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## **IF THEY'RE SO RICH, WHY AIN'T THEY SMART?**

Another prelude to the critique of economic theory

Alan Freeman, University of Greenwich, March 7 1997

This paper was originally presented to the 1997 conference of the European Association for Evolutionary Political Economy (EAEPE). I am publishing it on SSRN in the light of renewed relevance of its critique of the economics profession, and for the historical record, in the wake of the 2008 financial crash and ensuing Great Recession.

Economics, I argued at the time, has lost its way and has proven itself incapable of reasoning or explaining the world we observe. Increasingly, it plays a religious rather than an explanatory role. The reason for this is the substitution of a dogma – equilibrium, or comparative statics – for scientific enquiry.

This is illustrated by a detailed discussion of the profession's treatment of Marx's value theory. It has substituted, for Marx's own theory, an equilibrium 'reading' of Marx that removes, from the theory, its capacity to explain crisis.

The article was written at a time when an alternative reading of Marx – which became known as the TSSI or Temporal Single System Interpretation – had been made available to the academic world, at a time when there were still grounds to expect that this discovery might be received in a scientific manner.

The article presages subsequent development of the debate, in the course of which the defenders of the equilibrium reading have systematically refused to engage with the temporal alternative. The fact that the temporal reading was not accepted, it argues, is evidence of a profound malaise at the heart of economics, to which academic Marxist economics is no exception. The equilibrium paradigm is at the root of what David Colander and his collaborators, following the financial crash, rightly labelled the 'systemic failure' of economics. It is what renders economics impervious, theoretically, to theoretical comprehension of the world around it.

In the dock, the paper argues, is not Marx but Marx's target: the economics profession. This is not just a question for scholars but millions – probably billions – of victims of the market economics of the 20<sup>th</sup> Century. If the conclusions of this paper are true, then a very powerful weapon is available to these victims, of which they have been deprived for more than eighty years by the neoclassical reading of Marx: Marx's own ideas.

# IF THEY'RE SO RICH, WHY AIN'T THEY SMART?

Another prelude to the critique of economic theory

Alan Freeman, University of Greenwich, March 7 1997\*

Draft. Please check to see if a more up-to-date version exists before citing

Myself when young did eagerly frequent  
Doctor and Saint, and heard great argument  
About it and about, but evermore  
Came out the same door as in I went

– *the Rubáiyát of Omar Khayyam*

## *A watershed in the discussion*

After eighty years, recognition is dawning that values can be transformed into prices consistently with all Marx's contested assertions. For twenty years the procedure, though freely available,<sup>1</sup> has been ignored, suppressed, or both. One indicator of four years' progress, and of the debt we owe to those who have started to study this procedure seriously, is I can at last say this here without spending twenty pages proving it. One indicator of how far there is to go is that before discussing the next step, as in a normal discourse, I must spend the same twenty pages saying why it matters. I have therefore produced this, separate, paper, on the meaning of the discussion on the interpretation of Marx.

## *What's it all about?*

The debate on transformation and the rate of profit is often presented, as in Brewer (1995), as a sectarian squabble over the legacy of an obscure 19<sup>th</sup> century 'minor post-Ricardian'. I will begin with a novel idea: its importance is not what it tells us about Marx, but what it says about economics.

Steedman (1977) cogently explained that for 80 years the best brains of economics thought about the argument against Marx and failed to find the logical flaw in it. Evidently the final outcome of this thinking is that they got the wrong answer. Does this 'prove Marx right'? No; but it does tell us something else: all hitherto existing economics got it wrong.

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\* I have tried to acknowledge specific contributions in the text. Haste may have prevented doing this adequately. Among many omitted that I would like to thank are the many contributors on the OPE discussion list, and all the participants in present and past IWGVT conference who have made this discussion possible.

<sup>1</sup> The New Interpretation dates to the 70s and, we shall argue, opens a path to the Single-System interpretation which any free-thinking person can tread. In the early 80s Husson published in French and Savran independently described but could not publish a Temporal Single-System (TSS) interpretation. Wolff, Callari and Roberts in 1982 published the earliest Simultaneous Single-System (SSS) interpretation, and Guglielmo Carchedi published elements of a temporal version; Robert Langston arrived at a similar solution as is clear from his chapter in *Marx, Ricardo and Sraffa*. Ernst demonstrated the dependence of orthodox refutations of Marx's tendency of the rate of profit to fall (TRPF) on simultaneity in the early 1980s. Andrews also established the centrality of the equilibrium assumption in Okishio's result in 1984 and Naples' non-equilibrium critique of Bortkiewicz was published in 1985. By 1986 – more than ten years ago – a temporal proof of the internal consistency of Marx's transformation had been presented by Kliman and McGlone. Moreover any systematic extension of the iterative procedures rediscovered by Shaikh and Morishima (and already presented in the 1930s by Shibata) leads, as soon as historical time replaces logical time in a coherent way, to a confirmation of Marx's transformation as evidenced in Giussani (1991). Kliman (1988) applied a fully temporal approach to demonstrate the consistency of Marx's formulation of the TRPF. Moseley to my knowledge began working in a framework close to SSS in the early 1990s. In 1991 I presented a circuit-of-capital simulation of reproduction with technical change confirming Marx's transformation and yielding a cycle based on turnover time, and a general mathematical formulation in 1994 which was published in 1995. Maldonado-Filho circulated a temporal defence of Marx's transformation procedure and profit rate measure in 1986 and a revised version to the ASSA in 1995, which was apparently rejected by RRPE.

Now, I was brought up a scientist, for good or ill. The only positive lesson I retain from positivism – and from eight years of math and formal logic – is that when you get something wrong, you ask why. Economics claims to be a science. It spent eighty years and a lot of money proving Marx wrong; the answer was staring them in the face, and they missed it. How?

As Marx noted, in competition everything appears in reverse, and so it is with economics. To put the question the right way up, I want to ask why economics felt it so important to ‘prove’ a minor Post-Ricardian wrong in the first place. Was it something to do with Marx, or something to do with economics? Let us first assess Marx’s place in the history of economic thought dispassionately. Foley (1995) refers to the profession’s ‘chronic difficulty in coming to terms with Marx’. Can we explain this? I don’t think it is hard to understand: Marx was its most ferocious critic.

Marx was the most radical and intransigent antagonist, not just of what the economists said, but of their profession as such. He did not just say they were wrong; he said they could never get it right. He, alone among economists, said a science of economics was impossible in a market economy. Because money is the alienated product of social relations, his radical programme for overturning market relations included the thesis that economists would never as a body see them as they really were.<sup>2</sup>

Whether false, true or socially relative, I think this has all proved too much to stomach for the profession of economics, which goes to extraordinary lengths to dismiss these ideas and their author. Now, however, it is for *other* reasons – which I shall examine – in crisis. It has called the tune for 80 years and the piper has come for the debt. That, I think, is the reason for the present debate.

### *Man bites dogmatist*

Next let’s ask what led to the current re-evaluation. In welcoming the generosity of the few who take the new work seriously, I must say that I am in all honesty underconvinced that the change was the product of self-correcting tendencies in the profession. Things began to move when the worm turned; when isolated, ignored, rejected, and outraged individuals decided to work together to promote the alternatives which orthodoxy, with all its resources, refused to contemplate. We have had four years of IWGVT conferences, of patient organising, corresponding, listening, discussing and lobbying. Our manner of speaking, our insistence on being heard, our refusal to take no for an answer, did not always constitute civilised salon conduct. We admit it, we are the heaven’s devils<sup>3</sup> of the single-system set, the punks of political economy. But if we hadn’t done it, would the present rethink be happening? I think not. It took an *exogenous force* to confront our profession with conclusions it ignored for eighty years.

To summarise: first, the best brains of economics studied their arch-critic for 80 years and got it wrong. Second, the re-examination came from outside. Why? The moment I met this question, I concluded that not Marx, but economics, was in the dock.

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<sup>2</sup> “Bastiat does not represent the last stage [of vulgar political economy]. He is still marked by a lack of erudition and a quite superficial acquaintance with the branch of learning which he prettifies in the interests of the ruling class. His apologetics are still written with enthusiasm and constitute his real work, for he borrows the economic content from others just as it suits his purpose. The last form is the *academic* form, which proceeds “historically” and, with wise moderation, collects the “best” from all sources, and in doing this contradictions do not matter; on the contrary, what matters is comprehensiveness. All systems are thus made insipid, their edge is taken off and they are peacefully gathered together in a miscellany. The heat of apologetics is moderated here by erudition, which looks down benignly on the exaggerations of economic thinkers, and merely allows them to float as oddities in its mediocre pap. Since such works only appear when political economy has reached the end of its scope as a science, they are at the same time the *graveyard* of this science.” Marx, *Theories of Surplus Value* Volume III:502

<sup>3</sup> Like Hell’s Angels, but worse. Angels are *nice*.

And this leads to a third question: if economics got this one wrong, what else? Would you buy a used car from it? Is there *anything* we can trust in the concepts, logic, procedures and quantitative measures we inherit from it – including our own unreconstructed prejudices? This paper reconsiders Marx’s prime project – the *critique of political economy* – and proposes to relaunch it. We should re-examine all these concepts and methods, enquire into their origin, and determine the effect when they are applied as policy. That is where I think the debate needs to go and the basis of this contribution.

*Whose line is it anyway?*

That leads us to question more closely the origin of those interpretations of Marx in which the errors appear. Bortkiewicz – more honest than many successors – introduced his proposal 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)

Bortkiewicz’s reading, the standard, is consciously and explicitly Walrasian. It sets out to remove the acknowledged principle of temporal succession, which runs like a red thread through the whole of Marx’s writings, and replace it with an alternative, neoclassical principle – simultaneous causation.

In our view, this fact has not been honestly faced. The ‘correction’ which fooled our best brains for eighty years alters not only Marx’s calculation but his *method*. It absorbs the most trenchant critic of Say’s Law that economics has known into the framework of general equilibrium – the only framework that can support the subjective determination of value, on which all neoclassical thinking rests. This is the economic equivalent of reading Cromwell as a confused monarchist. You can just about square it with the record, but it hardly explains the English Revolution.

The principle of simultaneous causation appears nowhere in Marx and moreover this is beyond dispute; a jesuitic search may find tenuous evidence for ‘equilibrium’, but nowhere will you find simultaneous causation. It is an alien imposition, a reinterpretation of Marx according to neoclassical principles. Moreover we know, from the history of our subject, the origin of Marshall’s insistence on this principle. Admirably charted by Dobb,<sup>4</sup> it arises from Marshall’s

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<sup>4</sup> Dobb (1973:185) wrote: “In the second edition [of Jevon’s *Theory of Political Economy* - AF] he formulated the curious restatement of his theory in abbreviated form upon which Marshall was to comment so adversely:

Cost of production determines supply  
Supply determines final degree of utility  
Final degree of utility determines value

On this Marshall, who had reviewed Jevon’s book rather ungenerously (\*Keynes says ‘grudgingly’) in the *Academy* for April 1972, made this comment (*Principles* Appendix I, p818) ‘Now if this series of causation really existed, there could be no great harm in omitting the intermediate stages and saying that the cost of production determines value. For if A is the cause of B, which is the cause of C, which is the cause of D, then A is the cause of D. But in fact there is no such series.’ After propounding his own view of ‘mutual determination’ of ‘supply price, demand price and amount produced’ (which he regards as ‘the greatest objection of all’ to Jevon’s presentation), he ends by inverting the order of Jevon’s statement (‘a catena rather less untrue than his can be made’):

Utility determines the amount that has to be supplied  
The amount that has to be supplied determines cost of production  
Cost of production determines value

because it determines the supply price which is required to make the producers keep to their work”

criticism of Jevon's 'Catena of causation'. This implied, because of temporal succession, that cost of production determined marginal utility. Simultaneous causation had an ideological purpose: to rescue the subjective determination of value from an insoluble internal contradiction. Yet for eighty years, almost no-one has questioned the fact that the standard which passes for 'Marxism' is founded on this ideological principle, or asked if the source of the error might be this ideological principle, rather than the work of Marx.

### *Concerning the right to fly on broomsticks*

This gives the current debate an inverted form. Orthodoxy responds to its critics like mediaeval religion which fashioned witches – daemonic representations of its opponents – charged them with its own worst secret longings, guilts and fears and so terrorised the people out of heresy. The heretics then had to defend what they never took part in. This has a parallel in the stance of latter-day Marxists who in effect speak up for the right to fly broomsticks. We have been obliged to point out that no-one actually flies broomsticks, which makes the debate seem like an argument between witches and their critics. But its real content is resistance to persecution and the religious order which conducts it, the Worshipful Company of the Defenders of Money.

To recap: the reading of Marx which is without doubt inconsistent, redundant, and wrong, was a re-interpretation of Marx from the standpoint of the founder of neoclassical economics, Léon Walras.<sup>5</sup> Let's call things by their names. What has been refuted is the neoclassical reading of Marx.

Since I expect this to cause personal distress I'd like to be precise about it. First off, a definition. By *neoclassical* I mean the specific combination of simultaneous causation with a use-value standard of value. The standard reading of Marx is generally presented as the negation of subjective value determination. I shall prove in this paper that this is not the case, and that simultaneous causation demands a use-value-based standard, the standard which the subjectivist enterprise actually yields, and which the normal reading of Marx unconsciously accepts and consciously defends.

