a definition of what is permitted to exist.

The simultaneous value paradigm defined

As we have seen the current, generally-accepted definition of value – which comes to us through a very specific line of inheritance, via Bortkiewicz, Sweezy, and successive refinements by Seton and Morishima – defines both value and price with respect to a *stationary system*. Time is not merely suspended, but abolished, in this approach. The essential argument is that we may approximate to a moving system by first abstracting from the motion, and then re-introducing it afterwards. All the objects of the system are defined at the *same time*. Hence our use of the term *simultaneous* or *simultaneist* paradigm.

As stated earlier this is not just a calculation but a definition. It defines value *to be* the solution to a set of simultaneous equations. In consequence, it demands that all motion is abolished before the category itself can be established. It acts, in effect, as if Marx had written Volume II before Volume I, and had taken the requirement to reproduce capitalism to be the definition of value.

The motion that was removed at the outset cannot then be re-introduced. One may speak of equilibrium using a non-equilibrium concept, but one may not speak of non-equilibrium – that is, reality – with an equilibrium concept.

If, therefore, value is defined without the prior supposition of stationarity, a simultaneist mind-set faces far greater difficulties than merely following the calculation. The results are literally inconceivable.

The temporal paradigm contrasted

Now consider the temporal definition of value. This defines value *without the prior supposition of stationarity*. But precisely because value is defined differently, everything else is: price, profit, capital, productivity, technical change, money, inflation, output, not to mention cause and effect. The results contradicts 'traditional commonsense' in economics because, though the words are the same, they do not mean the same thing. We now attempt to trace some of these differences of meaning.

The first issue to be faced, once one abandons the comforting crutch of eternal and unchanging universals, is simply to be able to decide what exists. One confronts, head-on, the problem of *persistence*; how it is that something which changes in every respect, nevertheless in some sense continues to be. Each day, every atom of our bodies is completely renewed. Nevertheless, the persons that we are, remain in some sense, identical through their difference.

When we move to quantifiable objects, this leads to a requirement for a concept of *conservation*; in order to formulate the idea, for example, of a capital of \$1000 even though this capital completely changes its bodily form during its various transformations, we require the idea that some abstract identity-through-difference is preserved despite these changes. Value, in our view, is the fully rigorous formulation of this view.

The second principal difference is the concept of *cause*. In the temporalist paradigm, as in everyday speech, before one thing can ‘cause’ another, it must precede it in time. The simultaneist concept of cause is structural or algebraic or, to be precise, purely logical. One writes down a set of simultaneous equations and decides on the basis of an external argument which is endogenous and which is exogenous; the exogenous variables then become ‘causes’. Among other consequences, this divides every branch of economics into a hundred jarring sects whose real difference consists of no more than which variable they place on the left of an equals sign.

The differences then multiply. For example, ‘price’ is not something that we can determine. It is a datum, something that is observed in the world; the actual sum of money paid for a thing. The idea, again commonplace in economics, that the true or natural ‘price’ of a thing is something different from the money paid for it, is again as alien to the temporal paradigm as to any normal human being.

Profit itself is different in exactly the same way: in the simultaneist paradigm, it does not correspond to anything that actually appears in the world. The simultaneist profit rate is defined as that which *would* appear, *were* the economy to reproduce itself unchangingly, *if* profit rates were everywhere equal. The temporal profit rate is simply the business-like and actually-observed difference between the money paid for outputs, less the money paid for inputs, divided by the money capital advanced.

In our view, therefore, what is at stake is not just a difference of models, but a difference of world-views; a gulf every bit as large as that which separated Copernicus and Galileo from the Ptolemaic astronomers and their clerical successors.

Our results can, therefore, be understood only by suspending the ‘commonsense’ that we learn from economics, and approaching them with a genuinely open mind.

The source of simultaneist resistance

Why, and how, is the temporal paradigm so vigorously resisted in economics? In our view, because its conclusions are a marketable commodity. Its ontology, which has its origin in the method of Plato, substitutes an *ideal* system for the real world. It claims that this ideal system represents the world:

There exists, first, the unchanging form, uncreated and indestructible, admitting no modification, and entering no combination, imperceptible to sight or the other senses, the object of thought (Timaeus 20).

