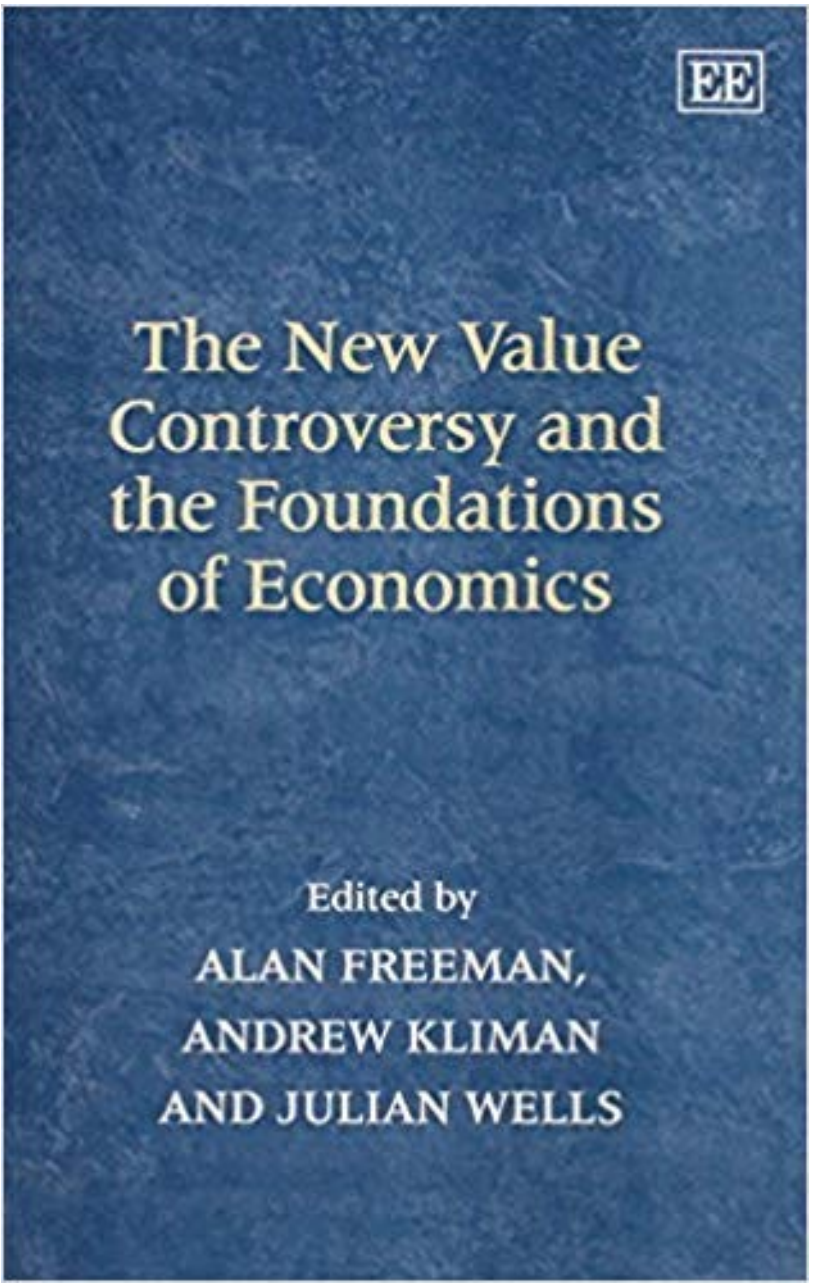
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The New Value Controversy and the Foundations of Economics
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2004

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Introduction

The papers in this volume reflect a critical stage in the evolution of the modern reappraisal of Marx's value theory and critique of political economy. They represent the first response by Marxist scholars to the debate initiated by *Marx and Non-equilibrium Economics* (Freeman and Carchedi 1996), a work that presented, for the first time in book form, what has become known as the Temporal Single-System Interpretation (TSSI) of Marx's value theory.[1]

In the first part of this volume, comprising chapters 1-11, the key underlying theoretical questions at issue are debated in depth. The second, more exploratory, section compirising chapters 12-18, is dedicated to a range of new or under-debated questions which, in the light of the TSSI and other new interpretations of Marx's value theory, are recognised to be deserving of renewed scholarship.

The TSS interpretation is controversial because it challenges a prior consensus within Marxist scholarship. In Duncan Foley's (1997:493) words, it 'endorses Marx's treatment of the transformation problem', that is, the account of the transformation of commodity values into prices of production given in Chapter 9 of *Capital*, Vol. III. It also offers the first refutation of Okishio's (1961) famous theorem, which had supposedly disproved Marx's claim that cost-reducing technical change tends to lower the rate of profit. In both cases, it confirms the logical coherence of Marx's theoretical results without 'correcting' or replacing Marx's own presentation of his own views.

INCONSISTENCY AS JUSTIFICATION FOR CENSORSHIP

By any objective standard, the significance of these findings is enormous. In the current historical context, they have an implication extending beyond the specialist study of value theory: they remove the only serious justification offered for the near-total exclusion of Marx's own ideas by mainstream economics.

Empirically, Marx's fundamental economic judgements, rediscovered by the press in every crisis, have stood the test of time in contrast to many once-fashionable notions. Who today remembers the conventional wisdom of the sixties, that planners have successfully fine-tuned crisis out of the market

economy? Or the Nobel Prize-winning bullmarket gurus of the nineties who, as the *Financial Times* put it, 'festooned' the boards of today's ignominious stock market failures? In contrast, as Cassidy (1997) notes:

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

Nevertheless, the theory and concepts from which Marx's insights stem are deemed unmentionable in economics. It is insufficiently appreciated that economics, which claims to be the most, if not the only, truly scientific discipline among the social sciences, treats Marx quite differently than its 'less scientific' sister disciplines. As Brewer (1995:111) notes:

> By any normal standard, he should not be accorded a significant position in the history of economics at all. It is not just that his ideas are not to be found in modern textbooks, but that they were never seriously discussed by mainstream economists, either during or after his lifetime.

In standard undergraduate courses in virtually every liberal arts or social science subject other than economics, Marx has a place. He is treated as a theorist whose views should at least be known, even if only to reject them. In economics he is not merely rejected: his ideas are simply not to be found. The mere word 'value' is received by everyone but tax collectors as a signifier of subversive intent. 'Positive' economic science has purged itself of the concept.

It thereby systematically excludes an entire theory from consideration. Any economist who seriously seeks to develop Marx's own ideas, in their original form, in however scholarly a manner, must recognise some basic facts. She is unlikely to be published in mainstream journals; she will not be promoted – at least on the strength of her Marxist scholarship; she is unlikely to secure tenure; and she will not be allowed to incorporate her research into her teaching at least until graduate level, and then only in a few islands of liberalism.

The charge of inconsistency is a central pivot of this suppression. Without it, no rational basis for excluding Marx remains.

Of course, we are not foolish enough to claim that reason has great bearing on what economists choose to teach, study or fund. But Marx's spectre haunts them still. The anti-globalist movement questions a ceaseless thirst for profit masquerading as a natural order, and searches for a more comprehensible ex-

planation of how capitalism really works. French students, calling for a 'post-autistic' economics, challenge economic orthodoxy's overweening claims to scientificity and its dogmatic insistence on expressing economic ideas almost exclusively by means of formal models. In disciplines such as international relations, geography and philosophy, growing numbers of writers have staked out their own challenges and alternatives to economic orthodoxy. There is a growing unease about what the economics profession has really achieved, echoed within the serious business press, and evidenced by the impact of writers such as Ormerod, Krugman, now Stiglitz, and indeed Soros.

It is crucial for those who question economic orthodoxy to understand a deception at its core: its censorship of the ideas of its greatest critic is unscientific and unfounded. Although the grounds for this censorship are allegedly logical, they are in fact ideological.

Several key contributions to *Marx and Non-equilibrium Economics* argued – and, we believe, proved – that the alleged inconsistencies or incoherencies that have provided economics its justification for the rejection of Marx's legacy are not present in his own writings. They arise instead from a theory which, although almost invariably portrayed within Marxian economics as 'Marx's theory of value', is actually a distinct theory in its own right. Its major founders and exponents include Dmitriev, Bortkiewicz, Sweezy, Seton, Okishio, Morishima, Shaikh, Steedman, and Laibman, among others.

Their theory rests crucially on two revisions introduced by Bortkiewicz (1984) in 1906–7 in order to 'correct' Marx's own theory. First, the revised theory is atemporal or *simultaneist*. In the real world, the prices of inputs into the production process can and do differ from the prices of the outputs that later emerge. In simultaneist models, however, inputs and outputs are valued simultaneously, as if there were no lapse of time between input and output. This procedure prevents the per-unit prices (and values) of the outputs from rising above or falling below the per-unit prices (and values) of the inputs. Thus this revised theory in effect presupposes the perpetual reign of a particular sort of equilibrium.

Secondly, the revised theory has a *dual-system* character. Whereas a commodity's price depends in part on the *prices* of the inputs used to produce it, the commodity's value, as defined by the revised theory, depends instead on the *values* of the inputs. Prices are thus determined within a 'price system' to which value is irrelevant, while values are determined within a 'value system' to which price is irrelevant. Thus does dual-system theory sever the link between values and prices.

The TSSI holds, in contrast, that Marx treated and conceived of both values and prices as magnitudes determined in historical time (hence the term 'temporal'). That is, he offered a general theory of their determination, one that applies whether or not the values and prices of inputs equal the values and prices of the

outputs that emerge later. The TSSI also holds that Marx's theory had a 'single-system' character: the sum of value that used-up means of production transfer to products is the sum of value that is needed to acquire them. It thus depends upon their price (not their value) at the time they enter the production process.

Within this reading the alleged contradictions between Marx's derivation of value and his principal contested assertions about it simply cease to exist. In a nutshell, the reading makes sense of what Marx himself wrote.

THE THEORY OF SCIENCE AND THE SCIENCE OF THEORY: THE CONTROVERSIAL ROLE OF HERMENEUTICS

The TSSI is an interpretation of Marx. It is not a 'new' theory of value that begins, as does so much Marxian economics, from a perceived requirement to correct Marx's alleged mistakes. TSSI authors have supplemented their work on value theory as such with extensive study of Marx's own writings. They claim to have established, through this re-examination of what he actually wrote, some new facts about his value theory which fly in the face of the conventional wisdom that, in its original form, this theory is riddled with errors.