Second, I do not claim a neoclassical argument is necessarily wrong. Some of my best friends are neoclassicals. Every argument stands on what it is, not where it comes from. Indeed, I have better discussions with neoclassical friends in which we each simply say what we think, discuss the evidence, determine what where we differ, and decide on joint action. The difficulties arise entirely when it is claimed that an argument originates from somewhere other than whence it really came.

Second it does not brand those who use such arguments as neoclassicals. An argument is an argument and it can be used by anyone.

Most important, it does not rule the neoclassical reading out of court as a possible interpretation of Marx – any more than our own. On this there seems to be an extraordinary level of misunderstanding. Several readings of Marx exist; a main purpose of our group was to construct an space to assess, on factual evidence, which of them makes the most sense, ending the repressive culture which rules the embarrassing ones out of order before the discussion begins. I think our

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<sup>5</sup> John E. King (1996) casts doubt on Bortkiewicz's affiliation to Walras. Jaffé (1965 Vol II:230) records that Bortkiewicz, a lifelong admirer of Walras, corresponded with him from the age of nineteen. His first letter to Walras begins: "Your writings, sir, have awakened in me a lively interest in the application of mathematics to political economy, and has pointed out to me the road to travel in my researches into the methodology of economic science."

conferences have been something of a breakthrough in building a genuine dialogue between these several different readings.

It is no part of this project to establish a new canonical reading or ‘direct line’ to Marx. On the contrary, everyone I know who shares my general way of thinking wishes to ensure that *no-one* should ever again claim special authority from Marx. But this *also* means that never again should a scholarly work refer to ‘*the*’ Marxist Theory of Value without saying *whose* Marxist Theory of Value is under discussion. The mere act of writing down these words in this way *already* asserts the dogmatic claim that there is in existence such a canonical theory. That is the entire source of the heat in this discussion and it is a gross and confusing distortion to read resistance to it as an attempt to establish a new dogma.

We are for the end of all dogma. We wish to end the existing doctrinal, dogmatic practice of claiming authority to speak for Marx. *But the only current claimant of a ‘line to Marx’ is the existing, neoclassical, reading.* This has a place – alongside and equal to all others. Its claim to be the only such, to confer the accolade of scholarship on dialogues that make no reference to any other, and on this basis pass solemn judgement on Marx, is a scandalous violation of the rules of scholarship and should cease.

The issue is more serious than the rights of the aggrieved: every time someone refers to ‘the’ Marxist Theory of Value, orthodoxy escapes its part in the authorship of this theory. If, after 80 years, orthodoxy has been proved wrong, then it is too convenient by far to say that the subject of its errors was not a debate with its critics, but between its critics. We repeat, neoclassical economics is in the dock; it is not acceptable to sneak it back into the jury because the judge is out to lunch.

In conclusion the debate about the interpretation of Marx is not a discussion within Marxism. It is a debate *between economics as a whole and Marx’s critique of it.* This is not a squabble among the Readers of the Lost Ark but a debate on the future of economics. To conceive it as an exercise in doctrinal wrangling is a debasement of the issues at stake.

## The Critique of what by whom?

Wenn ein Preusser hinfällt, steht er nicht auf, sondern sieht sich um, wer ihm schadenersatzpflichtig machen kann

When a Prussian makes a mistake, he does not stand up, but looks round for someone to blame

– Kurt Tucholsky, *Schnipseln*(1931)

*The heretic, the dogmatist, and the seeker after truth: what’s the difference?*

Brewer (1995) wryly observes that:

Marxists have a ready explanation for the neglect of Marx’s work by ‘bourgeois economics’. Consciously or unconsciously, it is said, economists identify themselves with the existing system. They are afraid of the revolutionary implications of Marx’s ideas and therefore choose to ignore them

This sets the scene for a universal theme; the Marxists evidently cannot be proved wrong. They have a dogmatic, self-justificatory defence: they are rejected because they are hated. No doubt distastefully anti-social stances have been observed among Marxists but the argument points both ways. In a clash of doctrines it cannot be assumed that the dogged are guilty of dogma; they might be guilty of heresy, or, heaven forbid, truth. The test of dogma is not persistence. This would be ridiculous – how does it distinguish dogma from truth? The test of dogma is reaction to error.

The new approaches arise because a tiny group of thinkers *accepted* Steedman's criticisms, took the contradictions seriously, chose not to wish or explain them away and launched instead the rather lonely programme of examining their own preconceptions to see where the errors came from. They overturned all common prejudices about Marx and constructed a reading which, they then found, not only corrected the supposed errors but led onwards to a deep and devastating criticism of neoclassical theory, demonstrating the neoclassical origin of the standard interpretation of Marx and re-establishing the rigorous foundation of all Marx's discarded criticisms of political economy. This is a scientific, not a dogmatic reaction.

Now it's the other side's turn.

*Source and sorcery: an update on the Samuelson eraser*

It is very convenient that the version of Marx's critique which Brewer chooses to study is that constructed by neoclassical economists. For, this version preserves intact all the mistakes of which Marx is accused. Convenient, also, that the only possible logical explanation which this leaves for the economists' rejection of Marx – the Marx which they themselves constructed – is that Marx was wrong. How inconvenient it would be, if Brewer's defence of neoclassical economics was measured against interpretations of Marx in which these errors do not appear. How fortunate that these interpretations do not figure in the debate. He writes as follows:

The issues involved in the transformation problem are now well-known and can be summarised briefly. Marx used a two-stage procedure to get from values to "prices of production" (equilibrium prices).

As authority he cites Howard and King and Desai and for dissenting views Morishima, Roemer and Steedman. The 'dissenting views' of at least sixteen unmentioned researchers are that:

- (a) Marx did not use a two-stage theory but a single-stage transformation

of these, all but four maintain that:

- (b) Marx did not produce an equilibrium but a successivist [sequential, temporal] solution.

Together, (a) and (b) provide a fully coherent logical confirmation of all Marx's disputed assertions. This is the true 'eraser' technique: to prove Marx has no impact on economic thought, erase all the economists who think about him. Brewer's is a self-contained and self-referential defence of neoclassical economics, by neoclassical economics, for neoclassical economics. The same line of argument would have confirmed the sun goes round the earth in 1600, since the priests had rejected the contrary for the eighteen hundred years since Aristarchus of Samos first asserted it.<sup>6</sup>

*Your call, guys*

A nondogmatic reaction to the discovery of an error in the standard interpretation would be openly to acknowledge the errors in this interpretation, and enquire as to all the sources of that error. Is this what Marx's critics do? No, they act as if the error did not exist.

As Brewer points out, judgement in the face of intransigence requires an independent standard of assessment. Unfortunately, he does not actually provide one. Instead he argues – again a common theme – that this standard must exist because (in essence) a hundred thousand economists can't be

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<sup>6</sup> To which Cleanthes responded Aristarchus should be tried for impiety 'moving the Hearth of the Universe, because he tried to save the phenomena by the assumption that the heaven is at rest, but that the earth revolves in an oblique orbit, while also rotating about its own axis' (Sambursky 1987:91)



wrong, a contestable assertion. His argument is as follows: the economists have surely rejected Marx because Marx is wrong, and the proof is that Marx is not rejected elsewhere.

This kind of explanation may have some force, but it cannot account for the glaring contrast between economics and other disciplines. In history, political science, sociology and so on, while Marxist theories have not generally won the day, they have been taken very seriously and have had a major influence on the development of ideas. If a fear of revolution is the main reason Marx has been ignored by economists, he would have been ignored by practitioners of other disciplines as well

This leaves out a more venal possibility: perhaps they reject Marx more vigorously than anyone else because they make more mistakes than anyone else. With embarrassing failures to account for and material interests at stake, they might well have trouble facing a quarrelsome critic. Might it not just be easier to eject him from the performance?

### What does economics offer?

We can't solve problems by using the same kind of thinking we used when we created them

– Albert Einstein

*In economics, everything appears in a mirror*

In the apparently obscure debate about 'which interpretation corresponds to what Marx says' there lurks a different and more substantive issue than doctrinal fidelity. Brewer's case – like all refutations of Marx – rests on making neoclassical economics not just the judge and jury of Marx, but the defence and prosecution. As we shall show, a neoclassical concept of Marx lies at the heart of the very errors which the neoclassicals have found in Marx.

But is it only Marx who offers a critique of equilibrium? And is it only Marx that the profession rejects? Brewer's account would be rational if Marx, and only Marx, was excluded by mainstream orthodoxy. But this is not the case.<sup>7</sup> Economics is the least tolerant of professions. Its heterodox critics, above all non-equilibrium critics, receive little or no recognition. Why?

*Neoclassical dogma, meet reality. Reality, meet neoclassical dogma*

Happily, science suggests a better criterion for judging theories than Pharisaic scrutiny: comparison with what actually happens. 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 explains 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.

We can add some more. They failed to predict Black Wednesday, wrongly claimed a global free market would lead to world prosperity, and through the IMF and World Bank imposed advice which has led to economic catastrophe, famine, war, havoc and genocide. On the basis of current

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<sup>7</sup> See for example the exhaustive survey of the UK Research Assessment Exercise by Harley and Lee (1995). Note also the prodigious growth of ICARE, the International Confederation for the Reform of Economics.

orthodoxy, unemployment in Europe hovers at forty million and fascist parties are either in government or second-line opposition in both Italy and France. IMF policies, based on impeccable economic advice, led to the collapse of the price of Rwanda's output, in return for which Western powers placed \$200m in hard currency in the Rwanda's central banks which was promptly used for the massacre of a million people.

This is not a salon discussion. This is not a 'personal' issue. If we occasionally get angry, no-one should think we do so without cause. These mistakes were neither necessary, nor did everyone make them. Anyone with an open mind can get it right. All they have to do is rid themselves of their profession's prejudices. Thus Ken Livingstone MP, writing to universal ridicule from the educated:

it is clear that the government will be unable to sustain the DM2.95 parity set for ERM membership. Devaluation, a market forced attempt to make the economy more competitive and increase its capacity to export, is inevitable. The only question is how long before the devaluation and whether it will occur before or after the general election (Socialist Economic Bulletin Research Paper #1)

Within a year the ERM went into a tailspin and Britain came spiralling ignominiously out of it. Nor are we discussing measurement errors or tactical mishaps. The failures of the profession are deeply rooted in the theoretical preconceptions of textbook economics. Consider the textbook theorem on trade, Samuelson's factor-price equalisation theorem (Lindert 1986:74)

free trade will equalise not only commodity prices but also factor prices so that all labourers will earn the same wage rate and all units of land will earn the same rental return in both countries regardless of the factor supplies or the demand patterns in the two countries

Of course, we all know that even in the fifties the empirical falsity of this thesis was already widely known to economists. As Lindert writes (op cit)

Even the most casual glance at the real world shows that the predictions of the factor-price equalization theorem are not borne out. One of the most dramatic facts of economic development is that the same factor of production, for example, the same labor skill, does not earn the same pay in all countries.

No doubt this explains the following:

In the 1980s, the political ascendancy of conservative governments in the United States, Britain and West Germany brought with it a neoclassical counterrevolution in economic theory and policy. Neoclassicists obtained controlling votes on the boards of the world's two most powerful international agencies – the World Bank and the International Monetary Fund... The neoconservatives argue that by permitting free markets to flourish, privatizing state-owned enterprises, promoting free trade and eliminating the plethora of government regulations and price distortions in factor, product and financial markets, both economic efficiency and economic growth will be stimulated. (Todaro1994:86)

By 1989 Peter Rogers and Christopher Huhne in the Guardian were moved to comment:

Six years ago, when we first published a map of the world's debt league, the consensus among bankers was that the problem would take until the end of the 1980s to solve.

They could not have been more wrong. As the revised map we publish today demonstrates, the problem has become worse, not better, as the end of the decade approaches. A depressing consensus is emerging that it will take at least another 10 years to resolve. Debt has risen even faster than the growth of exports needed to pay it, so that it has become harder to pay the interest. Living standards have fallen, in some cases drastically, and poverty has intensified. The prospect that debts will be serviced is so little that banks are willing to accept less than 50 cents in the dollar on average to cancel or exchange loans made in the heady days of the lending free-for-all... Worse still, there has been a huge financial transfer from the poor to the rich industrial nations, of \$43bn in 1988 and over \$140 bn in the last five years.

There is no let-up. At the end of the dreadful Victorian epoch in which Doctor Marx's followers allegedly still live, the richest country in the world was 23 times better off than the poorest. By

1990, according to the UN, the factor was 142. In 1980, the beginning of the globalisation offensive, the average GDP of the USA was 40 times that of India. Seventeen years later, the factor is 80.

*What kind of research do we need?*

Let us now suppose that the working economists involved in these failures worked for an ordinary company, and let us suppose that on the basis of their past record, they applied to the company for a grant for a further research programme.

I think if the company directors valued their lives, never mind their assets, they would reach the following conclusion: all the research leaders who made these recommendations should promptly be replaced by their most vociferous critics, if any can be found. These critics should be strictly forbidden to issue any further policy recommendations pending completion of a single, unified research programme calling forth the greatest talent the company has to offer, namely, to find out how these maniacs got everything so wrong for so long, and got paid for it into the bargain. They would tell their economists to put their money into the study of *their own* ideas and errors and not come back until they had explained them. They would invest, in short, in the critique of political economy.

**What does Marx offer?**

The moving finger writes, and having writ,  
Moves on. Nor all your piety, nor wit,  
Shall lure it back to cancel half a line,  
Nor all your tears wash out a word of it

– *The Rubáiyát of Omar Khayyam*

*The real and the ideal in the world of equilibrium*

Happily for relations with colleagues, my immediate research proposal is more limited: it is simply to examine more closely, and with a teensy bit more humility, the work of the man who first suggested that results like those above were likely. It would start from the following: what has the profession, in order to exclude Marx's insights, excluded from its thinking?