The issue is not just the idea of universals or essences but a specific concept of them: form is *that which does not change*; and this is the true reality. This leads to a view remarkably close, in fact, to the way that economists conceive of the real world and its relation to their ideal pictures of the market.

No-one, I should say, can ever gain knowledge of any sensible object by gaping upwards any more than by shutting his mouth and searching for it on the ground, because there can be no knowledge of sensible things...These intricate traceries in the sky are, no doubt, the loveliest and most perfect of material things, but still part of the visible world, and therefore they fall far short of the true realities – the real relative velocities, in the world of pure number and all perfect geometrical figures, of the movements which carry round the bodies involved in them. These, you will agree, can be conceived by reason and thought, not seen by the eye ...Accordingly, we must use the embroidered heaven as a model to illustrate or study these realities (Plato, *Republic* 7:529A, cited in Sambursky 1987:44);

Walras for his part avers:

A truth long ago demonstrated by the Platonic philosophy is that science does not study corporeal entities but universals of which these entities are manifestations. Corporeal entities come and go, but universals remain for ever. Universals, their relations, and their laws, are the object of all scientific study. (Walras 1984:61)

Few would dispute that universals are the object of scientific study: what is involved, however, is the specifically Platonic concept of universal, as an immutable structure independent of time. For Plato, the actual movement of the planet is a mere imperfect copy: the eternal, ideal, heavenly spheres on which they are constrained to move, are the true reality. As for Walras:

Mathematical mechanics demonstrates that the harmony of the spheres operates in a free enterprise system as well as in the heavens.¹⁶

Bortkiewicz in turn introduces his correction to Walras thus:

Alfred Marshall said once of Ricardo: 'He does not state clearly, and in some cases he perhaps did not fully and clearly perceive how, in the problem of normal value, the various elements govern one another *mutually*, not *successively*, in a long chain of causation'. This description applies even more to Marx ... [who] held firmly to the view that the elements concerned must be regarded as a kind of causal chain, in which each link is determined, in its composition and its magnitude, only by the preceding links ... Modern economics is beginning to free itself gradually from the successivist prejudice, the chief merit being due to the mathematical school led by Léon Walras. (Bortkiewicz 1952:23-24)

Using such an ideal system it becomes impossible to theorise crisis or imperfection in the market, which is perfect by definition. If one goes further and asserts, like Plato, that the ideal model is the truly real, and the truly real is just an imperfect copy, then any observed imperfection must result from 'outside' interference: from exogenous factors, imperfections, adjustments, or shocks. These are the names which economics reserves for the things that it cannot explain: by *definition* they are not the product of the market, but a deviation from it. The market therefore, *by definition*, cannot violate the conditions for its own existence. This ideological function is the prime reason for simultaneism's dominance.

If simultaneism was a mere logical error, a simple 'mistaken calculation' that would be swept away by changing a one to a zero, it could not survive. However, in this case, it would have been impossible for the Ptolemaic system of astronomy to survive the sixteen hundred years which separate Aristarchus – who first discovered the modern heliocentric system – from Copernicus. Simultaneist systems have a compelling internal logic; their very beauty and harmony has seduced generations of economists. This dominance, however, is not arrived at by the free choice of the actors alone. The *selection* mechanism of economics, its process of funding, judgement and promotion, ensures the survival of any theory in which market imperfection is ruled out by definition. This selection mechanism arises directly from the fact that, under a market economy, a specialised professional discipline dedicated to economics necessarily relies, for its support and funding, either directly on private material interests or indirectly on them, through the intermediary of public institutions that are bound to them.

As stated earlier this dominance of simultaneism makes economics a retrogression compared to all true sciences, which have progressed to the temporal paradigm: the Copernican concept in Astronomy, the laws of motion of Physics elaborated by Galileo, Newton and Einstein, the evolutionary concept in biology, and so on. Simultaneism is Creationist Economics.