This return to, and defence of, his work has been the source of much controversy, as the first section of the present volume makes clear. A common reaction, most cogently expressed in this collection by David Laibman, is that TSSI authors seek to establish a 'new Marxist orthodoxy', a dogmatically-asserted reading of Marx to which all others must conform. The contributions from Freeman and Kliman from within the TSSI perspective, and of Moseley from outside it, reflect the intense discussion this provoked.

The TSSI's proponents do not seek a new orthodoxy. They do not assert that Marx made no mistakes, nor that other value theories and critical modifications of his ideas are illegitimate. They do insist, however, that allegations of error be substantiated. They have thus returned to Marx's texts, not in order to embrace them as infallible, but in order to ascertain whether he did indeed commit the errors that have long been attributed to him. They believe they have found, to the contrary, that the apparent errors have arisen from misreadings of his texts.

The point is a simple one: before one criticises a theory, and certainly before one alleges error, one must first establish what that theory is. In other words, one must interpret – even the hard-nosed 'scientific' economist must do so – and there are certain standards to be followed when one does. The further issue which then arises is: by what means and on the basis of what evidence does one decide which of a set of competing interpretations is the most appropriate, in order to conduct a valid test of the theory?

Every interpretation is subject to the standard hermeneutic requirement that it be able to show that different, even seemingly contradictory, parts of the text actually constitute a coherent whole. It cannot merely claim to make sense of the text; it must pass the test of demonstrating coherence, or at least present the evidence which permits the reader to judge. Moreover no interpretation can legitimately lay a dogmatic claim to being the only possible reading, any more than any theory can claim to be the only one possible.

One may of course develop any theory and call it 'Marx*ist*', but what (if anything) the theory tells us about *Marx* is a different matter. One can no more develop Marx's theory, nor indeed advance any propositions whatsoever about it, in ignorance of its actual content than one can study or develop the thought of Darwin by reinterpreting the myth of creation.

At stake is the nature of scientific endeavour. Faced with competing theories, we need to test them, in order to decide which we can reject or, possibly, accept. But how can we claim to test alternative theories, unless we have some definite, evidence-based practice which allows us clearly to identify what theory we are testing? Suppose, for example, it is proven that ISLM Keynesianism failed to explain the 1970s stagflation. What exactly has this demonstrated about Keynes' own theory? Not a lot, unless it is established by scientific hermeneutic procedures that ISLM Keynesianism *is* in some sense the theory of Keynes. In exactly the same manner, it has been proven that the Bortkiewiczian reading of Marx leads to inconsistencies, to the redundancy of value, and to Okishio's negation of Marx's theory of the falling profit rate. What exactly does this tell us about Marx's own theory? Unless the Bortkiewicz interpretation in some sense is the theory of Marx, not a lot.

The primary reason this matters is that the exclusion of Marx is one of the cardinal implicit tenets, one of the principal ideological pillars, of modern economics. As we noted above, the standard basis for this exclusion is precisely and only the assertion that his body of work is inconsistent. The implications of the TSSI therefore reach beyond Marxist economics to call into question the foundations of neoclassical economics as a whole.

The very existence of an interpretation that makes sense of Marx's value theory, and hence removes the appearance of inconsistency, implies that mainstream economics no longer has a legitimate reason to ignore it. Inasmuch as genuinely scientific practice requires that a theory be tested against at least the most serious valid extant alternatives, mainstream economics cannot both ignore Marx's theory and be regarded as scientific. Thus the explosive potential of the proposed refutations of inconsistency is not merely that they provide a clear theoretical foundation for research based on Marx's own work – a line of research which has, in effect, been treated as heretical even by Marxian economics – but because they call into question the entire theoretical output of twentieth-century economics.

THE MARXIST REACTION

Given that the findings of TSSI research call mainstream economics into question in so fundamental a way, it might have been expected that Marxist economists would welcome them. Not so: TSSI authors first challenged the alleged proofs of inconsistency in Marx's value theory in the early 1980s. Since that time, mainstream Marxian (and Sraffian) economics have consistently greeted TSSI research with scepticism, incredulity, and opposition.

Critical evaluation is of course welcome; the problem is that no such response was forthcoming. The interpretation was ignored and excluded by Marxists just as economics ignores and excludes Marx.[2]

Yet now that the TSSI has nevertheless started to become known, especially since the publication of *Marx and Non-equilibrium Economics,* some of its Marxist and Sraffian critics have entered into a debate of sorts with its proponents. It is, however, a rather curious debate, since the critics either avoid, or indeed emphatically deny the need for, any serious re-evaluation of the question of internal inconsistency. They neither disprove the TSSI refutations of the alleged proofs that Marx's theory is inconsistent, nor acknowledge that the proofs are false. Inasmuch as these alleged proofs constitute the sole justification for the near-total exclusion of Marx's own work within economics, the critics' avoidance of the issue serves to perpetuate that exclusion.

This response has self-destructive consequences. The internal inconsistency argument was probably the most decisive weapon in the highly successful post-Sraffian onslaught on Marxist orthodoxy of the 1970s, so devastatingly summarised in Steedman (1977). The material outcome of this onslaught was effectively the near-elimination of Marxist economists from substantial influence in academia, following significant advances made in the wake of the radicalisation of the sixties. *Ceteris paribus* one would have expected its Marxist victims to welcome an effective response. In responding as they have, the critics do themselves no favours. The censorship which rests on internal inconsistency is applied to all Marxism, not just to its temporalists.

We suspect that a part, at least, of the reason for this entrenched position is an apparent dilemma. Critics seem to believe that, in order to challenge the claims of internal inconsistency it is necessary to accept the whole of the TSSI position and abandon all past simultaneist work; on the basis of this (mistaken) belief they have, in essence, opted to prioritise their own survival as Marxists above the defence of Marx. Yet the dilemma does not even exist. To refute the standard allegations against Marx it is not necessary to agree with or endorse an alternative interpretation, only to recognise that it *exists*; that it is internally consistent and supported by evidence.

Sraffian critics of the TSSI are hence perfectly entitled to continue working within their own paradigm. They cannot however defend the assertion that

proof of inconsistency succeeded or failed. The standard versions of Marxian value theory stem from an acceptance of Bortkiewicz's 'correction' to Marx and all subsequent proofs of inconsistency are derived from this 'corrected' version. But if Bortkiewicz's original proof does fail, there is no need to correct Marx's own treatment of transformation, and none of these subsequent proofs are relevant since none of the problems they address – such as the redundancy of value – actually apply to Marx.

Ramos' paper is not directly a response to Laibman, but the questions of hermeneutics and interpretation are equally central to its argument. Ramos is the first refutation of Oshikio's theorem which pays particular attention to changes in the value of money and suggests how a possible rising monetary profit rate should be treated in Marxist theory. Like other TSSI refutations of the Okishio theorem, it centres on the divergent path of the material profit rate, the money profit rate, and Marx's rate of profit. The hermenuetic question is then: is the rate of profit which, according to Okishio, cannot fall as a result of technological progress actually Marx's profit rate? If not, as TSSI authors argue, the principal conclusion of Okishio's theorem is null and void.

How, then is Marx's own, value profit rate determined? This obviously depends on his conception of value. From a temporalist standpoint, value *exists* already in production and the profit rate is therefore formed before exchange, and independent of it. The next set of papers deal with an issue that is critical to this interpretation, namely abstract labour. Is labour abstract in production or does it become so as a consequence of the subsequent exchange of its products? Roberts' article, and the responses from McGlone and Kliman, de Angelis and Robles, form the focus of a discussion around how abstract labour is formed, what constitutes it, and how its relation to money is determined.

Davis' incisive article was not directly written as a response to this debate, we have placed it at the head of this section because, in engaging some feminists' critiques of Marx, Davis identifies probably the central question of value theory: 'exactly which forms of labour create value?' She relates this to the question: 'under what social and historical conditions does labour become abstract?' She argues that

> Marx uses the terms 'value' and 'surplus value' to refer specifically to capitalism, a historical organisation of the economy limited to certain times and places. .... To argue that value and surplus value production are necessary for women's activities to be considered meritorious is to fall prey to 'commodity fetishism' (Marx), the notion that people have no 'value' without being able to produce commodities and money.

The final section of the book contains a series of contributions illustrative of the wide range of issues discussed during IWGVT conferences. The papers in

Marx's own value theory is internally inconsistent (much less that the inconsistencies have been proven), nor that their own work constitutes a correction of his errors, without first having faced squarely the proposed disproofs of these claims and the evidence on which these disproofs are based.

It is here that the role of pluralism is scientifically decisive. In order to substantiate the charge of inconsistency, it was never sufficient to show, as the Sraffians undoubtedly did, that Marx's conclusions cannot be supported within *one particular reading* of Marx. A much more powerful proposition has to be demonstrated: that there exists *no possible* reading of Marx that can render his conclusions consistent. No such attempt has ever been made. Moreover Marxists and Sraffians blithely continue writing as if the actually-existing alternative readings of the last twenty years (of which TSSI is only one) simply did not exist. The standard account continues to assert that Marx's value theory is synonymous with the revised – simultaneist and dualist – theory of Bortkiewicz, Sweezy, Steedman, *et al.*, that his principal conclusions about value, price, and the rate of profit are incompatible with that theory, and that Marx himself is therefore inconsistent.

This account remains so unquestioned that articles based on alternative interpretations continue to be rejected – even by journals of radical political economics – on the grounds that their theoretical framework and results differ from those of the received Bortkiewicz–Sweezy–Steedman interpretation. Attempts to challenge such editorial standards have been met with great hostility. As has sadly been the case in the past, therefore, the Marxists themselves have played as substantial a role in the suppression of Marx's own ideas as have their non-Marxist opponents.

TOWARDS A CRITICAL MARXIST PLURALISM

In the course of their re-evaluation of Marx's legacy, TSSI authors were obliged also to reappraise the conduct of Marxist scholarship. They were driven to a realisation that they could not respond to Marx's critics as these critics behaved towards them or, indeed, towards one another. They were thus drawn into a battle on two fronts. They had to seek recognition of, and debate around, their own discoveries. And they had to examine – and, as far as possible given their limited numbers and influence, critically reshape – the practices that led to the suppression of Marx's theory.