There has been some discussion of scorecards. But so far, the scorecard has been applied only to Marx. Let's put *economics* to the test. Let us take a calm look at some of the principal propositions with which – it is not disputed – Marx is associated. Since, as Brewer kindly points out, Marx has no influence on the profession, we trust we can assert without challenge that it rejects these propositions. Let us see what it chooses to ignore. This includes:

- Marx's critique of Say's Law, the 'metaphysical equilibrium of buyers and sellers' or the form in which the dogma of equilibrium was in his day expressed;
- Marx's 'dogmatic' assertion that the free market produces long-term unemployment;
- Marx's critique of both banking orthodoxy and banking reform;
- Marx's critique of the quantity theory;
- Marx's denial of the long-term viability of financial regulation as a substitute for a direct overturn of the market in investment goods;

- Marx's distinction between real and fictitious capital, the basis of his assertion that financial crashes and credit crunches were a necessary product of the market;
- Marx's 'logically false' proof that accumulation lowers the profit rate by increasing the value of capital stock leading to periodic accumulation slowdowns;
- Marx's insistence on the endogenous basis for the business cycle – let's not forget that for thirty years the profession stoutly maintained this cycle had vanished.
- Marx's proof that capitalism unavoidably creates a permanent class of workers and a permanent class of capitalists;
- the Marx-based critique of neoclassical trade theory and its proof that growing inequality between nations is a necessary consequence of globalisation;

This strikes me as a pretty useful wish-list for anyone setting out to find out what's wrong with economics. The question 'what's it all about' can be rephrased like this: Marx offers several clear, empirically-verifiable criticisms of the economic theories of his day; the same dogmatic and doctrinal assertions that led to the catastrophes of his day are endlessly re-incorporated into new theory; these same assertions form the basis of most current policy; Marx's forecasts of the results remain, a hundred and thirty years later, unbelievably accurate.

Is not possible that the odd economist might benefit from a dispassionate attempt to discover how he reached these conclusions? Is it not relevant to reconstruct the reasoning, the method of enquiry, and the conceptual framework which allowed him to draw these conclusions?

*Marx not wrong<sup>8</sup>: why it matters*

I hold a simplistic view of the purpose of debate: it is to criticise one's own thinking by examining the opposing view. The most fruitful way to debate is to *understand* what you oppose, which I take to be the scientific method. This is not the reaction of orthodox economics, which approaches its critics, frankly, like a tomb-robber turned trophy-hunter. It seeks only what it can drag back to domesticity and what it cannot subdue it kills, stuffs and mounts to boast of over brandy, savouring the quiet *frisson* of knowing that were it alone with the live beast in the jungle it would not last an hour.

The prolonged enterprise of showing Marx not merely wrong but 'inconsistent' has a very specific function which is insufficiently recognised.<sup>9</sup> It is not a 'normal' discussion tactic but has a profoundly anti-democratic content. Its function in the debate has been to *exclude* consideration of Marx's arguments or evidence.

Marx must be 'shown' inconsistent because economics cannot defend its *results* against his critique, and therefore demands an excuse for refusing to confront his *concepts*. In fact the best way to benefit from any critique is to understand it in its own terms; this is exactly what economics cannot afford to do, for it would then be plain to the whole world that the entire edifice stands on nothing. It is therefore a serious misunderstanding to construe the interpretation of Marx as

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<sup>8</sup> A feature of economics' terminal logical confusion is that unlike logicians, lawyers and the unlobotomised public, it cannot distinguish the phrase 'not wrong' from the word 'right'. No-one claims the current debate proves Marx *right*. Pleading not guilty is not the same as claiming the accused is in fact God. At stake in the present debate is a very specific charge, repeatedly hurled at Marx for 80 years, that his equations don't add up and value is inessential to his theory. They do, and it isn't. The charge has been thrown out. We are suing for malicious prosecution, not beatification.

<sup>9</sup> I would like to acknowledge Andrew Kliman's absolutely justified insistence on this point.

doctrinal or hermeneutic and the profession only sees it in this way because its own tradition is doctrinal through and through. At the core of this tradition lies a blank refusal to discuss *concepts*, substituting models, nostrums, and alchemical equations from which it can derive the missing concepts, for which the sole criterion of acceptability is to make the equations work. Yet it never assesses the *object* of these frankly superstitious models, nostrums and equations. It never asks what the variables *mean*.<sup>10</sup> Marx does ask what they mean: what better way – indeed, what *other* way – to duck his questions, than to ‘prove’ his equations don’t work?

Economics is literally the science that does not know what it is talking about. Indeed it is boastfully proud of this. Though this seems a difficult idea for the profession it is central to this paper. I will illustrate with the two concepts most central to the whole edifice: the labour force and the price level.

## Concepts versus models in economic debate

The critique of bourgeois ideology begins with the critique of common sense

– Antonio Gramsci

### *What is unemployment?*

On 20<sup>th</sup> August Clinton decreed a two-stage increase in the minimum wage, the first since 1989. Angus Deaton, William Church Osborn Professor of Public Affairs, Professor of Economics and International Affairs at Princeton University and generally considered a serious honcho on both sides of the pool, reported in October to the Royal Economic Society (of which he is a former president):

In Congress, the measure attracted bi-partisan support, as had previous minimum wage hikes. In the Senate, the bill was so popular that Republican Majority Leader, Trent Lott, held the measure back as a reward for his colleagues if they completed other measures before the summer recess. But the enthusiasm of the voters, 80 per cent of whom favoured an increase ... is not echoed by the majority of American economists. Although many support an increase in the minimum, 90 per cent believe that raising the minimum wage will lead to higher unemployment.

The Clinton administration’s support for the measure leant on detailed empirical evidence compiled by David Card and by Paul Krueger, chief advisor to Senator Edward Kennedy. Their *Myth and Measurement* (1995), a detailed study of actual changes in the minimum wage, suggests these had little or no effect on the employment of low wage workers. Deaton describes their results as

convincing and straightforward, so much so that their import is clear to policy makers and to the media.

The US profession seemed strangely unmoved. ‘We have been disquieted,’ remarks Deaton,

by the level of public and private vituperation that has greeted [this] evidence. The reception accorded to the Princeton economists by their colleagues in other institutions is what might be expected by the friends and defenders of child-molesters, and the public outcry has been no less extreme.

Paul Craig Roberts used his regular *Business Week* column to demand the American Economic Association withdraw its most prestigious award – the John Bates Clark medal – from Card,

an economist who does not believe in the law of demand, the cornerstone of economic science

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<sup>10</sup> In this I fully agree with the criticism mounted by writers such as Steve Fleetwood.

A *belief* is the cornerstone of a *science*? Card's sin is not what he sees, says or does but what he thinks. Is this some accidental polemical excess? We don't think so. It is the normal method of everyday economics and a natural consequence of its conceptual framework.

To what 'demand' does Roberts' law apply? Like all economists he does not mean actual demand or actual supply, observed in the real economy. He means theoretical demand and theoretical supply, expressed in curves which – as Frisch stated when he formulated the identification problem – can never actually be observed. His 'law' refers to a hypothetical equilibrium that never happens. What we *observe* is 'imperfect competition', an 'adjustment', 'imperfect information', a 'shock' or 'exogenous' – any excuse to avoid calling it what it really is. The language speaks for itself. Who ever saw perfect competition? What information is perfect outside Nirvana? What defines Black Wednesday as 'exogenous'? Adjustment towards what? The very words betray *concepts defined by an ideal*.

In short, the standards by which economics judges that 80% of the American people are wrong (we wonder what the Brewer criterion implies for this fact) is that what they actually observe in real life does not correspond to the purely ideal situation which is the stock-in-trade of the profession.

Roberts' onslaught cannot be countered with another, alternative ideal model. This leads to a war of models; a theological dispute between two world systems neither of which connects up with the world we live in. The origin of the doctrinal method in economics is the method of debating around purely ideal models in which the variables are defined by the models instead of, as in all genuine sciences, the other way around. The response is to question the *meaning of the terms*. The refutation of Roberts is that his definition of unemployment is obscurantist, ideological and corresponds to nothing that actually happens to the good people of the USA.

Questioning the meaning of terms is not a substitute for empirical work; it is what empirical work ought to consist of. The first requirement of study is clearly to define the object being studied. The first requirement of measurement is to state what is being measured, which is not defined by the measurement. In short, a procedure does not define a concept.

Genuine empirical work prescribes a clearly defined relation between procedures and observables, sensuous aspects of reality which ordinary people can verify for themselves. This is what the model-builders and the datacrushers alike fail to do. Econometrics has become contentless world-building, Sim-City for the big boys. The issue is that when the people of the USA say they're unemployed, Paul Craig Roberts says they ain't. That not only gets the point across a damn sight quicker than fifty slick models, it is the correct scientific criticism to make.

#### *Where do the unemployed come from? Early Keynesian debates*

The definition of unemployment is a very old issue. In normal usage, it means what it says: there are people who are fit to work but don't. Originally no clear distinction was made of 'voluntary' from 'involuntary' unemployment. According to Kahn (1976) Pigou introduced this in 1914 to distinguish between two kinds of inactivity: leisure, which was voluntary, and unemployment, which was not. 'Involuntary' unemployment thus meant 'unemployment'. However Pigou defined unemployment using a distinctively subjective notion: it consisted of people who *desired* to work, rather than those *capable* of work. This is the basis of the textbook definition of the labour force as people 'seeking work'.

As the boundaries of the welfare state fall back, layer after layer is redefined out of the labour force by successively more humiliating tests of ‘willingness’ to work.<sup>11</sup> One only has to compare this with the criterion for the draft; if the workforce was extended to everyone who failed to prove a conscientious objection to work, it would undergo a miraculous expansion. In the apparently pedantic discussion over the word ‘employable’, we find that the lives of millions are at stake. So let us probe further.

The history of the concept is traced in a fascinating paper by Roberto Dos Santos.<sup>12</sup> The puzzle facing Keynes and the ‘circus’ was as follows: they had to convince the profession that ‘equilibrium’ employment levels would never materialise. According to Keynes, Pigou’s definition admitted only one possible cause – when workers refused work at the current marginal product of labour in ‘real’ terms. He wished to show another possible cause – some kind of failure of co-ordination which stopped workers and entrepreneurs negotiating the money wage corresponding to the Pigovian ideal.

Actually, there are two ways to derive this conclusion. The most obvious is Marx’s. This is to assert that there is no reason equilibrium should ever be attained, and that any real economy persists in a state of permanent non-equilibrium. In Smithian terms, the hidden hand misses. Now, In Marx’s day no-one was inventive enough to speak openly of equilibria which did not really exist, so he did not *define* his concept as non-equilibrium. He simply stated the obvious, that a lot of workers were out of work.

Nevertheless, this is a non-equilibrium formulation. It says there is a permanent dynamic imbalance between the actual supply of labour and the actual demand for it; a visible stock of labour-power just like a visible stock of any excess commodity. But whereas excess in other markets can be liquidated, forcibly equating supply post hoc to demand, this is not yet a socially-acceptable method of disposing of excess labour (though the economists seem to be working on it). Therefore the visible expression of supply-demand imbalance, for the particular commodity labour-power, is a permanent excess or, as Marx put it, a reserve army of labour.

This is exactly how it first appeared to Keynes and the circus. They started from the obvious fact that for a prolonged period, workers could be unemployed even though, *if* the economy were to reach equilibrium, this excess stock of workers *would be* (theoretically) removed. In the first galleys of the *General Theory* ‘involuntary unemployment in the strict sense’ is counterposed to ‘so-called unemployment’. Keynes (1973:366) proposed the following definition:

Men are involuntarily unemployed if the supply of labour which is willing to work for a money wage whose value in terms of wage goods is equal to or lower than that of the existing money wage, is greater than the existing volume of employment

Though subjectivist, this is still the conceptual equivalent of Marx’s reserve army of labour. It is a straight excess of current supply over current demand under existing conditions. It means there are workers who aren’t working. It is a synonym for plain vanilla unemployment. Evidently Keynes changed this. The core concept of *General Theory* is a *systemic* incapacity, a feature of the system as a whole that cannot be overcome by private negotiations:

There may exist no expedient by which labour as a whole can reduce its *real* wage to a given figure by making revised *money* bargains with the entrepreneurs (Keynes 1936:13)

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<sup>11</sup> The UK government has now replaced ‘unemployment benefit’ with a ‘job-seekers allowance’. In a definition Orwell would have been proud of, the right to this allowance terminates if you don’t find work.

<sup>12</sup> The following account is of course my own. In places I have retranslated some citations from Keynes.

And so in the *General Theory* (Keynes 1936:15) we find the following definition:

Men are involuntarily unemployed if, in the event of a small rise in the price of wage-goods relatively to the money-wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment

This is a different concept. It no longer speaks of what exists but of a possible alternative existence, which cannot be brought about through private bargains but only by a systemic change. Workers cannot *negotiate* a change in prices. Keynes now defines involuntary employment, not as the difference between the actual workforce and actual employment, but with reference to a hypothetical situation which might arise, were the price of wage-goods to change. The economy, he is saying, is in a non-full-employment equilibrium from which it may only be rescued by systemic changes.