Concerning dead parrots: a brief digression on comparative statics

One of several common confusions, when economists first encounter the concept of temporal or TSS values, is that they believe it is merely a means of making economics dynamic. They then assert, without having thought carefully about the matter, that since economists in any case perform dynamic calculations – that is, calculations in which the parameters of the economy are changing – there is no substantive difference between temporal value calculations and the common practice of economics.

¹⁶ according to the Federal reserve Bank in a schools handout we are happy to supply to enquirers. We have not yet traced the original citation.

This first of all involves an elementary mathematical mistake, but underlying it is a much more serious paradigmatic failure. Mathematically, the method of so-called ‘economic dynamics’ is that of *comparative statics*; it calculates a series of static equilibria and claims that the sequence is an ‘approximation’ to a genuine dynamic trajectory. Paradigmatically, the method is an attempt to turn an inherently static object into a dynamic one merely by changing the arrangement of its elements as time progresses, much like a stop-time animation.

Mathematically, the assertion that a sequence of static equilibria approximates to a temporal trajectory is simply false. In the above example, the sequence of simultaneously-calculated profit rates rises, while the temporally-calculated profit rate falls. They never converge. The results are simply not numerically the same and in general, as long as the parameters of the economy move in a secular manner (as indeed do technical progress and monetary inflation), they cannot be. There are two *different* calculations leading to two *different* sets of numerical results, and no amount of hand-waving or dissimulation can spirit this away. This elementary logical error is just as scientifically serious when Thompson or van Parijs assert that the actually-observed rate of profit must behave like the comparative static rate, as when a neoclassical economist claims that the actual rate of employment must behave like the ‘natural’ (that is, static) one.

The mathematical reason for this is quite well-known; motion itself produces additional terms which are absent when the motion stops. This is why, for example, a gyroscope behaves differently when it is spinning.

Paradigmatically, the point to be grasped is the ontological hierarchy of the temporal and the static. A static object may not be turned into a dynamic object merely by rearranging it every so often. We may not study the activity of flying by moving a dead parrot’s wings about. On the other hand, if we wish to know what happens when a live parrot is at rest, we can wait until it is asleep. This is because, as Monty Python seems to understand better than the profession of economics, a live parrot is fundamentally different from a dead one. Static phenomena are a special case of dynamic phenomena, not vice versa.

Thus it is perfectly legitimate, after Marx has derived the categories of value, money, price, profit and so on in Volume I of *Capital* without presupposing that the economy reproduces itself in constant proportions, to abstract from variation in these proportions and study simple reproduction in Volume II. If, however, he had intended to adopt the definitions foisted on him by three generations of experts, Volume II would have appeared first.

8. The value concept as a universal element of economic theory

Nowadays, when economists hear the word ‘value’, they assume a Marxist is speaking. The Marxists themselves react to this label defensively, even making value a point of special pride, as if value were a category which no-one else has the right to use.

We assert to the contrary that all economics *implicitly* possesses a value concept. It is no more possible to do economics without value than physics without space. The very words ‘value of money’ demand that this value be defined. When any economist speaks of something that money buys, which is not itself money, she or he articulates a value concept. The real theoretical crime of the professional economists is not their lack of a value concept; it is the fact that they steadfastly refuse to examine the concept they actually use.

Our problem is not, therefore, to defend the need for a value concept. It is, by logical examination, to force each branch of economic theory to examine the concept of value which it uses in any case, whether or not it admits it. We believe that the appropriate object of study, when analysing a system of economic thought, is the *value concept* (possibly implicit) in it. When we understand how a theory conceives of value – we argue – we understand what that theory really is.

Our first task, therefore, is to deconstruct the prime value category – for such it is – of neoclassical economics, namely the *real-nominal distinction*.

Let us begin from the idea of the price level. Without it, economics cannot even formulate the quantity of theory of money, let alone discuss if it is true. But what *is* the price level? It must mean a ratio between some measure of output which is different from price, and price itself. In short, it is a measure of value. If economists say that the price level has risen by 10%, they must mean that \$1 buys 10% less of *something* – but hardly ever enquire into what that ‘something’ is, least of all question whether it can be rigorously defined. This is actually quite scandalous: it is as if physicists spoke of ‘energy’ or biologists of ‘species’ without any debate or enquiry into what these words meant.