This examination involved more than a critique of the practice of others. TSSI authors were forced to ask themselves how they could react to their predecessors and opponents, to the existing body of theory, in such a way as to remove from the discourse the very possibility of establishing a new dogma. The present volume is the first fruit – only partially successful – of that endeav-

our.

As part of the attempt to forge a new, non-dogmatic kind of discourse, proponents of the TSSI began to restructure their own conferences – the annual mini-conferences of the International Working Group on Value Theory (IWGVT). The papers in this volume arose out of the 1996 mini-conference, the first to try out the new approach to scholarly discourse.

In a rare and entirely welcome spirit of pluralism and support for heterodoxy, the Eastern Economic Association has hosted the IWGVT mini-conferences every year since 1994. A loose association of researchers sympathetic to the TSSI, the IWGVT was originally established to provide a framework for a small group of like-minded people to present, assess and discuss their work with one another.

It soon became clear, however, that the IWGVT occupied a terrain different from that which its founders intended. Its mini-conferences quickly became large and diverse. Eighteen papers were submitted to the 1996 conference, but only a few of them were written by TSSI authors. The remainder came from people holding a great variety of other views, who often had little in common with the IWGVT, but who nonetheless wished to discuss Marx, or Marxism, or their approaches to value at its mini-conference. The suppression of Marx by mainstream economics had created an uneasy association by default. Scholars were flocking to a conference that had been organised to promote a research programme different from their own – a research programme in which a good many of them were uninterested and to which some of them evinced outright hostility – because in effect there was nowhere else to go.

The mini-conference organisers had to decide what to do. They could have fallen back on standard practice and tacitly excluded contributions that did not address their concerns. Or, in recognition of their wider responsibilities to scholarship, they could have stuck with the *status quo* – continued to organise quite large conferences in which the great majority of participants not only disagreed with their views, but also declined to engage their research. Neither of these options were attractive, however, so they searched for an alternative.

At the 1995 conference, a seminal discussion took place at which the conference participants, including both advocates and critics of the TSSI approach, asked themselves whether, and how, to organise discussion between *paradigmatically distinct* theories of value, and interpretations of Marx, in such a way as to rule out dogmatic exclusion. The watchword of the conferences became *engagement*. It was not enough, TSSI authors argued, to follow the established procedures of 'positive' economics, setting out each theory on its market stall and leaving the reader to shop around. It was necessary also to read, and respond to, the alternatives to one's theory.

The alternatives are paradigmatically distinct because they do not share a common ontology. On the surface, different value theories may seem to refer to

the same things, but they assign divergent and antagonistic meanings to the most basic terms – value, profit, price, output, consumption, and investment. When a proponent of simultaneism speaks of the profit rate, she does not mean the same thing as a temporalist. When a dualist speaks of value, she does not mean the same as proponents of the New Interpretation or single-system interpretations.

An analogy, explored by Freeman in this volume, is the cosmological debate of the sixteenth century. Galileo and his detractors could not resolve how to settle whether the earth moved because actually, they shared no common view of what the word 'earth' actually meant.

In the absence of a means to appeal against it, prior authority rules by inertia. Not only were established practitioners deeply suspicious of dialogue with newer interpretations, they had unknowingly fallen into an intensely dogmatic practice. Proponents of the standard interpretation assigned a meaning – their own meaning – to the words 'value' and 'price', and then judged all assertions about value and price as if this meaning were the only one possible. Texts and research projects were judged unacceptable on *a priori* 'logical' grounds when they were in fact fully coherent, but did not conform to the methodological and ontological presuppositions of their judges. The result was what Dow (1985, 1996) has termed a 'closed system'. Free scientific enquiry – which demands constant critical examination and transformation of the meaning of concepts – was replaced by a system of purely deductive logic with a fixed and unalterable ontology, which would not and could not grant the legitimacy of other ways of thinking. It had ossified and become incapable of advance.

The alternative proposed by the IWGVT organisers was a set of standards termed the 'IWGVT Scholarship Guidelines' adopted in 1997 and reproduced in this volume. The basic purpose of the guidelines was to try to create conditions in which alternative theories and interpretations engage with one another. A second purpose was to secure recognition that every theory and interpretation carries with it its own conceptual framework, and therefore that a theory or interpretation can be tested properly only if the conceptual framework employed in the test is its own, rather than that of the person running the test.

From this point of view, the first function of debate is not to settle differences, but, by means of engagement, to understand what each alternative is trying to say in its own right, to draw out the implications, and thus see where the differences lie without any prior judgement on which theory or interpretation is necessarily true. At *this* point, when the differences are clear, criteria for deciding between the alternatives can be applied.

This does not reduce to relativism. Rival theories may construct their facts in different ways, but the 'raw material' that is being observed is always com-

mon property. We may construct different aggregates, averages, or indicators from a set of tax returns or recorded commodity prices or wage rates, but we are not entitled to alter the tax returns, or simply to declare that a commodity was sold for a price other than the money actually paid for it. As regards interpretation, texts are shared and determinate 'raw materials' to which all interpreters are obliged to refer. The genuine possibility arises, therefore, to test a variety of interpretations and theories against each other, in terms of their ability to explain what all must accept as empirically given.

This may seem simple and obvious, and indeed it is. Yet judging the validity of theories in terms of their empirical success, rather than in terms of their conformity with the accepted conceptual framework and methodological norms, represents a marked departure from the common practice of economics, including Marxian economics. The present volume is, as we have said, a fruit of the reaction of Marxist economics to these ideas.

WHAT IS IN DISPUTE?

The invitation to engage in a pluralistic but critical dialogue was met by Marxist economists with various degrees of scepticism, ranging from bewilderment to rejection. In retrospect, it was exceptionally optimistic to hope that critics of the TSSI could be persuaded to adopt scholarship guidelines that worked against them, even though the same guidelines were clearly to the advantage of Marxists in the wider battle against censorship.

The papers in this volume therefore fall naturally into two sections. The first consists of contributions that, to a greater or lesser degree, did enter into the new controversy between different value paradigms. The second section consists of papers by authors pursuing something akin to what Kuhn (1962) calls 'normal science'. Some treat existing issues, others explore new ones, but in both cases they do so without reflecting on their own paradigmatic presuppositions. They nevertheless bear witness both to the breadth of the discussion and interest in Marx's ideas – utterly ignored in the mainstream literature – and to the stimulus that a pluralistic approach gave to this discussion. This provides a snapshot of how Marxist economics responded to the challenge of engagement and to the requirements of a genuine pluralism, in the only world forum dedicated specifically to value theory.

In light of the conference organisers' focus on engagement and pluralism, issues of methodology were prominent in the discussion from the outset. Laibman's article, and the responses to it from Kliman, Moseley, and Freeman are part of a debate, still ongoing, on the *status of hermeneutics* in the assessment of economic theories, discussed in the previous section. Laibman and Kliman both address the central question of whether Bortkiewicz's original

this section were not in general responses to the new approaches to value and did not engage them, but they frequently sparked further controversy and engagement and serve as a valuable reference, a point of departure for subsequent study and a summary of existing scholarship. We have included them because it makes the volume a snapshot of the state of Marxist scholarship at a turning point in its history.

NOTES

1. At the time it was called 'sequential' and 'non-dualistic'.
2. 'Single-system' interpretations that continue to adhere to simultaneous valuation (proposed by Wolff–Callari–Roberts, Ramos & Rodriguez, Chai-on Lee, and Fred Moseley) have met a similar fate. The 'New Interpretation' (or 'New Solution') of Duménil, Foley and others initially received a similar treatment.

1 Rhetoric and Substance in Value Theory: an Appraisal of the New Orthodox Marxism

David Laibman

The onset of the 21st century is witnessing major defeats for left and working-class movements on a world scale. The most common response among Marxists and former Marxists, in this period of crisis, is a wholesale embrace of eclecticism and agnosticism, in the guise of a 'postmodern' attack against 'metanarratives' and replacement of class struggle with 'identity politics'.

There is, however, a minor trend in the opposite direction, which deserves attention: a retreat to the doctrines of the 19th century in pure and unadulterated form. The new orthodoxy in Marxist political economy goes beyond the mere affirmation of the foundation concepts of Marxism as the most fruitful basis for continuing development of critical and revolutionary social science. The new orthodox Marxists (NOMists) assert that Marx's formulations, in both the theory of value and the analysis of capitalist accumulation and crisis, are *literally* and *completely* correct; that Marx made no errors, bequeathing to us a system that is complete in all essentials; that Marx was far ahead of his time, and totally misunderstood in the hapless 20th century.[1]

The reverse side of this coin is a scathing condemnation of practically all work by Marxists since Marx. The list of epithets applied to the Marxist tradition includes 'neoclassical', 'neo-Ricardian', 'neo-Walrasian', 'Sraffian', and so on. L. von Bortkiewicz, an early 20th-century non-Marxist who voiced strident criticisms of Marx's procedures in transforming values into prices of production, comes in for particularly harsh criticism (see Bortkiewicz 1984). Most 20th-century Marxists are derided for capitulating to bourgeois economics, especially whenever they use simultaneous equations to model the interdependent structure of capitalist production, distribution and price formation.

In this chapter, I examine the NOMists' arguments, confining attention to the theory of value and price.[2] I assume general familiarity on the part of the reader with the 'transformation problem' literature (for an introduction and surveys, see Sweezy 1970; Laibman 1973, 1992, chapters 1–2).

(1970), Sraffa (1960), Meek (1956), Bródy (1970), Steedman (1977), Shaikh (1977), Harris (1978), Lipietz (1982), and Duménil (1983) may represent this category; see also Laibman (1973, 1992) – the failure to transform inputs in the value tableaux is in fact a drawback, or an insufficiency, in Marx's presentation, which caused violations of either simple or expanded reproduction conditions and produced an incorrect measure of the profit rate, and was corrected by later generations of Marxists. It should be mentioned that Marx himself repeatedly referred to the 'possibility of error' in disregarding the effect of prices of production on the valuation of inputs (see, for example, Marx 1981:261, 265). Marx is therefore the first 20th-century Marxist, despite strenuous, and admirable, efforts by some of the NOMists to discount and explain away those passages.