#### *Simultaneous causation and the origin of the doctrinal method in economics*

Keynes's final presentation makes the case harder to argue. It rests on proving that *if* there were a systemic adjustment *then* more people would get work. This requires the entire model to be accepted. The opposition, after some time, responded with alternative entire models. With the Keynesians out of power, their model cannot be tested and supply-siders can say that people queuing for jobs are not 'really' (i.e. ideally) employable. They can say that the money wage is too high; but this we can't test because of the minimum wage. Instead of a clash between an ideal system and reality, we now have a doctrinal clash between two ideal systems. And when genuine empirical work intrudes, apoplectic fury.

Why did Keynes take this stand? In my view, because he wished to put another, very strong argument on the table in order to convince his profession. He wished to show that even using their approach, there might be a less-than-full-employment equilibrium. I think, and I do not mean this to be offensive, that he ducked the debate on method to win the debate about policy. This is not objectionable as an exercise in *realpolitik*, but it is not good science. Political expediency is not a source of knowledge; quite the contrary. That is why the debate still rumbles as to whether the essential basis of Keynes's critique is a distinct low-employment equilibrium, or the non-existence of any equilibrium.

Marx's view on this is unambiguous: Equilibrium Just Doesn't Happen. Supply does not match demand. This is not because of price-stickiness, imperfections, trade unions, exogenous shocks or any other such daemonic influence. It is because equilibrium Just Ain't So. This is the ground on which some critics are starting to stand, but which far too many refuse for the purely dogmatic reason that they are too scared to share it with the Savage Moor of Trier.

#### *Simultaneism and subjectivism: the rocky road to a marriage made in heaven*

The above history shows how two pillars of neoclassical economics – simultaneous causation and a subjective definition of key variables – came together. This is because, as Marshall observed, simultaneous causation is needed to support a subjective definition of value. The combination runs through all of economics. Let us retrace the history of the debate:

- 1) the labour force is defined by marginalism in terms of desire instead of capacity.
- 2) This demands a *calculus of desires* which, however, have no visible measure; we can observe only the outcome of their interaction with other desires. The observables of this calculus are



not objects but outcomes. It begins to refer to ideal concatenations of objects in place of the actual objects.

- 3) Material being becomes an alien threat in the brains of the economists. Production is an activity in time; but producers' desires at the beginning are supposed to express the consumer's desires at the end. *Causation must be reversed*. Wages cannot be the result of work; work must be the result of wages. Heaven forbid, we might put the unemployed to work to create their own livelihood.
- 4) Workers must now wait for Money to decree the wage that will call forth their desires. Since real causation does not work like this, it must be replaced by ideal causation in the economists' heads; Marshall's 'simultaneous and mutual interaction of all factors'.
- 5) But now the procedure for defining models from concepts is reversed: unemployment is *redefined*. Instead of the difference between 'wanting' and 'getting' work it becomes the difference between those working now and those who *would be working* in an *ideal situation*. It is no longer an observable, but is defined by the model and has become a purely doctrinal entity.

So it was that subjectivism met simultaneism on its way to heaven. The offspring of the union was, however, a new family of concepts. As before they refer to a state of consciousness. But this was originally in some sense directly accessible so that, for example, to find out if someone was employable, one asked them. Equilibrium concepts such as NAIRU are a new departure; they are defined by a non-observable ideal. Workers are never found in the actual state in which to observe whether they have become indolent burdens on the state. We shall never know if they *would* accept work at the market-clearing real wage, because we never get to try it.<sup>13</sup> This is all wrapped up in 'conventional good sense' and learned lectures about models, levels of abstraction and successive approximations which underwrite a hearty disdain for actually publishing or studying anything critical of this divine order. The outcome, however, is a purely doctrinal approach to reality.

#### *The ideal, the real and the abstract in the standard interpretation*

At first sight the standard interpretation of Marx is a direct negation of subjectivism, being defined in allegedly pure physical terms. In the next part of this paper we aim to show that through convergent evolution it has reached the same conclusions. Neoclassical marginalism begins from subjectivism and arrived at simultaneism; neoclassical Marxism, we want to demonstrate, began from simultaneism and arrived at subjectivism.

Since this will cause distress, can I first call attention to an important effect of simultaneous causation. In the the standard reading of Marx, price does not *mean* 'price'. It does not have the normal, street meaning of the money paid for a thing or a service. It means 'the theoretical rate of exchange which would be realised, were the economy to attain a steady state with supply equal to demand and the full mobility of capital'. Likewise profit does not mean 'profit'. It has lost the normal business sense of the difference between gross worth in money terms at the beginning and the end of a period. It means 'the profit which would be attained, were the economy to reach a

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<sup>13</sup> Except of course in poor countries, where Western economists get to test things that would even cause moral qualms among tobacco executives. These experiments are always unaccountably ruined by exogenous factors such as genocide.

steady state' or more obscurely, 'consumed inputs times one minus the reciprocal of the maximal eigenvalue of the technical coefficient matrix'.

Though this separation between real and ideal is exactly the same as in marginal theory, it is generally defended with different arguments, chiefly about appearance and essence. But this transforms the concept of 'essence' itself. In the standard reading, value – the 'essence' of price – does not mean 'value' in the street sense of the word. It means a theoretical rate of exchange realised in 'a society in which each producer owns his own means of production and satisfies his manifold needs by exchange with other similarly situated producers' (Sweezy 1970:23), or in some other society which *would exist were* the economy to attain a steady state with supply equal to demand and no mobility of capital, or *were* all sectors to have equal organic compositions, or *were* the profit rate to be zero. Essence so conceived is purely ideal; it refers to a hypothetical state of affairs, other than that which actually exists. It does not manifest itself in any actual object.

Neither Marx nor Hegel distinguished essence from appearance in this way. To say essence is concealed does not mean it is ineffable; it simply means one cannot understand it without thinking about it. To say the essence of food is nourishment does not mean the food gets eaten while the nourishment does not, as if the shops had a virtual shelf for intellectuals and a plebian shelf for the earthy bits. It means that to determine whether something really is food, one has to find out if it is nourishing; if one is not aware of this, one will miss a great deal of the point of food.<sup>14</sup>

The same mutation has taken place in the abstract-concrete distinction. To say that abstract labour is the essence of price does not mean that concrete labour is real work while abstract labour is not, or that the two happen in different places as if abstract labour were astral and concrete labour were earthly. It is necessary to emphasise this because many critics approach the issues we raise with minds conditioned by the neoclassical procedure of substituting the unmanifest ideal for the manifest real. From this standpoint they simply refuse to recognise that quite commonplace ideas might lie behind the concept of value. In seeking to demolish this lofty superstructure our project is not just iconoclastic. It supports a definite alternative paradigm which, we believe, also happens to be Marx's. The significance of the new debate is not that it shows this paradigm to be 'correct' or the 'direct line to Marx'. What it shows is that the paradigm is *consistent*. It therefore has a right to exist.

In what follows I shall assert, indeed insist, that very commonplace ideas lie behind the concept of value; that it is an actual and observable property of a really functioning economy and does not require an ideal or model either to define or quantify it, that it is clearly distinguished from price, and that the distinction is vital to the critique of political economy and the understanding of the world. Critics are entitled to disagree with this assertion; they are no longer entitled to dismiss it.

## **Boskin meets Marx: price level, real output and value**

### *What is value?*

In conventional Marxology, as we have observed, value is either legendary or mythological. It

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<sup>14</sup> As many do. The conception of essence in question seems to originate with Plato, for whom the observed motion of the planets was not their true being; their essence was a (divinely ordained) perfect orbit. Aristotle sought to differentiate himself from this: "The mistake [according to Aristotle] made by the ideal theory of Plato is that of attempting to abstract from matter entities in whose very nature, unlike that of mathematical objects, matter is involved" (Ross 1995:71). Not so Walras: "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, my emphasis)

cannot be directly observed but exists in a state of being called ‘Simple Commodity Production’ which may have occurred in the past, or might exist if all organic compositions were equal, or if there was no profit, or if capital was immobilised. In real life, value exists as a directly observable, though abstract, substance. The ‘proof’ is the same as the ‘proof’ that space or time exist: no economist can put together a coherent argument without talking about it or an equivalent concept. Value is what money buys. Not one school of thought fails to distinguish nominal price from ‘something’ real that money buys. They may not call it value (though they often do, as when inflation is defined as a ‘fall in the value of money’ or when shops advertise ‘value for money’) but they always make the distinction. Take one of the oldest and most controversial assertion of all economics: the quantity theory of money. This asserts that

$$MV = PT$$

Where M is the money supply and has the dimension of money, V is the velocity of circulation, and has dimension of inverse unit time, P is the price level and has the dimension of money per ‘something’ and T is transactions per unit time has the dimension of ‘something’ per unit time. That ‘something’ is value. To deny this exists is simply fraudulent. It makes no difference that it gets renamed to ‘real output’; it *refers to the same object*, or more accurately the same substance. This equation could not be written down, would make no sense at all, unless T were already conceived of – and already was in reality – a homogenous, abstract measure of some single thing, some substance that is quantified. The mere distinction of ‘real’ from ‘nominal’ would be impossible unless there was a conception that ‘real’ income exists and has a single measure that differs from the money that is paid for it. Indeed, the real proof that value exists is that no-one can avoid talking about it, though they may refer to it with a variety of names. The scientific problem is not to prove the existence of something everyone knows to be there; it is either to define clearly what it is or prove it is an illusion.

Indeed there is a procedure for calculating it; the *neoclassical* value of any bundle of commodities is the observed price of the bundle of commodities divided by the neoclassical price level. So it has an operational definition even if its authors deny parentage.

The importance of this is that whenever economists discuss such concepts as profit, distribution, the production function, capital-intensity or capital-labour substitution, what they have in mind is a value-based measure. Since all important magnitudes are denominated in money, in nominal terms, they are always converted into real terms.<sup>15</sup> But in so doing, a concept of value is applied, whether consciously or not. The definition of these terms thus always depends on the implicit or explicit concept of value which informs the conversion.

Normally the debate on Marx’s theory of accumulation culminates in a judgment using the neoclassical measure of value. Mostly, economists do not realise they are doing this because they do not reflect on the conception of value which is implicit in their arguments and operational procedures. But as we have said, it is not Marx but neoclassical economics in the dock. We therefore propose the reverse process, which is to conduct a learned study of neoclassical procedures and judge the results using Marx’s measures, in whatever reading is considered appropriate. Our first task, therefore, is to study the concept of value in neoclassical economics, as revealed by its practical modern debates.

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<sup>15</sup> It might be thought that the rate of profit, being a ratio, is immune to this criticism. But the precise importance of a proper dynamic or temporal formalisation is that since the ‘price level’ changes over time, capital stock is revalued on a different scale to output so that the time-path of the monetary expression of value makes a decisive quantitative difference.

### *Enter Boskin*

The Boskin commission was set up to enquire into the consumer price index. It has rumbled for a while through the bowels of the US mandarin state from whence it erupted at the end of last year. Its antecedents, as well as its programme, date from Marie-Antoinette. Its argument is this: changes in consumption patterns of the population resulting from falling money incomes must be incorporated into the definition of the standard of life. In short, they want to put Marx's 'moral and historical element of the wage' into reverse.

It was established to further a research programme from somewhere in Newt-land to prove the rate of inflation in the US economy was over-estimated. The political significance is that 30% of US welfare payments (according to the commission) are index-linked. If inflation is over-estimated then these payments are overstated. The commission's rather gruesome presentation to the 1997 ASSA claimed, if I remember rightly, that the state could save up to \$250bn as a result.

The reasoning was technical but boiled down to this: the existing index fails to recognise that consumers are substituting closely-related use-values in response to changes in price. If, for example, they can respond to dearer margarine by switching to cheaper brands, the commission argues their standard of living hasn't changed. Similarly, 'outlet substitution' saves them money by shopping at cheaper places and further effects, such as the changing durability of second-hand goods (i.e. using them longer), should be taken into account.

The profession's response at the ASSA was valiant but weak<sup>16</sup> and I don't think it is hard to see why. The conceptual ground had already been surrendered with the idea that the best measure of output is a level of satisfaction; that is, that output should be measured subjectively.

Of course it is vital to measure the standard of living and the index does it. The dispute arises because it is a disguised general measure of value; in practice it is not a standard of consumption but *output*, that is, productive effort. Through the index, 'real' output (that is, value by this definition) has come to mean the *satisfaction a set of goods provides*, instead of the *social effort required to produce them*. A nominal increase in price no longer means, as it did for Marx, a rise in the quantity of labour represented by a given sum of money, but a rise in the satisfaction it can purchase. These are simply not the same.

But this revision changes the answer to every question; when a labour measure says workers are getting less, the neoclassical measure says they are getting more. The currency can be rising in labour terms yet falling in neoclassical terms. The neoclassical capital-output ratio will fall while the organic composition rises. Marx will report a labour-saving bias when the neoclassicals report a capital-saving bias, a falling rate of profit when they report a rising rate, and so on. At every point of concern to society there is not one but at least *two* quantitative answers. Indeed there are as many neoclassical answers as there are price indices, which to say the least casts doubt on the stability of their results. Yet in the whole discussion on Marx's supposed errors it has evidently never occurred that the critics are not even talking about the same thing; or that their measure of value fails even to distinguish a technical improvement from a change in the price level.

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<sup>16</sup> On this, as on the minimum wage, Clinton seems to have overruled the profession and vetoed the commission proposals. I think if President Clinton (or in the case of the minimum wage, the Republican leadership) stands up to reaction better than the economics profession, history is trying to tell us something.