The implicit measure of value used in economics is the macroeconomic magnitude called ‘real output’. It is the nominal price of a thing, deflated by the GDP or some other deflator.

Whatever sophisticated microfoundation is offered for this measure, it is in fact a cardinal, linear, and non-marginal measure. If we add together two assets whose ‘real’ value is \$1 and \$1 we get another asset whose ‘real’ value is \$2, by the very nature of the price index calculation. That is, its value measure is a *money of account*. Of course, a value concept which is adequate and appropriate to a genuine science of economics is more than a mere quantitative measure: but it is in the form of a quantitative measure that we encounter it in economics as now practiced, and it is as such that we study it here.

Economics speaks as if there were only one such measure; the recent debate in the USA provoked by the Boskin commission shows that things are quite different. The Boskin commission proposed to modify the consumer price index downwards, in order to reduce government spending on indexed welfare payments such as pensions. It thus accused the BLS of *overstating inflation*. But it rapidly emerged that a lot more was at stake. For, if the BLS had overstated inflation, it had *understated real output*. But if it had understated real output, it had likewise understated productivity. It had moreover understated real profits, hence economic performance in general. Once the value concept changes, all other variables change with it. The nexus of economic relations involved is as follows:

- (1) From any concept of value, there follows a concept of price level, and vice versa. The price level is simply aggregate price divided by aggregate value, however this is defined,
- (2) But likewise from any concept of value, there follows a concept of *output*; since aggregate value produced per year is simply the definition of output, corrected for nominal changes in the price level.
- (3) However from this also follows a definition of *productivity*; productivity is simply the ratio between value output and value input.
- (4) There also follows the definition of surplus or ‘value added’ – and if the economists really believe the concept of value to be redundant, it is perhaps time they demanded we stop taxing it – this is equal to the difference between value output and the value of non-human inputs.
- (5) The definition of profit itself then follows from these definitions. ‘*Real*’ profit – that is, the value rate of profit – is equal to the value added, divided by capital advanced, measured in value terms.
- (6) Finally, since the rate of profit is a determinant of investment behaviour, all this directly determines the way that an economic theory is obliged to view the actual motion of a market economy.

Note that the six statements above did not in any way assume a *particular* theory of value. Least of all are they specific to Marx’s theory of value. They are conceptual relations that

apply to each and every economic theory, which it must adhere to more or less consciously, and more or less rigorously.

A chain of conceptual connections leads from an underlying value concept, through all the key concepts of economics, to an actual theory of economic behaviour. The value concept adopted by any theory, far from being redundant, is the key to understanding how any economic theory actually works.

Production, circulation, distribution and value: a single concept

The issue is even more profound. The concept of value determines where the dividing line is placed between production and circulation, a distinction fundamental to economics. When economics seek to make a distinction between these two activities, what it always seeks to convey is the idea that one type of human activity *creates* that which is consumed elsewhere, and that another type of activity *allocates* this product to the final consumers. This distinction is itself meaningless, if it turns out that the allocation process is itself creative; there is no point in the distinction in that case.

Precisely what we mean by value *is* that which is created in production, since obviously, price variation is a phenomenon of circulation. In consequence, if we find out that price variations can bring about an increase in value without any productive activity, we have an incoherent value concept.

This is the true force of the capital controversy. Why did it matter to economic theory, whether capital was a factor of production or not? Precisely because, unless capital is considered a factor of production, and if we use quantity or nominal price as our measure of value, we find that there is an increment in the value of the product that cannot be accounted for in production. Therefore, we are obliged to ‘invent’ a new factor to make up the discrepancy – the ‘factor’ of capital.

With every new complication encountered by modern theory, it responds by inventing another factor, be it human capital, quasi-rents, or what-have-you; the reason for this inventiveness is the desperate need, in the face of a defective value concept, to plug the growing hole in the dike between the torrent of production and the flood plain of circulation.