1.2 THE NEW ORTHODOX CRITIQUE

The NOMists, however, insist on defending Marx's original procedure, as written. They do this in essentially three ways, which I will call the methodological, the retroactive, and the sequential.[3]

The methodological defence is best represented by the work of Moseley (1993b); it rests on invocation of the sanctity of 'Marx's methodology': the non-transformation of constant and variable capital follows from the argument of *Capital* Volume I, chapters 5–8, in which surplus value is derived from purchase of these elements of capital at their values, that is, *via* exchange of equivalents. Marx's argument seeks to show that capitalist exploitation in its pure form is based not on violation of the law of value, but rather on its fulfilment. In the formula M–C–M′, the capitalist starts with a given amount of money capital, M, and acquires, at the end of the production/exchange process, an augmented amount, M′. To isolate the source of the increase in the purchase and sale of labour-power, the original M must be constant. From this the methodological NOMists deduce that the value magnitudes of inputs are not transformed when values are transformed into prices of production.

The argument is a *non-sequitur*. There is no reason why the entire theory of the value of labour-power and surplus value cannot be stated in terms of complete value transformation – that is, of full production prices applying to goods functioning as inputs as well as (the same) goods functioning as outputs. The values of input commodities are *not* 'constant' with respect to the transformation of value (an essentially logical problem in the concretisation of the value categories in capitalist conditions). They *are* 'constant' in that their purchase is not the source of surplus value. Marx's crucial metaphorical story (Marx 1976a, chapter 6) of the equal exchange between worker and capitalist leading to the formation of surplus value in production emerges with a capitalist com-

plication: there is a coefficient differing from unity relating hours of (simple) labour time expended to units of value created. The constancy here refers to the fact that surplus value arises from the difference between value created by labour time and the *given* value magnitudes of the inputs, however these have been transformed by profit-rate equalisation. The methodological argument, then, quite aside from its unassailable orthodoxy, confuses two different senses of the word 'constant'.[4]

The retroactive argument is equally ingenious. In this view, there is no need to transform inputs in the value tableaux, because *they are already transformed* (Mage 1963, Carchedi 1984). Marx saved us the trouble of transforming them by doing so in advance. The pooling-and-redistribution of surplus value has thus already taken place for capital goods; it need only be illustrated for the outputs (presumably, consumer goods, or consumer goods plus capital goods appearing as outputs).

This argument exemplifies the curious NOMist tendency to isolate 'inputs' and 'outputs' into separate categories. In fact, the real 'dualism' is this separation, rather than the supposed treatment of value and price of production as distinct 'systems' – something done, so far as I am aware, only by Samuelson (1971) in his 'erase-and-replace' discussion. Even accepting the notion of a two-stage pooling-and-redistribution, however, the argument is illogical. In the second transformation – taking place as Marx described it with inputs 'already transformed' – the general rate of profit that is formed will be different from any rate on the basis of which the *prior* transformation of inputs had taken place. The prices of inputs will therefore have to change again, contrary to assumption.

Of the three arguments for untransformed inputs, the sequential, or temporal, is perhaps the most important (see Freeman 1995, Freeman and Carchedi 1996). The sequentialists realise that no amount of clever wordplay can ultimately escape the Steedman (1977) charge of absurdity – that failure to transform the value of a good appearing as an input while changing it when it appears as an output amounts to asserting that a good is bought and sold, *at the same moment*, at different prices – unless a dynamic process is under way, in which the price of the good as input at time 0 is in fact different from its price as output at time 1.

The sequential position in fact can be divided into two sub-positions. The first explores the implications of an iterative approach to the formation of production prices, on the basis of a constant technology and constant balance of class forces. While this may be, and has been, done in the context of transformation from values to prices of production (a process of reconstruction of the concrete in theory), it may also serve to illustrate the trajectory of *market* prices, beginning from any arbitrary levels determined by some historical conjuncture.

In this iterative story, the purchase of inputs and production take place, and inequality of profit rates is discovered. The subsequent pooling-and-redistribution may be presented pretty much in Marx's original terms, but input prices are affected *only in the next production period.* (The first purchase of inputs is a historical done deal, never to be changed.) In that next period, then, production takes place with the new input prices and unchanged technology, and a second round of redistribution and price transformation takes place. This affects input prices only in the third period; and so on. An *iterative* process is under way, well described by Morishima (1973) and Shaikh (1977); an example is presented in section 1.3 below. The known result of this process – assuming constancy of techniques and viable techniques in each sector – is *convergence*: in each period, the newly formed production prices come closer and closer to the vector of production prices resulting from simultaneous solution of the production/price equations. In short, with iterations on the basis of a constant technology, prices converge to the much-maligned 'neo-Ricardian' equilibrium prices! This, to the NOMists, is somewhat like an exodus across the desert to escape from an enemy, only to find that enemy waiting on the other side.[5]

Everything therefore rests on the success of the second sub-position within the sequential approach. Here, the non-equilibrium, dynamicist rhetoric comes into its own. In this view, nothing is constant. 'You can't put your foot in the same river twice', says Heroclitus. Marx's economics is essentially a *non-equilibrium* economics (Freeman and Carchedi 1996). Techniques are constantly changing. The quality of goods is constantly changing. *Any* measurement of output, capital stocks, or anything else for that matter, now becomes problematic. In this case it is clear that the price of a good used as an input at time 0 is quite definitely not the same as the price of that same good at time 1 (if indeed any good itself can be 'the same' at two moments of time). Then there is nothing that can be said about the prices of the inputs, except that they are what they are, or perhaps that they *were* what they *were*. The value transferred by elements of constant capital to the product is simply the amount of money paid for those inputs (Freeman 1996b). That amount is undoubtedly constant, since (leaving aside Star Trek and other undeniably enjoyable sci-fi fantasy) time runs only in one direction and only occupies a given moment once.

This 'historical-accidental' view of the value of the capital stocks is, however, a retreat to a crude empiricism, and a denial of the possibility of *any* price theory. If the capitalist economy can only be described in terms of perpetual non-equilibrium – anything else being an instance of 'Walrasian' psychopathology – then no story about the formation of prices of production can be told, *including Marx's original one*. Once again, as in the case of the ultra-methodological defence, Marx's account of value-price transformation is rescued by being abolished, along with all other efforts to explain and understand the

structure and behaviour of capitalism. The non-equilibrium standpoint appears, in this sense, to be a variety of *institutionalism*; despite its rhetorical radicalism, the opposition to equilibrium in fact signals an opposition to the theoretical reconstruction of the concrete (in this instance, capitalism), and therefore to the possibility of identifying and transcending (in theory and in practice) the defining core of capitalist reality.

1.3 AN ANALYSIS OF A NOMIST TRANSFORMATION TABLEAU

The issues involved in both the simultaneous and the sequential (temporal) positions may best be illustrated *via* detailed analysis of a typical model. From many possibilities, I choose one numerical illustration for attention, from a recent paper, 'A New Interpretation of Marx's Value Theory', by Andrew J. Kliman and Ted McGlone (subsequently published in Kliman and McGlone 1999:56).

Kliman and McGlone (hereafter KM) are concerned to defend Marx against the criticisms of Bortkiewicz: that 'logical error' is involved in the failure to transform inputs simultaneously with outputs; that Marx's procedure violates the conditions of reproduction equilibrium; and that Marx's equalities – between the aggregate value rate of profit and the uniform competitive rate, between the sum of values and the sum of prices of production, and between the sum of surplus value and the sum of profits – cannot in general hold.[6]

I reproduce (with some compression and change of notation) KM's Table 1 (Table 1.1 below). The first 'period' (we come to the meaning of the 'periods' presently) is an apt illustration both of Marx's transformation procedure and of Bortkiewicz's argument. It uses the three-sector format originated by Bortkiewicz, which is well adapted for the simple-reproduction assumption.

Table 1.1 KM's Table 1

Period	Dept	C	V	S	W	PR	P	R
	I	140	36	24	200	44	220	13.6%
1	II	40	48	32	120	22	110	36.4%
	III	20	36	24	80	14	70	42.9%
	TOTL	200	120	80	400	80	400	25.0%
	I	154	33	27	214	51	238	14.4%
2	II	44	44	36	124	24	112	40.9%
	III	22	33	27	82	15	70	49.1%
	TOTL	220	110	90	420	90	420	27.3%

The sectors I, II, and III are, respectively, capital goods, wage goods, and luxury goods. The column headings are, in order: constant capital, variable capital, surplus value, total value, profit, price of production, and the rate of profit.

In each sector, the rate of exploitation (ratio of S to V) is 2/3; this implies mobility of labour-power, a sort of working-class arbitrage pushing the value received for the sale of labour-power per unit of labour expended, V/(V + S), to equality in the three sectors.[7]

Owing to different compositions of capitals (however measured) in the three sectors, the value rates of profit differ, as shown in the last column. The average rate of profit is 80/(200 + 120) = 25 per cent from the TOTL row. Applying this rate to cost-price (C + V) in each sector, we find the average (redistributed) profit PR in each sector. Finally, adding this PR to (unchanged) C + V in each sector, we arrive at the prices of production P. The 'twin equalities' W = P and S = PR follow tautologically from this procedure, and can be seen from the column sums along the TOTL row. This exercise exemplifies Marx's famous 'brother-enemy' metaphor: capitalists in each sector are forced by competition to pool the surplus value created in their sectors and redistribute it in proportion to capital advanced. In untransformed value terms, the tableau is in simple-reproduction equilibrium: the output values of the three categories of goods, W, are equal to the respective sources of demand for those goods (the column sums of C, V, and S).

Now the problem observed by Bortkiewicz is that the capital goods and wage goods appear with two different prices, on the input and output sides of the calculation. The simultaneous defence must either deny any connection between the C and V magnitudes and commodities purchased and sold, or assert the simultaneous purchase and sale of a good at two different prices. In either case, as most of the participants in this discussion realise, the result is incoherence and absurdity.

The period 1 formulation further reveals apparent violation of the reproduction conditions: total demand for (replacement) capital goods is 200 against an output valued at 220, wage goods demand is 120 against department II output of 110, and luxury goods demand of 80 meets an output of luxury goods valued at 70.