*Is this value I see before me? The ideological foundation of neoclassical real output*

The difference has a directly political implication which furnishes the actual material, ideological basis for the neoclassical standard of value. A constant standard of living, as a policy principle, means the workforce has no right to benefit from productivity gains. In plain old-fashioned socialist terms, they are deprived of what they make. But this principle was the exact centre of the Boskin commission's presentation, and within the existing framework it could not possibly be challenged on anything except the technical accuracy of the measurements.

Suppose for example the workforce makes twice as much of everything. If they consume the same as before, all extra production will be lost to them. As a distributional principle, a constant living standard surrenders the right to the benefits of all increases in production. If, of course, workers themselves controlled distribution then this would be a mere choice between individual and collective consumption. But if the proceeds pass to other individuals then it is a direct sacrifice of the fruits of labour.

In the history of the concept, the alternative was the egalitarian principle of benefit in proportion to contribution made. This is actually a bourgeois principle; for example it is the basis of all joint ventures. Nevertheless, if applied uniformly, workers would be rewarded in proportion to *effort*, in the same way that the owners of capital are rewarded in proportion to investment. This made it the foundation of the utopian socialist programme who perceived exploitation as a violation of natural right.

Problems arise when it comes to disputes about what constitutes a genuine contribution. The money-owners claim rewards for their capital, the landlords for their land, the pharmaceuticals for patents on mutants, and so on. The timebomb lurking in what Marx termed classical political economy<sup>17</sup> was that it soon discerned that the suppliers of all such contributions acquired them only through the labour of others, entitling the workers to all the output of society, a deduction which economics could not accept whilst retaining the patronage of any other class. It needed a different concept of value, for purely ideological reasons.<sup>18</sup> When it thought the deed complete, it killed off the very idea of value and washed its hands of the crime – one reason it 'doth protest too much' when the concept is re-discussed. But the concept lives on: it is re-incarnated in the neoclassical price index and the corresponding concept of real output which measures not *effort* but *satisfaction*.

This is not a paranoid delusion of Marxian historiography. The distinction was exhaustively described by one of the founding currents of modern economics, the Austrians – above all in the work of Böhm-Bawerk. The distinctive view of the neoclassical school, which unites all its many warring factions, is subjective valuation: the measure of value by the satisfaction of desire or need that it brings. But this is *exactly* the principle which governs all measures of output, capital, wage,

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<sup>17</sup> Which in his terminology did not mean those who measured value by labour, but those who distinguished themselves from the vulgar and the apologetic. "Let me point out once and for all that by classical political economy I mean all the economists who, since the time of W. Petty, have investigated the real internal framework of bourgeois relations of production, as opposed to the vulgar economists who only flounder around within the apparent framework of these relations, ceaselessly ruminate on the materials long since provided by scientific political economy, and seek there plausible explanations of the crudest phenomena for the domestic purposes of the bourgeoisie" (Marx 1990:175)

<sup>18</sup> "In so far as political economy is bourgeois, i.e. insofar as it views the capitalist order as the absolute and ultimate form of social production, instead of as a historically transient stage of development, it can only remain a science while the class struggle remains latent or manifests itself only in isolated and sporadic phenomena...In France and England [in 1830-AF] the bourgeoisie had conquered political power. From that time on, the class struggle took on more and more explicit and threatening forms, both in practice and theory. It sounded the knell of scientific bourgeois economics. It was thenceforth no longer a question of whether this or that theorem was true, but whether it was useful to capital or harmful, expeditious or inexpedient, in accordance with police regulations or contrary to them. In place of disinterested inquirers there stepped hired prize-fighters; in place of genuine scientific research, the bad conscience and evil intent of apologetics" (Marx 1990:97)

exports, imports, savings, or virtually any serious economic variable denominated in money. It is also the standard by which Marx is judged when he is refuted. And it produces *different quantitative results*. It is this latter we now proceed to examine.

*The Marie-Antoinette theory of value*

The neoclassical concept of price level comes down full square on the side of subjective determination. It *defines value to be the amount of satisfaction* that a use-value provides. Having done this, it then judges Marx by this standard. We'll assess this with a simple subject of some discussion, a single-sector corn model. We call it a model because it's neoclassical. This also lets us specify a one-hour working year to make for simple arithmetic. Suppose in a primitive state of bliss an economy consumes annually 10 units of corn and produces 20 of which 10 are consumed by the 10 workers. If this economy attains a stationary state then the value  $v$  per unit of corn produced will be such that

$$10v + 10 = 20v$$

and so  $v = 1$ . Now suppose ten Friedman dollars whose supply is fixed. These judicious measures set corn at \$1 per bushel. In that case the economy spends \$10 to make \$20 and gives the workers \$10, 'Real Income' is \$10. One dollar represents one hour represents 1 bushel. Nirvana.

Now suppose the landlords decide to raise the fertility of the land. Having asked the workers, who are the experts, they decide on various improvements (which the workers carry out exogenously) and get 30 units of corn for the same seed and labour. Once things have settled down we have a new  $v$  given by

$$10v + 10 = 30v$$

and so  $v = \frac{1}{2}$  and has halved. Due to the quantity theory of value, the Friedman pound has fallen to \$0.50 per unit of corn, net output having doubled. We set aside the mischievous argument that gross output has risen by a mere 50% as a primitive double counting error. Now suppose the workers, good honest folk that they are, enter a discussion with the landlords. Tugging forelocks and scratching their bucolic heads they say: all the extra corn results from our actions or advice so, if it's all right with you, we want it. In support of this they point out that with wages fixed in corn, in money they are now worth only \$5. Money wages have halved.

Not so, say the landlords. Your problem is that you don't understand nominal and real. In fact, Mr Boskin here tells us that in fact, though your money's gone down by a half, he has this consumer price index thingum. And it says a dollar isn't really a dollar. In fact it's two dollars.

- Say what?
  - Well we don't understand it either but the fact of the matter is that this Mr Boskin here runs the bank, and he says you're not really getting \$5, you're really getting \$10.
  - Er, how exactly how'd this Mr Boskin get to run a bank?
  - Well, we asked him.
  - So, let's get this right, want to be clear, you say you have this bank, and it's yours. And you have this Boskin, and he's yours. And, actually, you don't do anything at all. And neither does he. And neither does the bank. But your Boskin, and your Bank, they're going to give you half what we make. And then, you're going to give them half that. Right?
  - Right.
- Pause.
- Can we have the bank?

- Well, funny you should say that, Mr Boskin here thought you might, and so we got ourselves these here gun things. Anything else you got to say?

Yes. The dispute is not about money but the meaning of money, that is, value, which is *represented* but not *defined* by money. Different value theories give different accounts of the same price data. That is why the data cannot just be used, without interrogating it. The Boskin theory of value says a constant price of corn-based satisfaction is the correct measure of value. But a measure based on effort – for example, labour – gives a different result. We find that the 20 units of net product are worth the same 10 hours as the 10 units were before.<sup>19</sup> By this measure, which is independent of the subjective desires of agents, output has not changed. But by a neoclassical *subjective* measure, output has doubled. Hence:

- 1) the neoclassical measure of the price level determines the neoclassical measure of real output. This is a subjective, satisfaction-based measure based on quantity of use-value.
- 2) conversely neoclassical ‘real’ output (value) treats any increase in use-value terms as an increase in value output regardless of the labour-time is spent on it.
- 3) a scientific measure of ‘real’ output (value) will treat as a rise in the output of value *only* an increase in the actual effort of society, in this case the work of the workers, who supplied all the information and all the productive effort. Conversely it will measure the price level as the amount of money that purchases a given amount of average abstract social labour, or as Marx puts it, the *monetary expression of labour time*, so that a nominal rise in prices *means* a rise in the monetary expression of labour time.

### *Having your Keynes and eating it*

So far this is nothing to do with the difference between temporal or successivist approaches, and simultaneist approaches. *Even* the simultaneist approach yields this distinction, though few seem to notice. When we study temporal issues with a mind opened by the previous discussion, however, we find it sheds remarkable light on Marx’s profit rate theory.

Let’s suppose that on the sound advice of Mr Keynes, instead of waiting for the long run the workers and the landlords start discussing the very next September after the second harvest. It’s been a good year. Last year, the village spent \$10 on 10 bushels of seed corn. In the ground they went in January and out came 30 bushels in September. Everyone is celebrating. However, there’s a slight problem. Because of the quantity theory of money, the net output of 20 units of corn is priced at \$10, only \$0.50 per bushel. Wages are negotiated post hoc and so paid in today’s money. As normal, an increase in supply leads to a fall in price though the tight money doesn’t help. The landlords draw up their accounts. They look like this:

Costs:	seed corn 10 @ \$1=\$10;	
	wages 10 @ \$0.50 = \$5:	\$15
Revenues:	sale of 30 bushels @ \$0.50	\$15
Profits:		zero

They go to the workers. They say, look, we have no profits.

- Profits be dangled. You got our corn. And by the way, we spiked your guns.
- Ah. very good point boys, glad you thought of that. Now, we have this Boskin thing, and what it says is: a real

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<sup>19</sup> Our choice of money units happens to implement this because both the supply of money and the supply of labour are fixed, but clearly if the labour force increased, Friedman money would deflate the economy in value terms.

dollar is two dollars. So, luck would have it, we really made \$30. And you really got \$10. And we'll do some deflation-adjusted accounts in real dollars. They're not really real dollars, hahaha, slip of the tongue there, I mean, they are *real* dollars but they're not *really* dollars, if you follow, oh shit, well anyhow it's like this:

Costs:	seed corn 10 @ \$1=\$10;	
	wages 10 @ \$1=\$10 :	\$20
Revenues:	sale of 30 bushels @ \$1	\$30
Profits:		\$10

Everyone's happy. Wages, profits, beer all round.<sup>20</sup> However, the landlords do have a problem. They have a lot of corn and they have to do something with it. Good Protestants all, they plough back in all 20 bushels. And lo, because of the improvements, up come 70 bushels.

Since the workers haven't had time to make any more workers what with all the excitement, the labour force hasn't changed. There is a net output of 50 bushels and because of the quantity theory of value, corn sinks to \$0.20 in Friedman money which, we should recall, is still the actual unit in which bills are settled. Wages – still 10 bushels – are now a mere \$2. The landlords do their sums again. They look like this:

Costs:	seed corn 20 @ \$0.50=\$10,	
	wages 10 @ \$0.20=\$2	\$12
Revenues:	sale of 70 bushels @ \$0.20	\$14
Profits:		\$ 2

The landlords are nervous. They're sitting on 40 bushels of corn, they paid the workers a fifth what they got two years ago, and they have to explain they made two dollars. And if they want to put the corn back into the land, no way can they get it ploughed without the workers doing a bit more. Mr Boskin, they say, this isn't quite working right. No sweat, says Boskin. I've been talking to my friend Mr Keynes. Apparently Mr Friedman just fixed the the money supply, left it running and went out to lunch; but now your output's up and things need a little fixing. Mr Keynes is going put the whole economy on a thing he calls *corn-dollars*. The way these work is, one bushel of corn is always one dollar. Couldn't be simpler, could it? that way, we all know what's going on. We at the bank, we're happy to backdate all the payments and set the record straight: and here's some accounts we prepared earlier:

### Year One

Costs:	seed corn 10 @ \$1=\$10,	
	wages 10 @ \$1 = \$10	\$20
Revenues:	sale of 30 bushels @ \$1	\$30
Profits:		\$10

### Year Two

Costs:	seed corn 20 @ \$1= \$20,	
	wages 10 @ \$1= \$10	\$30
Revenues:	sale of 70 bushels @ \$1	\$70
Profits:		\$40

That's great, say the landlords, but darn it, what if the workers come back for more money? There's a lot more around. Lot more corn too. And we're asking them to work harder.

Boskin thinks for a while and says: Tell you what. My friend Marie, she bakes cake. And with the same corn you can make twice as much cake as you could bread. So, the way I tell it is, that's a

<sup>20</sup> The beer is supplied exogenously



hundred percent raise. Now, you want them to work half as hard again. Tell you what we'll do. You give them \$8 and they can make 16 cakes. Tell them it's worth \$16; that's a sixty percent rise. And because you're generous, you'll let them have it if they only work fifty percent harder. Go to it, fellas.

Weary but exultant, the landlords plod through the dusk to the cornfields to meet the workers. But they aren't working. They're gathered round a flickering fire shaking their sickles whilst in the gloom, a dark, bearded, frock-coated figure addresses them with an unmistakable German accent in saintly if beer-sodden tones...

### *Disputes in successivist valuation*

Now, what might the bearded figure be saying? Well, that's what the debate's about. I think it would be something like this: I understand you want to take over the bank. If that's what you want I won't stop you but as I told Mr Darimon only last week, if you want to do that you'll have to take over the business too.