This spills directly over into political analysis. Without a firm division between production and circulation, with the origin of value firmly located in production, we cannot theorise the notion of *transfers* of value. We cannot express the concept of exploitation or class division. We cannot rigorously express the notions of unequal exchange, nor explain the ever-growing gap between nations. The very notion of *distribution*, and the idea that the price system is an allocative process that transfers from one person, or one class, or one nation, to another, cannot be expressed without an adequate value concept.

This, also, is what Keynesian theory seeks for when it (rightly, in our view) strives to establish that distribution is in some sense ‘prior’ to price formation. The essential idea that needs to be expressed is this: some ‘thing’, some ‘substance’ is created in production, and the price mechanism consists of no more than the allocation of this substance, without changing its size.

Marx’s value concept in context

This allows us to place Marx’s own value concept in its rightful context and clarify, first, why it is such an important achievement to locate *labour* as the source of value, and second the underlying qualitative significance of his celebrated equalities

The whole historical evolution of the value concept is an evolution *away from physiocracy*, for whom the basis of value was *natural*: the reproduction of nature unaided and unorganised by people. For the physiocrats, production consisted in the production of things by means of

things. On this basis, as Marx notes because of the very narrowness of their value concept, they successfully identified the relation between value and distribution. What they could not do, is identify the relation between either of these things and human society.

Successive refinements by Smith, Ricardo and Marx freed this value concept from its naturalist heritage and located it in specifically human, social, that is, conscious activity.

The place of Marx's value concept in the history of economic thought is the completion of this evolution. In his work for the first and last time all production is rigorously and uniformly defined as a specifically human activity, and value is rigorously defined as its quantitative outcome. Economics since his death is not much more than an orchestrated media drive to prove it can't be done.

Labour, for Marx, is the universal substance of value because production consists, and only consists, of the application of labour. This is not just a definition of value but also of production. Labour is the conscious transformation of nature by humans for humans, and hence production *is* the application of labour both to nature and to past human products. It is not the unaided activity of nature, nor is it the passive self-motion of machines, and least of all is it mere existence.

As we have seen every body of economic thinking makes a distinction, vaguely or less vaguely, between production and circulation, and entertains the notion that in some sense production creates something new, and circulation only changes its ownership. What they do not realise, except in Marx's case, is that in making this distinction, they also determine a value concept. If, therefore, we define production so that non-human activities are included in it, then inevitably we find a non-human source of value; try as we might to measure value as a human activity, we will always find a place where it grows by itself.

For the physiocrats, nature was the explicit source of value. For Smith, 'stock' remained an independent source of value because he did not treat it as a product of labour. Ricardo's two great achievements were on the one hand to define stock rigorously as a product of labour, and on the other to define rent as a deduction from the product rather than an increment to it, finally freeing value from any natural basis. But he bequeathed a dual standard of value through which things as such were allowed to become again a source of value, though free of their natural origin. Value for Ricardo was on the one hand, the labour incorporated in a thing, and on the other hand, the amount of another thing for which it exchanged. When this second definition, the *use-value concept of value*, is insufficiently separated from the first definition, then economics ends up measuring things in terms of other things.

But these things are human constructions, alienated from their producers. The use-value concept of value therefore divides symmetrically into the physicalist and the utilitarian viewpoints; one conceives of value as if things existed independent of their use, and the other as if the use existed independent of the thing. In either case, the old naturalism of the physiocrats is restored in a new, fetishised form: the things which we ourselves create are endowed with the magical property of creating value out of themselves.

Finally from this viewpoint we can give a very mathematically precise, and non-mathematically sensible definition of exactly what is offered by Marx's value concept: it is a explanation of the substance and measure of economic activity with the unique mathematical property that, if all economic magnitudes are transformed by applying it, new output *always and only* arises in production, production being defined as the application of human labour to the production of commodities. It offers, therefore, a *universal measure of all economic magnitudes in terms of a universal productive capacity*.

No other value concept possesses this property.

9. What constitutes scientific conduct in an anti-scientific institution?

The TSS value concept makes perfect logical and theoretical sense. It cannot be ruled out as a trick, a paradox, a different model or an elementary logical mistake. Of course, in and of itself, this neither proves that it is Marx's concept, nor that it describes reality.