Now KM are at pains to show that Bortkiewicz's criticism is unwarranted; that Marx's procedure is consistent with reproduction equilibrium, provided a dynamic interpretation is allowed. In their 'period 2', input prices are indeed different. The numbers in the C and V columns are derived by multiplying the period 1 numbers by the ratio of P to W in period 1. For example, the new value of constant capital in department I, 154, is the original 140 multiplied by 220/200. KM point out that the column sums of C and V in period 2 now correspond exactly to the prices of production in *period 1*: 220 and 110. This of course is what we should expect. These new input price figures represent market-clear-

ing prices, given fixed quantities in production. The prices of capital goods in the accounting schema of period 2 must reflect the 10 per cent rise in the price of capital goods in the redistribution of surplus value in period 1, and the fall in the price of the wage good inputs mirrors the 1/12 fall in the price of wage good output. Finally, KM note that the sum of the revenues left over in each sector after replacement of capital goods and wage goods exactly equals the price of production of luxury goods. Thus, capitalists in sector I have gross revenue equal to their price of production, 220, out of which they buy capital goods (from themselves) now worth 154 and wage goods (from sector II capitalists) now worth 33, leaving a revenue of 33 for themselves; capitalists in departments II and III similarly have revenues left over after replacement of 22 and 15; and these revenues sum to 70, precisely the price of production of luxury goods in period 1.

There are now two ways to complete the period 2 tableau; I will call these the *renewed production* variant, and the *surplus value redistribution* variant. KM choose the former, according to which production takes place in period 2, in real historical time, and with unchanged inputs, outputs, labour times, and techniques.[8] They therefore find the surplus values in period 2 by holding the magnitudes representing current labour time, V + S, constant from period 1. Thus, in department I, current labour time was 36 + 24 = 60; S in period 2 is therefore 60 – 33 = 27. The surplus values found by this procedure are then again redistributed, using the same method as before, to generate the rest of the period 2 numbers.

Now KM are anxious to avoid the slippery slide down the iterative chute leading to what I have no hesitation in calling the fully transformed values – the production prices identified *via* simultaneous solution. They want to stop after two periods. It is clear, however, that, even in its own terms, the period 2 numbers cannot be the end of the story. To get from period 1 to period 2, the constant and variable capitals were transformed by the ratios of output value to input value, 220/200 and 110/120, respectively; this process is intended to illustrate the price adjustment required by the requirement of intersectoral equilibrium. The ratios 238/220 and 112/110, then, imply a third period, in which the profit rate turns out to be 25.1 per cent, and the story continues. Comparison of input and output values *within a period* drives the relation between the two periods, despite KM's insistence that profit-rate equalisation is established within a period, but the intersectoral reproduction conditions appear only between periods. If this were not the case, we would need a period 0 to define the input values in period 1, and a period –1 to fix period 0, and so on; in either the forward or backward cases, multiple periods are generated.

The average rate of profit of 27.3 per cent (actually 0.272727...) in period 2 therefore clearly cannot be final. We are embarked on a (forward) *iterative process*, suggesting a period 3, and 4, and so on, and must wonder whether the

numbers in the table will converge, and, if they do, to what values. In fact, computer simulation shows that these numbers do not converge. After five iterations, for example, the value rates of profit in the three sectors are 0.153, 0.526, and 0.677, and after 10 iterations they are 0.115, 0.493, and 0.704.

We have, then, the following result of the renewed production variant. Reproduction equilibrium exists between periods (although there is an infinite regress problem in illustrating this), and profit-rate equalisation occurs within each period (complete with the much adored twin equalities). The 'price' paid for this orthodox imagery, however, is substantial: first, an apparently infinite number of sets of production prices, each set with its associated rate of profit (even if we accept the KM truncation, there are two such sets) correspond to a *single* production schema, with its given inputs, outputs, techniques, and flows of labour. This alone invites a reiterated charge of absurdity. But, in addition, there is the ontological dimension: we are treated to a truly timeless vision – akin to one of those Star Trek episodes in which certain characters are frozen in time while others walk around them. In this vision actual time passes, but production remains the same from period to period! And this metaphysic is advanced in the name of a *temporal* analysis of capitalism!

The alternative is the surplus value redistribution variant, arguably the truly dynamic variant of this model. In this variant, the first-period numbers alone represent production at a given moment in time. These numbers, whether defined as quantities of abstract labour time or their money counterparts, correspond to a real production process involving flows of direct and indirect labour. Only in period 1, then, do the V + S numbers represent flows of *current labour*. In the second period of the table, the output values (appearing in the W column) *are what they are*, that is, the prices of production formed in the first (and so far only) pooling-and-redistribution process and given in the P column of period 1. The profits remaining after this process are then the difference between output value and input costs; in sector I, to illustrate, 220 – 154 – 33 = 33. The second period is then represented as shown in Table 1.2.

Table 1.2 KM's second period

Period	Dept	C	V	S	W	PR	P	R
	I	154	33	33	220	39.7	226.7	17.6%
2	II	44	44	22	110	18.7	106.7	25.0%
	III	22	33	15	70	11.7	66.7	27.3%
	TOTL	220	110	70	400	70	400	21.2%

It will be seen that after the second pooling-and-redistribution, the reproduction conditions are still violated: total demand for wage goods, for example, is

110 against an output value of 106.7. This interpretation proposes a dynamic process of pooling and redistribution, deepening and extending Marx's original metaphor. On the basis of a *given* set of production conditions, visible directly only in the numbers of period 1, surplus value is repeatedly pooled and redistributed, and the successive tableaux reflect that process.[9]

Unlike what appears in the renewed production variant, however, the profit rates appear to be converging – as indeed suggested by the entire imagery surrounding Marx's original presentation of the problem in *Capital* III. This suggests further convergence; and that, in fact, turns out to be the case, as the data for 10 iterations show (see Table 1.3, which gives the results for periods 1–5 and period 10).

Table 1.3 Surplus Value Redistribution, 10 Periods

PERIOD = 1; R = 0.250

DEPT	C	V	S	W	PR	P	R
I	140.000	36.000	24.000	200.000	44.000	220.000	0.136
II	40.000	48.000	32.000	120.000	22.000	110.000	0.364
III	20.000	36.000	24.000	80.000	14.000	70.000	0.429
TOTL	200.000	120.000	80.000	400.000	80.000	400.000	

PERIOD = 2; R = 0.212

DEPT	C	V	S	W	PR	P	R
I	154.000	33.000	33.000	220.000	39.667	226.667	0.176
II	44.000	44.000	22.000	110.000	18.667	106.667	0.250
III	22.000	33.000	15.000	70.000	11.667	66.667	0.273
TOTL	220.000	110.000	70.000	400.000	70.000	400.000	

PERIOD = 3; R = 0.200

DEPT	C	V	S	W	PR	P	R
I	158.666	32.000	36.000	226.667	38.134	228.800	0.189
II	45.333	42.667	18.667	106.667	17.600	105.600	0.212
III	22.667	32.000	12.000	66.667	10.933	65.600	0.220
TOTL	226.666	106.667	66.667	400.000	66.667	400.000	

(continues)

PERIOD = 4; R = 0.196

DEPT	C	V	S	W	PR	P	R
I	160.160	31.680	36.960	228.800	37.634	229.474	0.193
II	45.760	42.240	17.600	105.600	17.263	105.263	0.200
III	22.880	31.680	11.040	65.600	10.703	65.263	0.202
TOTL	228.799	105.600	65.601	400.000	65.601	400.000	

PERIOD = 5; R = 0.195

DEPT	C	V	S	W	PR	P	R
I	160.631	31.579	37.264	229.474	37.475	229.685	0.194
II	45.895	42.105	17.263	105.263	17.157	105.157	0.196
III	22.947	31.579	10.737	65.263	10.631	65.157	0.197
TOTL	229.473	105.263	65.264	400.000	65.264	400.000	

PERIOD = 10; R = 0.194

DEPT	C	V	S	W	PR	P	R
I	160.846	31.533	37.403	229.781	37.403	229.782	0.194
II	45.956	42.044	17.110	105.109	17.109	105.109	0.194
III	22.978	31.533	10.599	65.109	10.598	65.109	0.194
TOTL	229.780	105.109	65.111	400.000	65.111	400.000	

Several things can be learned from these numbers. First, notice that profit-rate equalisation does take place, and that convergence is rather rapid (the structure of prices is essentially in place after five periods; there is only a small amount of further movement in a few of the numbers not captured by three decimal places after 10 periods). Second, the reproduction conditions also re-emerge with profit-rate equalisation: the prices of production in the three departments are equal to the C, V, and S column sums.

Most important, the numbers emerging after sufficient iterations turn out to be *exactly* those predicted by the simultaneous transformation of values and formation of a general profit rate r, as given by these equations:

$$(140x + 36y)(1 + r) = 200x$$
$$(40x + 48y)(1 + r) = 120y$$
$$(20x + 36y)(1 + r) = 80z$$
$$200x + 120y + 80z = 400$$

These are, of course, the detested Bortkiewicz–Sraffa–Dobb–Seton simultaneous equations, towards which all roads, apparently, lead! So long as the trans-

formation of value under the impact of competitive profit-rate equalisation is considered on the *methodological* plane, and assuming it is appropriate to hold techniques of production in each sector constant, and to refrain from changing the class balance of forces – as reflected in the real (product) wage rate, *and* in the rate of exploitation revealed in the original value tableau, *and* in the production coefficients (which are *not* independent of the state and recent history of class struggle) – then the dynamic, iterative process appears as just another way of solving the simultaneous price-production equations. On the other hand, if techniques and social relations *are* changing *during* the transformation, then *no* transformation methodology will 'predict' actual production prices and profit rates, *including* Marx's one-stage original procedure.

One observation remains. The iterative calculation applied in the surplus value redistribution variant suggests that what I once called *total value invariance* holds (Laibman 1973, part 2); compare the TOTL price of production (P) of 400 in period 10 to the TOTL value (V) of 400 in period 1. In short, of the 'two equalities', one (V = P) appears to be vindicated, while the other (S = PR) is not. It is a remarkable feature of the NOMists' style of argument that, through all of the *sturm-und-drang* of non-equilibrium dynamics, technical change, class struggle, and so on, the *two* 'equalities' shine through like a constant beacon. The NOMists apparently do not realise that an entire range of invariances, each of which has strong intuitive appeal, is involved: equality of constant capital and the value of the means of production, equality of current labour and value added (the so-called 'new view'; see Lipietz 1982, Duménil 1983), equality of variable capital totals pre and post (and therefore of the ratio of total variable capital to current labour).[10] In general, there is no reason to believe that *any two* of these will hold simultaneously (see Laibman 1973, 1992, chapter 2). But there seems to be no justification for the NOMists' exclusive focus on just two of the several possibilities (which only arises, of course, because Marx's exercise in *Capital* Volume III – written in the late 1850s and *not* chosen for inclusion in Volume I – emphasised just those two).