—I suggest to get ready, you rework the accounts to show what the landlords and their cronies have been up to. You can use something Mr Darimon calls *labour-money* though I wouldn't recommend using it to run the economy. A dollar of labour-money always represents the same amount of your work. We're all equal so no matter whose work it is, or when you did it, a dollar is always an hour. I'll do the accounts in labour-money to show you. I see it like this: in year one, you started with ten hours in corn. That makes the first year like this:

Your past work:	seed corn 10 @ \$1 = \$10	\$10
Your present work:	10 hours @ \$1 per hour	\$10
Results:		\$20

—In the second year, things were not really very different. You worked the same time and so this part of the accounts look just the same:

Your past work:	seed corn 10 @ \$1 = \$10	\$10
Your present work:	10 hours @ \$1 per hour	\$10
Results:		\$20

—But this work was embodied in 30 bushels of corn instead of 20, because of the improvements that you made, acting under the instructions of the landlords, who took your advice how to do it. So the price of the corn changed. The total price didn't change and nor did the total labour, because you didn't work any harder. But there were 30 bushels of it and so each bushel was worth  $\$2/3$ . And because you didn't consume any more, that left some over for the landlords. In terms of labour-dollars it went like this:

Replacement for outlays of \$10		\$10
Wages:	10 bushels @ $\$2/3$ per bushel	$\$6\frac{2}{3}$
Profits	$\$10 - \$6.67$	$\$3\frac{1}{3}$

—Now let's look at year three. 20 bushels of your output from year one were ploughed back in. That was two-thirds the total output, which was \$20, 20 hours. Two-thirds of 20 is  $13\frac{1}{3}$ . I could show you this in hours, but just to satisfy Mr Boskin let's do it in labour-dollars:

Your past work:	seed corn 20 @ $\$2/3$	$\$13\frac{1}{3}$
Your present work:	10 hours @ \$1 per hour	\$10
Results:		$\$23\frac{1}{3}$

—Just like before, you now have to see how much labour there is in the corn you just made. You

made 70 bushels this time so each was worth [ $\$23\frac{1}{3}$  divided by 70] =  $\$1\frac{1}{3}$  – it represented one-third of the hours that you worked, taking into account the fact that in the earlier years, you didn't produce so much per hour as you can now. Now let's look at the distribution of the results:

Replacement for outlays of $\$13\frac{1}{3}$	$\$13\frac{1}{3}$
Wages: corn wages 10 @ $\$1\frac{1}{3}$ per bushel	$\$3\frac{1}{3}$
Profits $\$10 - \$3\frac{1}{3}$	$\$6\frac{2}{3}$

–So you see, at the beginning you drew all the benefit from your own work, but now you draw only one-third. And the landlords, who did nothing but take your advice and feed it back to you, draw two-thirds of all the work that went into this year's corn.

The workers are livid but puzzled.

- They been cutting our wages for two years now, and that there Mr Keynes says they were keeping it steady.
- Sure, but remember what it was like under that Mr Friedman: why, we were down to two dollars. If we used this Dr Marx's money then we'd be almost as bad off as we were back then.
- Hang on, says a third, there's something wrong here.
- Say what?
- Well, according to these here figures, if we'd taken all the profits, we'd have made \$10 every year, right?
- Sure, that's because you work 10 hours and each hour is a dollar, right?
- But, the first year we'd have put \$10 into the business so we'd have made 100 percent profit, right?
- Right.
- But in the second year we'd have put in  $\$13\frac{1}{3}$  and still only made \$10, so we'd have made 75 percent, right?
- Right.
- And if we put all this corn back in next year, after we took our wages out, it'd be worth \$20, and we'd *still* only make \$10 extra so our profit would be down to 50 percent, right?
- Sure. I call that the general law of capitalist accumulation. There are two ways out; you can take over, or you can have a slump.

Pause.

- Where can we get a slump?
- *Bitte?* Hmmp. Well, *it gets you*. For example, if next year you plant 20 bushels of corn again, then it won't be worth as much as it was last year. Your investment will be only  $20 @ \$1\frac{1}{3}$ , that's  $\$6\frac{2}{3}$  – half what the same amount of corn cost last year. If you all got work then the profit would get up to 150%. But unfortunately it won't be like that, because if productivity keeps rising they'll probably only need half of you. Profits will be up to 75%, but half of you will be out of work.

Pause.

- But that don't make sense. How come when we're making *more* corn every year, the returns are going *down*?

An expansive figure walks into the firelight waving a cigar.

- Hi fellas, how y'all doing, like y'all to meet a friend of mine. Name of Bortkiewicz...

## The value of meaning and the meaning of value

'When I use a word', Humpty Dumpty said in a rather scornful tone, 'it means just what I choose it to mean – neither more nor less.'

'The question is', said Alice, 'whether you *can* make words mean so many different things.'

'The question is,' said Humpty Dumpty, 'which is to be master – that's all'

– *Through the Looking-Glass, and what Alice Found There*, by Lewis Carroll

*Meet my friend Bortkiewicz the sequentialist*

What would Bortkiewicz say? Well, first off, I think he would have a new difference with the whole procedure. He would want two sets of accounts, one for value and the other for price. In this respect he differs from Boskin, who says there is one set of *accounts* but two *valuations* or interpretations of these accounts. This is because Boskin has to run the bank, and unlike Bortkiewicz he cannot allow value to disappear. In the first year this causes no problem and the accounts do not differ except in the manner of presentation. For year 1 the value accounts can be written like Marx's:

**Year One**

Past work:	seed corn 10 @ \$1 = \$10	\$10
Present work:	10 hours @ \$1 per hour	\$10
Results:		\$20

of which

Replacement for outlays of \$10		\$10
Wages:	10 bushels @ \$1 per bushel	\$10
Profits	\$10-\$10	\$0

The price accounts are at this point only presented differently in that profits appear not as a deduction from returns but a markup on cost (at this point zero); that is, a contribution to output.

Costs:	seed corn 10 @ \$1=\$10,	
	wages 10 @ \$1 = \$10	\$20
Profits:		\$0
Revenues:	sale of 30 bushels @ \$1	\$20

Even at this point, of course, the price accounts would differ from the value accounts if there was more than one output and non-zero profits. However there is a far more significant difference, not between price and value, but between Marx's accounts and Bortkiewicz's accounts. Marx not unreasonably recognises that the price at which corn is sold at the end of year 1 is the same as the price of seed corn at the beginning of year 2. He also recognises that the price of corn at the end of year 2 is the same as the price of seed corn at the beginning of year 3.

Bortkiewicz doesn't calculate like this. He's got Professor Böhm-Bawerk breathing down his neck at night school. He 'corrects' Marx's non-existent failure to transform inputs in order to smuggle in his own principle, or more precisely Walras's principle, that the price of the corn at the beginning of the year must be the same as the price at the end. Otherwise he cannot 'simultaneously and mutually' determine anything at all. He decides to reason as follows: in year 2 the value of the seed corn is determined, not by what it actually cost at the end of year 1, but by what it *would* cost, *were* the society concerned to reproduce itself at the same level indefinitely. He has replaced Marx's *realist* principle, that both price and value measure what actually takes place, with the Walrasian *idealist* principle that they measure what *would* take place *if* the world were different.

His second year accounts are therefore based on a price that would be needed to reproduce the economy identically, if the workers got all the profits. He adopts a (value) price that solves:

$$10p + 10 = 30p$$

that is,  $p = \$0.50$ . His value accounts then read

Past work:	seed corn 10 bushels @ \$0.50	\$ 5
Present work:	10 hours @ \$0.50 per hour	\$ 5
Results:		\$10

But at this point Mr Boskin intervenes. This could cause the bank a few problems; at the end of year 1, they bought all the corn at the year 1 price of \$1 and paid \$20 for it. After selling 10 bushels back to the workers for \$10 that left it 10 bushels worth \$10. Now Bortkiewicz says they sell it for \$5. That means the bank takes a hit of \$5 which *vanished in pure circulation*. And if productivity had fallen, the bank would be left with a money profit. *Value would have been created in circulation*.

When the bank gets value for nothing, we worry. But when the bank loses value, the bank worries. Actually, the scientific principle underlying both worries is the same: in actual commodity exchange, value cannot be destroyed or created over society as a whole. Since in this case the bank is the universal purchaser, it is Boskin who feels the pain. You can't sell that stuff for fifty cents, he says. We bought it for a dollar.

- Nmr pm.
- say what?
- Numrr prblm...
- Speak up!
- *NUMERAIRE PROBLEM!* You deaf?

Pause

Nother pause

- Tell you what. Why don't you tell me, very slowly, what *exactly* a numeraire is, my friend? And do try to remember there are people watching. OK?
- Look, actually it's completely arbitrary what we say the price is. Money's a veil, see? Doesn't really matter. It's, you see... er, you wouldn't like to point that sickle somewhere else would you? Ever so kind. Now, the point is, all that *really* matters is how much corn a man is worth, or perhaps you'd prefer it this way, how much man a corn is worth. I call these *relative prices*. In the first year we said a man was one corn. Herr Marx's labour-dollars were just the same as Mr Keynes's corn-dollars. But in the second year, men made more corn. So, corn-dollars weren't the same as labour-dollars any more. Now, this doesn't have to have anything to do with money. All that really matters is relative prices; how much corn-dollar you get for one labour-dollar.
- You wouldn't like to put that in language the shareholders understand, would you?
- Sure. What you do is, you say the money-value-added has doubled. A year-two hour is worth twice a year-one hour. Because it made twice as much. I'm sure you're familiar with this argument. That is, you *rewrite labour-dollars as corn-dollars*. Then the accounts look like this:

Past work:	seed corn 10 bushels @ \$1	\$10
Present work:	10 hours @ \$2 per hour	\$20
Results:		\$30

Now let's look at the wages. Workers are still getting 10 bushels. Corn costs a dollar.

Replacement for outlays of \$10	\$10
Wages: corn wages 10 @ \$1	\$10
Profits	\$10

And, seeing as you're worried about the shareholders, we'll draw up a set of accounts for them too:

Costs:	seed corn 10 @ \$1=\$10,	
	wages 10 @ \$1 = \$10	\$20
Profits at 50%		\$10
Revenues:	sum of costs and profits	\$30

- Now this is looking good, says Boskin. In fact, it looks exactly the same as the accounts I got from that Mr Keynes. But where did that 50% come from?

- It's a little idea I got from my friends the Professors Perron and Frobenius. I need it to make sure the price at the end is the same as the price at the beginning. You don't need to worry how it works. All that matters is this: it makes sure that the inputs and the outputs are the same price, measured in corn-dollars. Just think of it as a 'correction'.

What Bortkiewicz has agreed with the bank, in order to make sure that in terms of *his* value nothing is created or destroyed in circulation, is to double the monetary expression of labour-time. But in so doing, he has literally added one and one to make three. If we translate from his dollars back into hours, we find the past work of the labourers that was previously expressed in \$10 in year 1 was 10 hours. That's the value in the seed corn of year 2. But Bortkiewicz takes this 10 hours of dead labour and adds it to 10 hours of living labour by doubling the number of hours that the year 2 labour counts for. This he does by doubling the money value that they add. His difference with Marx is that he makes the workers add \$2 in year 2, and \$1 in year 1. He *adjusts the value-contribution of labour in line with productivity*. Thus, in year 3 we have the following equation:

$$20p + 10 = 70p$$

so that  $p = \$0.20$ . Now if the bankers weren't watching, Bortkiewicz could write, using labour-dollars

Past work:	seed corn 20 bushels @ \$0.20	\$ 4
Present work:	10 hours @ \$1 per hour	\$10
Results:		\$14

But he can't write this, because the bankers won't let the farmers pay \$0.20 for the seed when it was purchased for \$1. However, there is a way which still preserves the form of the equation; he adds a factor for the *intensity of labour* or *money-value creating capacity* of an hour of labour. Call this  $i$ . Then we can write

$$20p + 10i = 70p$$

In that case with the bankers' constraint (input price of year 3 = output price of year 2) what we have is  $p = 1$  (corn dollars) and therefore  $i = 5$ ; labour now counts for 5. That multiplies all the accounts by 5 to yield

Past work:	seed corn 20 bushels @ \$1	\$20
Present work:	10 hours @ \$5 per hour	\$50
Results:		\$70

Again, just like Keynes. But this isn't totally satisfactory. The discrepancy between the value-creating capacity of labour, and its reward, is a little too obvious. Therefore, we present a *second set* of accounts in the style of the business community in which the value-contribution of labour is replaced by two contributions, one from labour and one from the capitalist-landlords:

Costs:	seed corn 20 @ \$1=\$20,	
	wages 10 @ \$1 = \$10	\$30
Profits at 110%		\$40
Revenues:	sum of costs and profits	\$70

and the transformation is complete. *Labour-dollars have been transformed into corn-dollars*. Marx's labour value accounts have been transformed into neoclassical value accounts.

This is what Bortkiewicz's transformation really consists of, to paraphrase Samuelson. Write down a set of value accounts. Write down another set of use-value accounts. Find a numeraire that takes the first into the second. Rub out time; the transformation is complete.

## The physicalist project and the close of the simultaneist system

### *The outcome and meaning of the Sraffa project*

By popular request and in deference to the non-mathematical reader we presented the above argument without matrices and with the bare minimum of equations. However, the result is general and rigorously provable. Indeed it appears in a variety of replies to our results concerning the falling rate of profit, which have responded by arguing, either that we are not measuring value, or that value is destroyed or created at inopportune moments if our method is applied. What emerges is the following: a different concept of value has been brought into play. Our results are ‘falsified’ by contrasting them with results obtained by substituting a *measure in terms of use-value for a measure in terms of labour-time*.

This may be achieved in a variety of ways. For example, as we have shown, any ‘simultaneous’ system can be converted to provide a temporal sequence in which output prices at the end of each period are equated to input prices at the start of the next period, by applying a different numéraire in this next period – that is, by multiplying all prices by the same constant conversion factor. This factor, however, redefines the value added by labour so that one hour in a later period adds more value than one hour of the previous period, in proportion to the rise in productivity from one period to the next. This is what Boskin made Bortkiewicz do, above. But in this case labour-time ceases to be the measure of value, because the value contribution of each hour of labour comes to be determined (backwards in time) by the use-value it creates. Our ‘error’ consists in rejecting a use-value-based conversion factor.