If economics were a science, and functioned as a science applying genuinely scientific criteria, it would consider the TSS value concept on an equal footing with its own value concept. It does not do so, because as we have explained, it is organised as a dogma. Is it possible, then, to oblige economics to examine this value concept objectively? If not, what can or should be done?

In defence of rationalism, in defence of democracy

The answer we supply is drawn from the old, Galilean, rationalist agenda. Contrary to the normal tradition in economics, we do not dismiss our opponents by demonstrating faults in their logic. Nor do we dismiss them by proving that they cannot claim the authority of great people – least of all Marx himself. Our question is: can they explain the world we live in? Our judgement is based on *evidence*.

In our view, the 'Marxian heresy' consists precisely in the fact that it explains the world we live in; and this is precisely what the profession of economics finds an anathema. The question that then arises is an obvious one. If the conceptual structure of the profession of economics does not serve the function of explaining reality, what function *does* it serve?

The emperor's tailor may not judge the emperor's clothes

However, we couple this to an unusual observation: economics, alone among the 'sciences' reserves to itself the right to judge its own conclusions. We are allowed to test what doctors do: we can see, with our own eyes, whether the patient dies or gets better. The economists, however, cure no-one and kill many people; yet ordinary people without economic qualifications are not presumed capable of telling the economists that they are wrong.

In our view, the entire point of the Galilean revolution in scientific method does not reduce to the use of experiments or to 'falsification'. Galileo asserted something much more fundamental against the church: he asserted that people other than God's appointed had the right to judge what God had done. This was, in fact, the basis of Bellarmine's objection to Galileo which was, strangely enough, a kind of pluralist objection. He accused Galileo of presuming to determine *for himself* which of the two possible explanations of God's work was valid; this, he argued, was blasphemy because only God knew his own reasons. He obliged the church to submit to the judgment of non-clergy, of the ordinary person.

This leads to an approach which we might term critical pluralism; no theory should be ruled out *a priori* but every theory should be tested against the evidence, and obliged to engage and debate the alternatives. Most important the tests should not be the preserve of the economists. Economics, if it is to play any useful role at all under a market economy, must be obliged to abandon all claim to authority. Its job is to make theories available for others to judge; not to stand judgment on others for the theories they hold.

Against the abuse of logic

The difficulty of debating across paradigms leads most simultaneists to treat temporal results as the product of some kind of simple mathematical trick or deceit, not worthy of considering as a true theory. Though we would not be so foolish as to claim no future error can be discovered, TSS ideas have been subjected to very intense debate and criticism for over five years and we think there are now sufficient ground for saying that they are not likely to be overturned by a purely logical argument.

Unlike Ian Steedman, and, to be fair to him, most of economics, we do not draw from this the conclusion that our opponents are wrong, or that we are right, simply because our argument is proven in logic. This is a method of debate which, in our opinion, we must all leave behind us.

In our view, the issue is an entirely different one. Most explicit theories of value contain an implicit logic that is consistent *if one adopts the conceptual structure that goes with the theory*. The questions we pose are threefold:

- (a) What really is this underlying conceptual structure? What *presuppositions*, what *axioms*, must we adopt, in order to think in such a way? This is the true application of logic.
- (b) What relation does this conceptual structure have to reality? Does it explain the observed facts which any educated person can verify: does it make sense of the world? This is the true application of science.
- (c) What relation does it have to the known work of any writers whose theories we are assessing? Does it make sense of their ideas and are we justified, therefore, in *attributing* this theory to them when we judge their work? This is the true application of honest debate.

All three of these are jointly required for a scientific endeavour.

What is to be done?

Some closing words are necessary, in any critique, to indicate the directions of motion which are possible in the object of critique, and suggest the better choices open to the free individual, where by 'free' we mean an individual who has recognised without self-deception the material roots of her or his own prejudice.