The question remains, however: does the iterative procedure outlined above vindicate total-value invariance (V = P), after all? I think it does not, for this reason. The tableau method of approach to this problem, originated by Marx and refined by Bortkiewicz, is a rather clumsy one. In particular, to make sense of the price transformations shown in the tableaux, it must be assumed that quantity magnitudes are constant throughout the process. The value (price) sums shown in the table are products of price relatives times quantities; a total value produced in a sector of 200, for example, means a unit value times a definite quantity (number of units). The only way to interpret a calculation such as 140(220/200) = 154 is to assume that the price shift is operating on a given quantity of capital goods. This assumption is highly restrictive, especially since the story of competitive alignment and realignment requires move-

ments of capital into and out of sectors.

The transformation of value should therefore be re-examined, using more powerful and modern tools, such as the cross-dual dynamics of Flaschel and Semmler (1987). Awaiting that re-examination, then, not too much weight should be placed on the intuition arising from the application of any one theoretical model, as for example that of the iterative adjustment of prices of production and profit rates in a fixquant tableau. The search for the *unique determination* of capitalism-transformed value continues, as part of (what should be) the real object of ongoing inquiry in the theory of value: the substantiation of the place of embodied abstract labour in the theory of capitalist (and other) relations of production.

1.4 CONCLUSION

What messages emerge from this critique? There are, perhaps, three. First, to build the Marxist alternative to mainstream theory we need, above all, to retain a dialectical sense of the comprehensiveness and complementarity of concepts. Many processes in capitalism are sequential, and constant disruption and transformation are a fact of life. But sequential models alone do not capture this. There is also simultaneous determination. Simultaneous equation models in fact capture one essential aspect of the capitalist economy: interdependence among atomistically separated units of control. Simultaneity reveals structure; sequentiality reveals transformation. Both must be brought to bear on the task of grasping capitalist reality.

If we think of a sequential set of poolings/redistributions of surplus value, then we arrive at the eigenvector of production prices of the '20th-century Marxist' variety – to the analysis of which non-Marxists like Böhm-Bawerk, Bortkiewicz, Morishima, and Samuelson have undoubtedly contributed. (Marx always drew upon the best bourgeois practice of his time; why shouldn't we?) There should be no confusion between the *methodological* and the *ontological* uses of this eigenvector: Marxists do not imagine a serene process of competition leading to a stable – 'stationary' – price-profit configuration (although perhaps some post-Keynesians or post-Sraffians might). But if the production-price eigenvector is an immanent central tendency of price behaviour in capitalist economies, then any attempt to theorise real processes in accumulation without it will be suspect; one will simply not know whether the results obtained are rigorous and general. Even the theories of surplus value and exploitation are incomplete unless they are placed on this foundation of the underlying tendency of price formation. Redeveloping the theory of surplus value – the core of Marx's analysis of the paradox of apparent 'market' equality and reciprocity, on the one hand, and the reality of exploitation in the relations of

production, on the other – in fact requires that *complete* – non-dualist! – production price formation be part of the '*Hic Rhodus*' conditions of the problem originally formulated in *Capital* Volume I, chapter 5.

A similar point holds for disequilibrium and equilibrium. Capitalism is inherently crisis-prone, and its accumulation path does not behave like the steady-state, tranquil models of neoclassical growth theory. It also, however, maintains a certain coherence over time. The homeostatic aspects must be balanced against the transformative, crisis-provoking ones. The term 'equilibrium' is subjected to much abuse by the NOMists. It has different meanings, however, and some of them are crucial to the Marxist enterprise. (Marx, of course, described central tendencies and abstract structures underlying complex realities, beginning with value theory and continuing with models of simple and expanded reproduction.) As a *methodological* tool, equilibrium paths are the necessary ground for the study of *disequilibrium* dynamics. (By contrast, it is not clear that *non*-equilibrium describes anything at all.) This again is to be distinguished from *ontological* equilibrium: the view that the actual economy tends toward, rather than away from, its equilibrium centre, and that the capitalist growth path is smooth, constant-proportional, and crisis-free.

Second, in contemplating different conceptions of value and production price, rhetoric should be abated somewhat in the search for exact meanings. The 20th-century Marxist (eigenvector) conception of production prices is arguably the closest thing available in all of economics to a coherent conception of price formation. It establishes the interdependent qualities of the price system, avoids the obvious contradictions of the earlier Marxist formulations (assuming these are taken as completed theoretical tools rather than as good first approximations), and undercuts in a massive way the central neoclassical concept of *scarcity* as the foundation for price theory. The eigenvector conception is entirely consistent with intrinsic value (value as abstract labour); with the theory of exploitation and surplus value; and with disequilibrium dynamics. It is simply wrong and misleading to claim that eigenvector price formation precludes or denies the foundation concepts of Marxist theory. The simultaneous *quantitative* determination of the profit rate and prices does not violate the *ontological priority* of the profit rate, or reduce it to just another price (as the neoclassical theory in fact does).[11]

Most important, however, is the need to avoid dishonouring Marx by treating him as a holy prophet. The not-yet-the-Messiah attitude – which asserts that the entire 20th century is a theoretical and practical wasteland, and that Marx will yet speak to us, once we come finally to understand him, and lead us out of the capitalist morass – is simply not helpful as we face real problems requiring creative solutions.

Apparently there is a large amount of psychological fixed capital invested in the belief that Marx 'was internally consistent' and that he 'made no errors'.

I would like to propose a distinction. An Error I is a crucial logical flaw that strikes at the heart of a theoretical system; the prime example that comes to mind is the 'unobtrusive postulate' in neoclassical theory of a well-behaved production function grounding a stable and inverse relation between factor quantities and marginal products (see Laibman and Nell 1977). An Error II is an inconsistency, whose removal through development of the theory leaves the foundations of the theory intact. Now I believe that Marx left us with a few Errors II. Böhm-Bawerk saw the very existence of production prices distinct from values as an Error I. Bortkiewicz, Laibman, and KM all disagree. Bortkiewicz, in turn, thought that any inconsistencies that might be found in Marx's formulation of the transformation would have to be considered Errors I. KM and Moseley apparently agree with Bortkiewicz on this, and are willing to stake the entire Marxist enterprise on the defence of those precise formulations against charges of inconsistency. I disagree; the inconsistencies referred to are Errors II.

The NOMists have considerable energy and enthusiasm, and have reminded us of the importance of continuing study of Marx. They need to be told, however, that there is only one path leading from the 19th century to the 21st, and that one lies through the 20th.

NOTES

1. A range of contributions to this trend has been collected in Freeman and Carchedi (1996); this volume contains some papers with positions that differ from those specifically cited below, and which would therefore require separate treatment. Earlier articles in the genre include Wolff (1984), Ernst (1982), Kliman and McGlone (1988), Carchedi (1984). Recent contributions include Kliman and McGlone (1999), Giussani (1991), Moseley (1993), Freeman (1996b).

   The NOMists, of course, deny that their intention is to defend *all* of Marx's work as *literally* correct, and some (not all) are uneasy with the 'orthodox' label. In practice, however, as we will see, they reject any notion that Marx's value theory is in any way incomplete, or that its original formulations contain any errors or inconsistencies.
2. The NOMists insist that their interpretation of Marx's value theory has profound implications for the theory of capitalist crisis. In particular, they find massive support for a falling rate of profit, and declare the Okishio Theorem (Okishio 1963) false on value-theoretic grounds (Kliman and McGlone 1999, Freeman 1996b). I do not address these issues in this chapter; see Laibman (1999, 2000).
3. Some members of the school prefer 'temporal' to 'sequential', and link their concept of value formation *in time* to their rejection of what they see as the 20th-century Marxist dualist bifurcation of value and price of production into two distinct systems; thus the 'temporal single system' position. To avoid pre-empting discussion of differing interpretations of historical time (see below), I will retain 'sequential' in the argument that follows; with some care we should be able to keep terminological choices from interfering with understanding.
4. In Chapter 3 of this volume, Moseley argues that the given money sums of constant and variable capital are unrelated to *any* physical quantities, whether measured in (untransformed) value terms or in production-price terms. This removes the formation

of production prices from any concept of reproduction and the labour process, and in effect makes the magnitude of value and surplus value indeterminate. Here, as in many of the ultra-orthodox efforts to defend Marx, the result is the dismantling of his conceptual edifice. A deeper insight arises from this: a viable system of thought will tend to be destroyed, unless it is continually developed and transformed.

5. It amuses me to hear Anwar Shaikh called a 'neo-Ricardian'. I am reminded of a cartoon from the 1960s, showing an old lady in tennis shoes, demonstrating with a sign that reads: 'The John Birch Society is soft on communism!' She is saying: 'What's the matter? Ain't you never seen an extremist before?'
6. Bortkiewicz uses simple reproduction (all surplus value is consumed) in his examples, although the point is perfectly general and extends to models describing expanded reproduction (and growth).
7. This is precisely the kind of tendency-toward-equilibrium assumption that the sequentialists deny for the formation of prices of production!
8. This is necessary in order to answer Bortkiewicz's charge of disequilibrium. The alternative – setting aside the surplus value redistribution variant, to be discussed below – would be to revert to the temporal transformation position, according to which anything can happen and therefore nothing can be said.
9. This interpretation uses a methodological conception of time, compressing the time needed for pooling-redistribution into packets contained within a unit of the time that passes as the characteristics of production change. This theoretical-methodological technique is not intended to suggest that *real* time behaves in that manner, or that in (what we choose to call) reality technical transformation does not occur before price of production formation is complete. I think that this theoretical use of time is not fully captured by the distinction between logical time and historical time, since all attempts to theorise the economic process construct and simplify time to some extent.
10. It is intriguing to observe the intellectual gyrations of NOMists defending and proclaiming the equality of V and P, and of S and PR, while at the same time asserting, as a matter of fundamental insight, that the value of the means of production and the value of constant capital are two different things, and that 'Marx never intended' them to be equal (cf. Carchedi 1984, Moseley 1993b).