Alternatively, it may be asserted that the value-contribution of each specific type of concrete labour is distinct. If combined with the notion that this value-contribution is a multiple of the (heterogeneous) wage, then the value-contribution of labour is reduced to a multiple of *another* value, measured moreover in use-value terms. Again our ‘error’ in not agreeing to this correction consists in rejecting the idea that the value contribution of labour-power is in some sense a *function of other values*, and in insisting instead that the value contribution of labour-power is given independently of other values.<sup>21</sup> This is the real core of the present discussion around skilled and complex labour. In fact it is not essential to temporal determination that the value-contribution of labour be identical for all types of labour-power. What is essential is that it be given *independent of other values*. Once made structurally or functionally dependent on some other value, that is, once the requirement of an independent source of value is abandoned, then the whole procedure becomes nothing more than the determination of values from other values and – as the redundancy debate proves – is mathematically equivalent to a use-value determination of value.

The real issue for value theory is this: these ‘physical’ standards of value produce the *same determination of value* as if money merely tracks the increase in productivity, that is, the same results as a straightforward neoclassical calculation where nominal prices are reduced to real prices using a gross-product price index. How can the ‘physical’ calculation, claimed as the alternative to the ‘marginal’ calculation, yield the same results? For, the equation system is already

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<sup>21</sup> “Admittedly Destutt does say that all things which constitute wealth ‘represent the labour which has created them,’ but on the other hand, he also says that they acquire their ‘two different values’ (use-value and exchange-value) from the ‘value of labour’. He thus falls into the commonplace error of the vulgar economists, who assume the value of one commodity (here labour) in order to turn to use it to determine the values of other commodities” (Marx 1990:174n). To ‘assume the value of labour in order to determine the values of other commodities’ means precisely to treat the value added by labour as a variable magnitude given by its cost of production or some other function of other values, instead of an *independently determined* magnitude which enters into the determination of all other values, but is not determined by any of them. This is in my view the crux of Marx’s approach to the determination of the magnitude of value.

the same. Now it turns out that the measure of value is also the same. Operationally, there is no difference.

To examine this in more detail we must go back further into the conceptual roots of what we shall term the 'physicalist project' in economics.

### *Physicalism and marginalism in the twentieth-century debate*

The modern verdict on Marx is that, in effect, he was groping for the surplus approach and failed to make it. At first sight, no catena between subjective concepts and simultaneous causation intrudes on the 'physical' model of the surplus school. Sraffa aimed to remove his system as far as possible from marginalism, and at first sight he has replaced subjective desire by a completely objective means of discussing distribution: the 'physical quantities' of goods consumed and produced. In this sense he responded to the Austrians who set the agenda of the 20<sup>th</sup> Century discussion by constructing a polarisation between what Böhm-Bawerk termed 'objective' and 'subjective' value theories. Sraffa took on a designation we might term 'objectivist and proud' and therein lies the source of the difficulty.

The problem is that the real technical structure of society is not comprised of pure inhuman objects but of *use-values*, which do have a subjective component and cannot be reduced to pure physicality.

The underlying difficulty is then that physicalism, as I shall call it, fails to recognise that the real objects of economic study are social relations, aspects of *society*. It identifies the consumption of use-values with the physical properties of objects. Use-values, however, are in the last analysis not a purely physical attribute of a commodity and it is not possible to treat them as purely inanimate objects, as if they were part of nature with no human aspect. Indeed Marx did have a name for this idea, which is commodity fetishism. This is not just a term of abuse but furnishes an explanation for what has since happened.

Because physicalism has not reflected on the real nature of the objects of which it speaks, it does not pause to consider how their properties are in practice measured. It takes the money values of inputs and outputs (in fact flows of capital) for real physical magnitudes. But since it must distinguish real from nominal, and since it has not thought that there may be a problem in doing this, it simply adopts the neoclassical price index to convert nominal into real. This *imports* the subjective concept of value into both the calculations and the models. All physical quantities thereby acquire a subjective standard of measurement. When this concept fuses with the simultaneous method, the result is a subjective quantification of the technical structure of the economy which masquerades as a physical description.

This is not a negation but a mirror-image of marginalism; Marginalism speaks of desires, needs and satisfactions yet on analysis we find it deals with the things that yield these desires, needs and satisfactions. Physicalism speaks of things but on analysis we find it means the desires, needs and satisfactions which these things provide. The reason for this paradox is that neither things nor desires exist in pure form. What exists is *use-value*, a contradictory unity of natural existence and the human use made of it. The marginalist and physicalist projects share a common concept of value, in reality a *use-value* measure of value.

We have often been asked whether the Sraffa-based conceptualisation has any merit. In my view, of course it does. It began life as, and remains, a brilliant critique of marginalism. Its value is the purpose for which it was set up, namely to conduct an *internal criticism* of neoclassical economics

by confronting it with the fact that there implicit within the Walrasian system two quite distinct systems of determination, one in terms of marginal utilities and products and the other in terms of aggregate constraints imposed by the requirements of reproduction.

But an internal critique is a quite different thing from a genuine alternative foundation for political economy. The judgment which I personally would make on the Sraffa project is that it arose from an internal critique of general equilibrium theory and therefore remained bound by that theory. Because general equilibrium is an inadequate basis to understand society, the logical step for 'physicalism' was to break free of it and embark on a conceptualisation of economics rooted in a dynamic analysis of stock-flow relations. But if this is done, unless there is an accompanying concept of value, the system loses its critical power. And of course, since the entire basis of Sraffa's critique was to abstract away from the discrepancies of supply from demand in order to defeat marginalist arguments, the awkward problem must be confronted that in real life supply does not equal demand, and therefore there really are margins (for example, rent) which have to be theorised.

Indeed it is curious that Sraffa's followers did not draw a logical conclusion from the success of his critique; namely that since a purely marginal account is logically impossible, when the marginalists *speak* of pure subjective magnitudes they must *in fact* refer to something else. What the followers should have done, is enquire into what it was that the marginalists were actually speaking about. They would have discovered that it was use-value, and realised that they were themselves simply describing the same thing, with the same equations, using different words. However, in order to draw this conclusion they would have had to confront the same dilemma as Keynes: once they departed general equilibrium, the profession would have largely ceased listening to them. They chose the profession and joined its eighty-year campaign of exclusion against Marx's critique. In the last analysis I believe, though not always consciously, they chose expediency over science.

The physicalist project historically confronted a choice, and took the wrong branch. One way forward was to embark on genuine dynamic analysis in which discrepancies between flows were represented as changes in stock levels, correcting the mathematical error in the comparative static method. Along this route, the problem to be confronted is to construct an adequate measure of value that distinguishes properly between changes in productivity and changes in the price level. This route was clearly specified by Hawkins and Simon themselves who wrote:

Any system of things may be regarded, at some level of abstraction and with some degree of approximation, as functioning in a stable or steady state. There are, however, potential instabilities in an exchange economy which have no essential connection with the perplexities of the exchange *mechanism*. They are connected with the dynamical coupling between parts of the economy. To study them one must go beyond the Aristotelian mode of thought, in which the system investigated is assumed stable 'by nature', instabilities being conceived of as due to external accidental circumstances. (1949:310)

The Hawkins-Simon condition has come to mean the condition that an economy can be arranged in certain ideal proportions such that it produces a positive net product of every good. In real life no economy does this: instead, it runs down the stocks of the goods it no longer needs. Hawkins and Simon set out to discover the *manner in which this transformation might take place*, that is, the set out to define the characteristics of a dynamic process by investigating the relation between stocks and flows. In their conclusions they identify, fully fifty years ago, the two directions which economics *could have taken*, given this analysis:



To what extent does the above result depend merely upon the particular model employed? There are several directions in which such a model may be generalised. Its virtue, and its limitation, is that it describes the dynamics of an economy according to the same basic abstraction that is used in physical dynamics; the future course of a system is uniquely determined by general laws connection the behaviour of the variables at adjacent moments in time, starting at arbitrary initial conditions. It has in it no explicit teleological assumptions, unless one wishes to justify the hypothesis of full employment by reference to a collective purpose to maximise the rate of profit...

In one direction, one may wish to replace the hypothesis of full employment by more relaxed assumptions, which postulate restoring forces associated with the possibility of unproductive storage...

A more radical sort of generalisation is that which gets away from the assumption of constant technical coefficients and time constants. If the ingredients of production may be mixed in varying proportions with varying capitals and outputs corresponding, then even under full employment the number of unknowns will exceed the number of technical relations.

Leontieff (1953) himself proceeds directly to a discussion of a dynamic model in chapter 3 of his seminal work. But economics explored neither the 'more radical generalisation' to which Hawkins and Simon refer nor, with few exceptions, the Leontieff dynamic model. On the contrary, it collapsed back into an equilibrium formalisation in which the emphasis was bit by bit shifted precisely to the 'teleological' objective of establishing the prices and proportions which *might hypothetically* reproduce the economy *were it to adopt* these prices and proportions.

The tradition of dynamic analysis founded in stock-flow relations continued into the sixties and for example, in Samuelson, Dorfman and Solow's (1958) *Linear Programming and Economic Analysis* we still find the dynamical Leontieff model assessed at some length. The Hawkins-Simon condition is introduced first as a static condition to define a 'plausible' economy and then re-introduced as a dynamic condition to define when an economy is running down, or accumulating, its stocks. The difference is still at this stage clear but the static model is in the driving seat

The main difference between the two formulations [static and dynamic – AF] is that in this alternative setup, if the Hawkins-Simon conditions fail to be satisfied by the *a*'s, the system simply runs down gradually over time; the initial stocks are eaten into as flow inputs that the system is too unproductive to make good...<sup>22</sup>

In the dynamic model, at any point of time, the available capital stocks play the role of primary factors. They are historically given quantities, and nonaugmentable *for the moment*, although of course the accumulation of capital is exactly the process we are studying. Final demand now includes both consumption flows and net additions to capital stock.

By the time of Pasinetti's (1976) *Lectures on the theory of Production*, an entirely static conception has taken over. Leontieff's dynamic model is absent. 'Dynamics' consists only of a discussion of the conditions for proportionate growth, that is, the conditions under which an excess supply or demand of any good cannot arise. The Hawkins-Simon conditions are reduced to the negation of the intention for which they were created: Pasinetti simply states that

Negative commodity components of the net production or negative production coefficients would have no economic meaning.

And even more strongly (p97)

If the condition were not satisfied, it would mean that the economic system considered is so technically backward as to yield a negative rate of surplus, i.e. to use as means of production greater quantities of

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<sup>22</sup> in reality this represents the replacement of one commodity by another and is the normal mode of operation of a real economy. Society today has a negative net product of 486 computers, because it is replacing them with 586 computers. Samuelson and Dorfman either do not see or do not comment on this because their eyes are on the difficulty of establishing the conditions for an economy to continue reproducing itself *unchanged*, a typical equilibrium fixation.

commodities than it would then be able to produce. Such a system could obviously [sic] not survive; it would not be viable.

The possibility that technical change might involve a *transition from one state to another* in which the stocks of one good are depleted whilst those of another are increased has vanished from sight; indeed by defining them to have ‘no economic meaning’ they have been purged from economics. The stock-flow dynamics of the original Leontieff model have simply been written out of the subject.

The reason for this is as follows and is central to the whole issue: for the post-Sraffian school, the technical structure of production must serve as a *determinant of prices* – via Marshallian ‘simultaneous and mutual determination’. However, to achieve this aim, any gap between supply and demand – overproduction or underproduction – cannot be permitted. This is because prices in the post-Sraffian system are *defined to be* those prices that will reproduce the economy as Sraffa himself (1962:3) explains:

There is a unique set of exchange-values which if adopted by the market restores the original distribution of the products and makes it possible for the process to be repeated; such values spring directly from the methods of production.

Clearly, if the market does not restore the original distribution of products, then this set of exchange values will not hold. In the Sraffa system it is not actually *algebraically possible* – if the price of iron is set higher than the reproduction ideal, then the users of iron will obtain less iron and the producers of iron will end up with surplus stocks. And our knowledge of ordinary demand and supply informs us that if the price of iron is too high then likewise there will be a surplus stock at the end.

This is the mode of operation of a real economy. Supply never equates to demand in anything or, as Marx puts it ‘only accidentally’ and prices are never equal to their theoretical ideal. If, therefore, one pursues the Leontieff dynamic model one finds that *prices are indeterminate*. The notion that these prices can be determined by technical structure is impossible to pursue.

But Sraffa’s followers nevertheless pursued this impossible road, and attempted to use the Sraffa system without abandoning general equilibrium. I think this was a step *backward* when compared with the quite promising prospect offered by the *original* project of Hawkins, Simon, Leontieff and the other early pioneers of dynamic analysis. And it led as I have stated to a convergent evolution; it *redefined the concepts* with which these writers began, so that they came to mean in practice the same as their neoclassical counterparts. In my final section I suggest why this was possible.

### *The thing mode of production*

When a physicalist says the profit-rate must rise, and expresses unease or distress at our finding in support of Marx’s theory of the tendency of the rate of profit to fall, what is nearly always in mind is the following idea: through technical progress, society produces more and more ‘things’. By a kind of physiocratic reasoning, the ever-growing output of things must surely result in an ever-greater surplus and hence ever-greater profits, or an ever-greater wage, depending on the struggle for surplus ‘things’.