Because it is an ideology in constant conflict with the real world, economics is in a constant state of crisis which is at this moment particularly sharp. This crisis produces a constant flux of ideas which break and fragment away from the neoclassical value concept, and are then re-absorbed within it, or destroyed. Individual contributions and insights which result from such breaks can and do possess genuine scientific merit, either in that they succeed in explaining things that happen in the world, or that they develop concepts which do not depend on a Platonic ontology.

Nevertheless, economics consistently demonstrates that because of its social function and organisation, it will not permit any complete theoretical development beyond individual insights. The method by which it prevents such a complete development cannot be reduced to the bad practices of its organisers; it is a church, and the only way to reform a church is to deprive it of secular power. It is in fact the simultaneist paradigm itself, as a method of conducting and organising discussion, which prevents any coherent theoretical development. This can be seen from the practices of many past debates among heterodox but simultaneist currents, who constantly fragment and frequently fight among each other with more vigour than they fight the mainstream, around issues that seem to resemble ancient debates about the number of angels that can dance on a pin.

This fragmentation derives precisely from the substitution of the methods of neoclassical debate for genuine scientific discourse, and the way that this intersects with the organisation of the economics profession. Instead of argument with respect to evidence, simultaneism substitutes argument with respect to authority and pure logic. The attempt which is made by each dissident school, therefore, is to set itself up as a unique source of authority, with graduate schools, professorships and prizes. But this necessarily sets it against all other schools. Since every such individual school necessarily offers one-sided and partial insights, and since the funders of economics in any case always promote the more comfortable,

equilibrium variants in each school, the apparatus of the economics profession works very effectively to prevent the evolution of science.

The alternative requires what we term *critical pluralist engagement*; a genuine confrontation in which each is prepared to examine, and confront, the concepts of the other without eliminating them a priori as logically illegitimate. It also involves a materialist recognition that economics in a market economy *cannot* function as a science. The most vital requirement of a scientific economics is therefore a paradox: it is the categorical denial that the profession of economics can function as a scientific institution.

This is not a post-modernist view. First, a scientific strand of thinking may exist within economics, as the counterpart or extension of the greater scientific endeavour outside it which is created by the desires and efforts of ordinary people to understand and change their circumstances. But it can only do so if it recognises and promotes the most fundamental scientific principle of all, which is that it cannot itself judge its own conclusions.

Equally we do not argue that all points of view are equally valid or that no criterion of truth exists. We argue, that the question of validity, and the question of truth, may not be settled from within the profession of economics. The practice of heterodox economics should aim at making all the various points of view, and their conclusions, available to the general public: to restore to the public the right to make its own judgements on matters of economic theory and policy. This is not merely a scientific, but a democratic duty.

This alternative involves, as does any atheism, a militant battle. It is not merely sufficient, in an institution whose social function is the suppression of truth, merely to speak the truth. The simultaneist paradigm rebels against critical pluralism from the core of its very methodology, because it finds it impossible to conceive that it may be possible to think about the world differently. This leads us to conclude that the principal task, in developing a scientific alternative, is to develop an effective and pluralist dialogue between temporalist currents. We agree with the 'Weintraub-Davidson-Eichner' project to create such a dialogue but with one obvious amendment: hitherto there has been no temporalist Marxism. Now there is.

We do not argue to exclude or denounce simultaneist ideas from this dialogue. The problems arise only because simultaneist thinkers systematically tend towards solipsism. This makes it very hard to hold a discussion. We propose only, therefore, that there are rules of discourse to establish, to prevent a recourse to tradition, logic and authority as a substitute for genuine open engagement.

Nor is it our intention to found a new source of authority. We do not demand either that all economics must agree with us, or that it must treat our reading of Marx as the only one possible. We *do* demand that economics cease presenting its own version of Marx as the only true version: this is the true dogma. We *do* demand that it cease suppressing alternative interpretations of Marx, and we do demand that it abandon its unfounded claim that Marx can be ignored or re-interpreted, because of errors which, in these alternative interpretations, do not exist. A scientific audience is required to accept that our argument is *legitimate*; that is, it is possible to think in the way that we propose, that it is possible that Marx, too, thought in this way and that, if he did think this way, he has a great deal more to tell us about the world we now live in than his unfortunate detractors.

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