    In my own earlier work on value transformation (Laibman 1973), I argued that one invariance condition had intuitive primacy over the others: this was the one called 'rate of exploitation invariance' – equivalent to 'variable capital invariance', since the rate of exploitation is measured not by the (transformed value) profit to wage ratio but by the relation between variable capital and the (given) current labour flows. I now think that no intuitive argument of this kind can settle the matter, and that determining the absolute labour content of production prices remains an unsolved task.
11. Careful distinctions must be maintained: the Sraffa/classical/Marxist system is a model of *reproduction*; the Walrasian system is based on allocation of *fixed endowments*. They are both 'simultaneous equation' systems, but of totally different kinds.

2 Marx versus the '20th-Century Marxists': a Reply to Laibman

Andrew Kliman

> Far from expressing a sequence of never-ending progression, the Hegelian dialectic lets retrogression appear as translucent as progression and indeed makes it very nearly inevitable if one ever tries to escape regression by mere faith (Dunayevskaya 1989:xlii–liii).

First, I wish to commend David Laibman (Chapter 1) for entering into dialogue with those whose research defends the internal consistency of Marx's value theory. He is the first '20th-century Marxist' to puncture the silence we have faced for more than a decade.

My response first discusses his method of evaluating new research in value theory. Section 2.2 discusses Marx's 'internal inconsistency' and shows that the 'proofs' of self-contradiction in his value theory have been refuted by the 'temporal single-system' (TSS) interpretation (which Laibman terms 'sequentialist').[1] Section 2.3 shows that the TSS interpretation alone adequately reproduces the 'quantitative' dimension of Marx's value theory, and explains why – to conceptualise value as determined by labour-time in a coherent manner, a temporal conception is needed.

2.1 ESCAPING REGRESSION BY MERE FAITH?

Urging us to build upon the work of what he calls the '20th-century Marxists', Laibman would have us take as given that Marx's work has been improved upon by their rigour. He invokes Bortkiewicz's (1952:8–9) 'proof' that Marx's transformation[2] disrupts conditions for balanced reproduction. Yet Kliman and McGlone (1988) demonstrated the falsity of this 'proof' back in 1988. (Appendix 2.1 provides a similar demonstration.) Laibman neither refutes nor disputes this. He simply disregards it, thereby seeming to accept, and/or wanting the reader to accept, Bortkiewicz's 'proof' as a matter of faith.[3] *Yet just as it would be dogmatic to hold that Marx could not be wrong, it is no less dogmatic to*

accept on faith the '20th-century Marxists" belief in the internal inconsistency of his value theory – especially now that this belief has been shown to be baseless.

In Laibman's chapter, the '20th-century Marxists' appear as champions of rigour, in contrast to Marx's 'orthodox' defenders who take 'Hi[s]' imprecise formulations 'literally'. Yet because the TSS interpretation has refuted the various 'proofs' of Marx's inconsistency, the choice between rigour and his formulations is a false one.

It is precisely this reduction of Marx's value theory to a matter of 'formulations' and 'presentation' that allows Laibman to portray the '20th-century Marxists' as continuators of his critique of political economy despite the theoretical differences between his original theory and their 'corrected' versions. They have supposedly developed his 'foundation concepts' in a rigorous, coherent manner. '[T]here is only one path leading from the 19th century to the 21st, and that one lies through the 20th'.

Ironically, this account manifests the characteristically 19th-century faith in a unilinear progressive movement to history. It is also a perfect example of the 'Whig interpretation' of the history of economics, much beloved by neoclassical economists because it turns earlier thinkers into flawed precursors who groped for the truths 'modern economics' possesses. Heterodox economists generally resist this process of subsumption, as I shall do here.

The key to Laibman's attempt to subsume Marx into '20th-century Marxism' is the claim that their 'foundation concepts' are the same. Yet he offers no criterion to discriminate between foundational and non-foundational concepts, unless his personal intuition can be called a criterion.[4] Hence, he has no criterion to discriminate between his Errors I and II, errors that undermine a theory's foundation and those that do not. That profit comes from exploitation, for instance, is supposedly foundational, yet the law that Marx (1973b:748; cf. 1981:319) himself considered 'in every respect the most important law of modern political economy' – the law of the tendential fall in the profit rate – is evidently not!

It certainly isn't a foundation of '20th-century Marxist' value theory, according to which mechanisation itself cannot cause the profit rate to fall. As Laibman notes, Marx's profit rate must be 'incorrect' if his nontransformation of input prices is an error. But if it is not an error (see Appendix 2.1), then the key conclusion of Marx's transformation, the conservation of total value and surplus-value in exchange, is internally consistent. And, as is shown in Appendix 2.2, a refutation of the Okishio (1961) theorem, Marx's law of the falling profit rate follows *immediately* from the conservation laws and the determination of value by labour-time. Despite what Laibman suggests, then, conservation of value is no mere 'metaphor'; its consequences are important.

Thus, whereas the choice between '20th-century Marxists'' rigor and Marx's

formulations and metaphors is a false one, there is a real choice to be made – a choice between their *theory* and his. Although TSS refutations of the charges of self-contradiction in Marx's theory do not show that he was 'right' and they are 'wrong', they do show that '20th-century Marxism' is not Marx's Marxism.

2.2 THE QUESTION OF 'INTERNAL INCONSISTENCY'

The Centrality of the Question

Laibman's misguided charge of orthodoxy stems from his failure to distinguish between assertions that Marx was *right* and demonstrations that his value theory is *internally consistent*. The most charitable explanation for this is Laibman's failure to appreciate that the single central focus of economists' discussions of Marx for a full century has been the internal inconsistency question, so that this question is necessarily also the central focus of TSS research today. What has been and therefore remains at issue, in other words, is not whether Marx's value theory is right or wrong, fruitful or fruitless, but whether it is a theory in the proper sense at all.

Böhm-Bawerk (1984:4), for instance, was well aware that his critique of *Capital* Volume I from an Austrian perspective would not convince Marxists. He therefore welcomed the appearance of Volume III for allowing him to prove 'self-contradiction' within Marx's theory (Böhm-Bawerk 1984:6, 64). Similarly, Bortkiewicz (1952:9) is famous today, not because he offered an alternative perspective to Marx's, but because he supposedly 'proved that we would involve ourselves in internal contradictions by deducing prices from values in the way in which this is done by Marx'.

Nor did Samuelson's (1971) famous paper evaluate Marx externally, by criticising the exploitation theory of profit. It argued that *proponents* of that theory must use the 'tools of bourgeois economics (*i.e.*, of simple general equilibrium pricing)' to tell their story rigorously, because Marx's value theory is a 'redundant and obfuscating' detour (Samuelson 1971:405, 423). Finally, *Marx after Sraffa* did not contend that Sraffian theory provides a *better* explanation of economic phenomena than Marx's. Instead, Steedman (1977:206) claimed to have 'proved that Marx's value reasoning is often internally inconsistent, completely failing to provide the explanations which Marx sought'.

It is Marx's critics who have chosen this 'firm, narrow, and clearly defined battleground' of internal inconsistency (Böhm-Bawerk 1984:6), instead of granting Marx his theory and then debating its merits. Were Laibman more sensitive to this, he might recognise that the battle is necessarily being fought on this ground still, and therefore that he needs to come to grips with *the* central question today: have the 'proofs' of Marx's internal inconsistency been

refuted?

The TSS interpretation has met the charges of internal inconsistency without equivocation or 'clever wordplay', as Laibman himself recognises. This interpretation, which has been *independently* 'discovered' several times, diverges from the standard one in two simple but crucial ways. Whereas the '20th-century Marxists' represent values and prices as two separate, timelessly determined, equation systems, the TSS interpretation argues that Marx conceived of values and prices as magnitudes determined *within historical time* and *interdependently*. 'Interdependently' means that the 'value' rate of profit, $s/(c + v)$,[5] enters into the determination of (output) prices, while the sums of value advanced to production, constant and variable capital, depend partly on (input) prices.

Textual Evidence

Two types of textual evidence support this interpretation. First, re-examination of Marx's concepts has shown that the TSS interpretation is at least as defensible as the standard interpretation. To take one important example, Marx (1981:265) wrote: 'if the cost price of a commodity is equated with the value of the means of production used up in producing it, it is always possible to go wrong'. To Marx's critics, including Laibman, it has seemed obvious that Marx has admitted his nontransformation of input prices was an error. To me, it is obvious that he was anticipating that readers might fail – as they have since at least 1907 – to realise that the value of *constant capital* and the value of *means of production* are not identical; the former depends on the prices, not the values, of means of production.

Still, this first type of textual evidence only makes the TSS interpretation plausible. The second type is what really shows it to be a superior interpretation of Marx's value theory: by means of the TSS interpretation, many of Marx's important concepts and theoretical results that have heretofore been judged false or self-contradictory have re-emerged as coherent and meaningful.

The charges of internal inconsistency stem from the belief that Marx's assertions contradict the actual conclusions derivable from his value theory with respect to the falling rate of profit, the transformation of values into production prices, the 'redundancy' of value, and negative values and surplus-values. Yet the TSS interpretation has replicated Marx's conclusions in each of these cases.[6] In every case, moreover, the *exact same* conception of value and price determination, not *ad hoc* assumptions or modelling tricks, is what leads to these conclusions.

Table 2.1 compares the implications of the standard and TSS interpretations, plus the 'simultaneous single-system' (SSS) interpretations,[7] to *Capital*'s theoretical results. The standard interpretation's results match Marx's in only two of the 12 cases; those of the SSS interpretation match in five cases out of

Table 2.1 Interpretations of Marx's Value Theory: Contrasting Implications

Marx's Theoretical Results	Interpretation: Standard (simultaneous dual-system)	Simultaneous single-system	Temporal single-system
Equalities and inequalities			
Profit rate = s/(c + v)		✓	✓
Total price = total value	b	✓	✓
Total profit = total surplus-value	b	✓	✓
Values always > 0	c	✓	✓
Surplus-value always > 0 if profit > 0	c	✓	✓
Relations of determination			
Mechanisation itself can reduce profit rate[a]			✓
Variations in living labour performed affect profit rate[a]			✓
Profit rate invariant to distribution of profit[a]			✓
Profit rate affected by luxury industries[a]			✓
Inputs lacking value before production transfer no value			✓
Unit values invariant to real wage rate	✓		✓
Unit values invariant to length of working day	✓	✓	
Results replicated	**2**	**5**	**12**
Results negated	**10**	**7**	**0**

Notes
a. Refers to functional determination of uniform profit rate.
b. Not replicated unless postulated.
c. Not replicated given additive values.