It then seems very unreasonable that the money or value rate of profit might fall in this process. When we produce illustrations to show that it does, it seems against common sense, as some kind of trick, accident or deceit. Instead of explaining our results our critics always try to explain them *away*. This is a very curious reaction from a scientific point of view, since *mathematically* the

problem is that of path-dependence,<sup>23</sup> which is quite well-known and establishes the following: there is a quantitative difference, in the event that the parameters of a system are undergoing secular change, between the predictions of comparative static and genuinely dynamic solutions. This quantitative difference is always in the same direction, and represents the error term involved in mistaking the comparative static solution for the true solution. The rigour of this finding from a mathematical point of view is impeccable, and it is curious that though in ten years of debate no error has yet been found,<sup>24</sup> few people are prepared to draw the not unreasonable conclusion that comparative static method is suspect.

In my view the refusal to come to terms with this simple result has a straightforwardly dogmatic character; as I stated earlier, the proof of dogma is reaction to error.

The leap which must be made is to understand that what is at fault is not the temporal method, but the commonsense intuition that arises from attempting to perceive an economy as the production of things by means of things.

The problem is that the physicalist project, the view of an economy as things making things, is unsustainable and mystificatory. It therefore collapses into something else, which is to measure physical goods in money; in short what this speaks of as things, are not things at all but flows of money capital. In the last analysis, it fails to make an adequate distinction between *use-value* and *exchange-value*.

The 'commonsense' view does not realise that it is actually discussing not flows of things but flows of value. It is obliged to confront this fact once it is forced to make allowances for changes in the price level, since it has to admit that a mere doubling of all prices cannot be considered a doubling of wealth. However, the measure of value which it applies is the neoclassical price index, which not only differs quantitatively from Marx's measure of value but injects an irretrievably subjectivist content into the project. In particular, it fails to distinguish changes in productivity from changes in the price level, and in fact treats every rise in productivity as an increase in value production, identifying the neoclassical concept of real output with Marx's.

#### *What is a thing? Real, Material and Physical in the minds of the economists*

What makes this confusion possible, however, is an even more primal error: the 'commonsense' view takes a use-value to be a *physical* property of a thing. To grasp this fact we must establish what the abused word 'technical' really means.

What are the 'physical quantities' under discussion? What happens when, through technical progress, the economy begins substituting one good – say a 586 computer – for another quite similar good, say a 486 computer? Or a trainer for a plimsoll? A can of beans for a bunch of beans? A colour TV for a mono TV? A short glance at the world of commodities reveals that no commodity is reproduced identically; the old is constantly replaced by the new. In fact, there is no such thing as the 'net product' beloved of the entire post-Sraffian school. Moreover, most of this school have committed the quite serious logical error of supposing that a positive net product is a

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<sup>23</sup> See Freeman, (1996), 'Mr Marx and the neoclassics', presented at the annual conference of the Society for the History of Economic Thought, Vancouver 1996

<sup>24</sup> I would not be so foolish as to predict that none will be found in the future. The point is that one hasn't been found yet, so that as the debate stands formally our critics are what we in the trade call 'wrong'. What are they doing about this? Seeking, not for their own mistakes, but for ours. But they've had ten years to find our mistakes. Isn't it time to look at theirs? That is the issue.

necessary condition for positive profits. It isn't.<sup>25</sup> Negative net production of most commodities is the normal state of being of a changing economy.

What society actually produces, consumes and reproduces are *use-values*; the means of satisfying certain human desires. What the 'technical matrix' – if such a thing really exists – consists of, is not flows of goods but flows of *uses*. Therefore, when terms such as the 'real wage' are thrown into discussion as if it was obvious what this consists of, it is in fact not obvious. The real content of the concept of 'real wage', is the satisfaction of a socially-defined conglomerate of subjective requirements. Indeed, it is very hard to see how the wage can be discussed otherwise. Marx long ago recognised this by including in the wage a substantial 'moral and historical' element which is socially defined.

This does not make the real wage unreal. But it does give it a definite subjective content, and one of the tasks of economics is to incorporate this into its treatment of the wage. The endless repetition of the word 'real' as if it were a synonym for 'material' does not escape this any more than the endless use of 'technical' as a synonym for 'natural'.

### *The production of things by means of things*

It might be thought that at least production is free of this taint. However, it is not so simple. Let us, for example, ask what a technical change really consists of and how it enters the technical matrix.<sup>26</sup>

In the first place what is a 'better machine'? When I replace a 486 computer by a 586 computer, I replace a less productive machine by a more productive machine. It is moot whether the use-value is the 'same' but since our task is a critique of an existing concept, let us take this as given. Since the 586 computer is a more productive instance of the use-value 'computing', for the same labour more can be produced. The unthinking way this is usually represented is this: beforehand, one computer could make, say one book with one month's labour; after, another computer can make, say, two books with one month's labour. So, the coefficient of the technical matrix dealing with 'production of books by means of computers' has halved; the input of computers per book is one half what it was. This the rise in productivity is 'due to' the capital investment in a new computer. The debate then turns on whether this substitutes capital for labour, or labour for capital, or some combination of the two.

This discussion is held as if it were completely unproblematic to discuss the question in physical terms. In the above case, the coefficients of labour and of capital have both halved. The investment employs capital and labour in the same proportions, to double output. More 'things' are produced for the same labour so that, it seems intuitively, the surplus available for distribution is larger and so the rate of profit must be larger.

But it is not so simple. What *is* the use-value of a computer? To produce books. What does it *mean* to employ a computer that is twice as productive? It means to employ twice as much of the use-value 'computer'. It means to double the input of 'computer'. So the technical coefficient of computers per book has not altered. It now appears that the investment was a pure labour-saving investment. Indeed, if this programme of interpretation is applied rigorously, it is evident that almost every technical change is a labour-saving substitution in use-value terms.

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<sup>25</sup> See Freeman, A (1997) 'Positive Profits with a Negative Net Product', presented at the first conference of the European Society for the History of Economic Thought, Marseilles, February 1997

<sup>26</sup> John Ernst's persistence with this question should be acknowledged. My comments owe much to an argument advanced by Paolo Giussani. Any errors are my own.

Can we escape by measuring computer inputs in terms of ‘numbers of machines’, for example? When I started working with computers, one ‘machine’ occupied the entire floor of a large factory. The cleaners hung their coats up in the CPU and the engineers drove trucks around in the memory. Its storage was probably slightly less than a modern calculator. Are they both just ‘machines’? When we study how statisticians approach this we find something very curious: they use what are called ‘hedonic’ indices which measure functionality in terms of performance. The word ‘hedonic’ does not exactly reek of oil and metal.

But the conceptual difficulties go further since, for example, the computer may double the production of books, but treble the production of airflights.

Moreover computers, like most other goods, are not just a means of production. If the worker gives her son a computer as part of the ‘real wage’ then the measurement of the ‘amount of computer’ the son gets comes under the classification of the *subjective* pleasure it brings the son.

No matter what subtle distinctions are made in the theory, the market reduces all such distinctions to one common measure by exchanging all use-values against money. It is not possible to take the same computer and sell it to a business for twice as much money as to a consumer on the grounds that it is twice as useful. Against the will of all agents and all theoreticians, money *reduces* all use-values to a common denominator.

Hence if we construct indices to compare ‘real’ output with ‘real’ wage, we are not free to assert that the computer when used for the son’s pleasure counts a half or double what it does for the factory-owner using it as a means of production. Indeed, in this case the *meaning* of ‘physical’ surplus would be obliterated if each computer figured in output as two, but in inputs as one. We could double the wealth of society by transferring all the computers from the factories to the sons,<sup>27</sup> in a latter-day equivalent of the Keynes housekeeper trick. We have no choice, to give any meaning to the concept of a technical matrix, but to harmonise the measure of consumption in production and by humans. The very fact of living in a money economy makes it impossible to reduce use-value to a purely physical magnitude.

*Many-splendoured things: use-value as unity of natural existence and human satisfaction*

These conceptual difficulties are not confronted, as far as I can see from the literature. Maybe I have missed something. What I see is this: what physicalists actually do is use statistical information from input-output matrices where the data is not derived from any physical measurement at all but is directly represented in the price form.<sup>28</sup>

In mathematics we used to call this a ‘hand-waving’ argument. The lecturer outlines a general theorem which is rigorous, beautiful and watertight, and then gets to the point where it has to be

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<sup>27</sup> an idea which has already occurred to many of the sons.

<sup>28</sup> When I raise this with practitioners of the input-output art, they invariably object that the coefficients are dimensionless ratios and therefore independent of prices. Leontieff himself (whose Berlin PhD supervisor was, curiously enough, von Bortkiewicz) was perfectly aware that this was not so and is just as honest about it as his supervisor. He baldly describes input-output analysis as ‘the simplified version of the classical general equilibrium theory’ (Leontieff 1953:7) He then writes: “All figures in this table are shown in dollars. They might as well have been given in physical units appropriate for the description of the outputs of the individual sectors of the economy – tons of coal bushels of wheat, ton miles of transportation, man-hours of work, and so on. As a matter of fact, the dollar figures entered in each particular row can be interpreted in this sense *provided one defines the physical units in which they have been measured as ‘the amount (number of tons, yards, ton miles, or hours) of the particular product purchasable for one dollar at the prevailing 1947 prices’*.” (Leontieff 1953:9). The dollar is thus the scale of measurement of all physical units. A rise in the relative price of, say steel, will therefore raise all entries in the steel row (consumption of steel), and diminish all entries in the steel column. The input-output matrix does not at all represent the purely physical structure of production but, on the contrary, it represents the flows of *capital* within the economy, telling us how many *dollars* of iron are required per *dollar* of steel.

mapped onto reality. It then emerges that the objects to which the theorem refers have no necessary relation to the objects of reality. At this point, the speaker brings out a visual aid containing images that vaguely correspond on one side to objects in reality, and on the other to ideas in the theorem. Then while the audience is distracted, the speaker waves a hand in the air and says 'it's like this', at which point if timing is good, the coffee arrives.

There is a double elision. First of all, it is alleged that it is possible to speak logically of production as a purely material process with no subjective element. This creates the illusion that the economy concerns 'things' that exist independent of our use of them. Then, finding that the magnitude 'amount of thing' is almost unmeasurable, the economists substitute the measurement *in money* of the things, but wave their hands in the air and speak as if the input-output matrix was really a technical and structural description of a 'thing' economy.

What we really find is the following: what actually exists in society is neither pure private satisfaction nor pure physical magnitude. What actually exists is use-value, the specific combination of satisfaction and physical magnitude which is bought and sold as a commodity. Each half of the general equilibrium project takes one aspect of the totality which use-value consists of, and attempts to make it the sole foundation of a distinct theory as if it were half a Fabergé egg. But this separation is not really possible. Hence when the attempt is made to describe use-value either as pure satisfaction or pure physical magnitude, and to base a system of general exchange entirely on this description, the end result in both cases is the *same*: a system of relative prices that is actually determined neither by satisfaction nor by physicality, but by use-value. We have a system for the *determination of value by the magnitude of use-value*.

#### *The Streetcar named Desire*

The core problem is extremely profound: it is that the *subject matter of economics consists of human relations which appear to us as objects* – such as money. Neither the mental nor the material aspect of social relations can be distilled out in some kind of pure form. Political economy cannot be reduced or subordinated to another field of knowledge such as psychology or mechanics. It demands its own concepts, appropriate to its subject matter, just like any other branch of knowledge; in this case the specific concepts appropriate to the study of human relations in the alienated form of commodity relations. Economics really is the study of social relations, and this is not an optional choice for economists. If they seek to define their subject otherwise, they mystify and confuse only themselves, because they seek to define it as something it is not.

And precisely because it is not possible to redefine economics as a natural or naturalistic science, neither is it possible to relegate Marx to the status of an idiosyncratic universalist who 'chose' to combine the study of economics with the study of society. Economics is *about* society, and the physicalist flight from this into the technical is just as obscurantist as the marginalist flight into the psychological. The specific problem which Marx set out to investigate is this: how is it, even although all economics is social, the social relations that it deals with do not appear openly and transparently to us? How is it that we can, through the subjective exercise of our wills, bring into being things that confront us as objects independent of our will? How does the *mental and subjective* confronts us as *if it was natural and objective*? The concept of alienation is not, as Althusser sought to establish, merely a humanistic hangover. It is the core scientific concept required in order to understand a society which turns its subjects into objects.

There is a cost in adopting a fully-fledged temporal approach, particularly for anyone who has (like all of us) spent a large part of their life trying to make sense of the old way of thinking. It is a sacrifice to give up so much work and reconstruct conceptual foundations from top to bottom.

But this personal, individual cost has to be weighed in the proper balance. On the other side of the scale comes, first of all, not just the confirmation of one or two ideas about Marx but *all* the questions on which Marx-based analyses takes issue with the reigning orthodoxy, that is, the right to criticise. This right is what was sacrificed when neoclassical economics realised it could not win confrontation on the terrain of either concepts or results, and determined instead to *rule Marx's critique out of court by 'proving' it inconsistent.*

Moreover when we study the arguments of our most sincere critics carefully, what we usually find is that they resist our very general conclusions because it would mean giving up one or at most two quite particular cherished ideas – indeed, it usually turns out that what has to go is not the cherished idea but the cherished way of proving it. Again, the costs and benefits must be weighed up.

Secondly, I repeat that in the dock is not Marx but Marx's target: the economics profession. This is not just a question for scholars but millions – probably billions – of victims of the market economics of the 20<sup>th</sup> Century. If our conclusions are true, then a very powerful weapon is available to these victims, of which they have been deprived for more than eighty years by the neoclassical reading of Marx. Viewed in this light, I do not really think there is any choice.

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