12. *The TSS interpretation replicates Marx's results in all 12 cases,* and I know of no other case in which it fails to do so.

It is also noteworthy that the simultaneist (standard and SSS) interpretations yield almost no results whatever, except by postulating static equilibrium. In contrast, the theoretical results of Marx and the TSS interpretation do not rely on static equilibrium or on perpetual disequilibrium (contrary to what Laibman implies). Determinate conclusions are yielded in either case.

Published TSS research vindicating the internal consistency of Marx's value theory dates back to 1982 (Ernst 1982) in the case of the falling rate of profit, and back to 1988 or earlier (Kliman and McGlone 1988, partly anticipated by Carchedi 1984) in the case of Marx's transformation. During this time, no one has demonstrated that the TSS interpretation itself suffers from self-contradiction or has discovered a concept or theoretical conclusion of *Capital* which cannot be interpreted consistently within the TSS framework. Unless someone finally does, the verdict is clear: claims to have proven the internal inconsistency of Marx's value theory have been refuted.

Implications of the Evidence

Differences between the value theories of Marx and the '20th-century Marxists' are by no means limited to such formal matters as the standard interpretation's inability to obtain the equalities of Marx's transformation. Marx and the '20th-century Marxists' have different and partly incompatible theories concerning the *real relations* under capitalism that determine its prices, profits, and law of motion. As Table 2.1 indicates, Marx's theory implies that the profit rate is determined before and thus independently of the distribution of profit; that the profitability of nonbasic industries affects it; that it is not a function only of technology and the real wage; and that therefore, and most importantly, mechanisation itself can cause the profit rate to fall. The standard interpretation concludes just the opposite.

This is all well known, but the point is that '20th-century Marxist' value theory is not the development-through-correction of Marx's theory it claims to be. Perhaps this claim was excusable as long as his own theory still seemed to be self-contradictory and thus to require such 'correction'. It is no longer excusable now that the TSS interpretation has decisively refuted this belief by replicating Marx's results in these and other cases. '20th-Century Marxist' value theory is not Marx's value theory.

Of course, the TSS interpretation is 'only an interpretation' and one that many seem to find unappealing. That the 'proofs' of internal inconsistency have been refuted, however, is not a matter of opinion or taste. It is *fact*. By repeatedly replicating Marx's results, TSS research has demonstrated that what contradicts his theoretical claims is not his value theory itself, but the standard *interpretation* of that theory.

It remains legitimate for '20th-century Marxists' to argue that, as *they* interpret Marx, his value theory is not fully correct, complete, or consistent. Yet rather than this revised claim indicting Marx's own 'logic', it actually exposes the weakness of his critics' interpretation. Precisely because the '20th-century Marxist' interpretation cannot make coherent sense out of many key aspects of his value theory, while the TSS interpretation can and has done so, the latter is

markedly superior *as an interpretation.*

Although acknowledging that the TSS interpretation dispels the appearance of inconsistency in key aspects of Marx's value theory, some of its critics have suggested that it may nonetheless not be what his texts 'really meant'. What this suggestion overlooks is that an interpretation's repeated ability to replicate a text's theoretical results *is itself* decisive evidence that the interpretation corresponds to the 'real meaning' of the text.

Let me illustrate this by means of a parable. Many people have been trying to put together a jigsaw puzzle, but they continually fail. Some say: 'The puzzle has no solution. Let's throw away some pieces and see if we can solve the puzzle'. Others say: 'Let's take some pieces from a different puzzle and use them here, to see if we can solve the puzzle'. And some say: 'Let's throw out the puzzle and do a different puzzle'. Suddenly a few other people come along and say: 'The puzzle's instructions read: "if 'joining pieces' is identified with 'interlocking the pieces', it is always possible to go wrong". This puzzle lets you join pieces by putting straight edges together. Look, we've done so, and the result is just like the picture on the box'.

Whose interpretation of the instructions is superior? Don't the results speak for themselves?

2.3 IS VALUE DETERMINED SIMULTANEOUSLY, OR BY LABOUR-TIME?

Equalities versus Relations of Determination

If one focuses on those results of Marx's pertaining to *equalities and inequalities*, the TSS and SSS interpretations may both seem to vindicate the coherence of Marx's view that value is determined by labour-time. Yet as Table 2.1 reveals, the SSS interpretation replicates only these results. It fails to replicate *all seven* results pertaining to real *relations of determination* governing the capitalist system, including those which concern the determination of the profit rate. It is thus no accident that only TSS research (Ernst 1982; Kliman 1988, 1996; Freeman 1996b) has refuted the Okishio theorem on value-theoretic grounds.

The SSS model thus concludes that the real-world profit rate *equals* $s/(c + v)$, but that its level and tendency are *determined* only by technology and real wages, as Marx's critics hold! The voice is the voice of Marx, but the hands are the hands of Sraffa. This apparent contradiction is easily explained: normalisation conditions are used to equate $s/(c + v)$ to the profit rate, the level of which, however, is already *determined* by real wages and technology.[8]

According to the TSS interpretation, the value of capital advanced is deter-

mined before the values and prices of outputs; according to the SSS interpretation, they are determined simultaneously. This is the only mathematical difference between the two interpretations, so it is responsible for all differences in their results. Hence, the TSS interpretation is able to replicate the relations of determination of Marx's value theory *precisely* because it understands Marx's conception of valuation to be temporal, while the SSS interpretation is unable to do so *precisely* because it holds valuation to be simultaneous.

'Marx after Torrens'?

A simple example will help demonstrate that simultaneous valuation itself is what makes the '20th-century Marxist' and SSS interpretations unable to replicate the real-world relations of determination implied by Marx's value theory. *Deviations of prices from values have nothing whatsoever to do with this failure.* The problem lies much deeper; simultaneous models are incompatible with the determination of value by labour-time as a real process operating in capitalism.

The example comes from Robert Torrens, who wrote: 'The farmer ... expends one hundred quarters of corn in cultivating his fields, and obtains in return one hundred and twenty quarters. In this case, twenty quarters, being the excess of produce above expenditures, constitutes the farmer's profit' (quoted in Marx 1971b:77). Critiquing this, Marx (1971b:79, first emphasis added) argued that

> the value of 90 quarters of corn can be equal to (or greater than) the value of 100 quarters, that the *value of 100 quarters can be greater than that of 120 quarters*, and that of 120 quarters greater than that of 500.
>
> Thus, on the basis of one example which has *nothing* to do with profit, with the surplus in the *value* of the product over the *value* of the capital outlay, Torrens draws conclusions about profit.

Whatever the unit in which value is measured, Torrens' theory implies that the farmer's profit rate is 20 per cent, while Marx's theory implies a negative profit rate if the 100 quarters expended are indeed of greater value than the 120 quarters produced. Table 2.2 illustrates the difference between the two theories. It assumes: corn is the only industry;[9] production takes one year, so that the output-time of year 1 is the input-time of year 2; seed input and wages are the same in both years; and, due to better weather, the corn yield is greater in year 2 although the living labour input is smaller.

In this single-sector example, all simultaneist interpretations yield identical results, and they all seem to find yet another internal inconsistency in Marx's work. In year 2, the value of the 100 quarters of corn advanced, 70, is less than the value of the 120 quarters produced, 84. This conclusion follows from simultaneous valuation; for *any* stationary value of corn, V_c:

Table 2.2 Production of Corn versus Production of Value

Year	V_b	c + v	c	v	L	s	c+v+s	s/(c+v)	V_e
1	1	100	50	50	51	1	101	1%	1
		(100)	(50)	(50)			(101)		
2	0.7	70	35	35	49	14	84	20%	0.7
Simultaneous		(100)	(50)	(50)			(120)		
2	1	100	50	50	49	−1	99	−1%	0.825
Temporal		(100)	(50)	(50)			(120)		

Notes: V_b and V_e are the unit values of corn at the beginning and end of the year. L is living labour. Quantities of corn are given in parentheses. The table assumes that \$1 = 1 labour-year, so value magnitudes are measured in both dollars and labour-years.

$$\frac{100V_c}{120V_c} \equiv \frac{100}{120} \equiv \frac{70}{84} < 1$$

must be the ratio of value advanced to value produced. The former cannot be greater than the latter. Under simultaneous valuation, moreover, the profit rate must always equal 20 per cent, just as Torrens implies:

$$\frac{120V_c - 100V_c}{100V_c} \equiv \frac{20}{100} \equiv 20\%$$

On the TSS interpretation, however, the value advanced does exceed the value produced during year 2, because the rise in productivity makes the value of corn fall. And due to the reduction in living labour extracted, the mass and rate of profit are negative, despite a 20-quarter physical surplus. None of this proves that Marx was 'right', of course, but the results do conform to his theory rather than Torrens'.

Some simultaneists, especially some proponents of the SSS interpretation, claim not to be invoking the special case of static equilibrium. Crucial to their defence of the internal coherence of Marx's value theory is the claim that his production prices (here, values) are stationary by *definition*, because the input prices relevant to his theory are the post-production 'replacement cost' prices.[10] It should be clear that the present example profoundly undermines this claim.

It is also noteworthy that the simultaneous models contradict Marx's (1976a:314) concept that the value of a means of production 'is determined not by the labour process into which it enters as a means of production, but by that out of which it has issued as a product'. In the simultaneous models, the value of year 2's seed corn is determined by the labour process of year 2, not year 1.

Yet what is most troubling about the definitional defence of stationary prices is that it deprives Marx's value theory of any real-world significance. Recall that, given Torrens' figures, the simultaneist models will always compute a profit rate of 20 per cent, however advances are distributed between seed and wages and no matter how much living labour is extracted. Hence *variations in the amount of living labour extracted, the rate and mass of surplus-value, and the composition of capital have absolutely no influence on the profit rate!* The profit rate always *equals* s/(c + v), but the real relations *determining* it are purely physical – the ratio of corn produced to corn advanced. Multiplying three quantities of corn by a constant and rechristening them as c, v, and s doesn't affect the relations between them in the least. In short, the simultaneous models are all value-form and no value-substance.

The present example, because of its one-sector nature, shows clearly that the 'transformation problem' is *not* what makes value relations irrelevant in '20th-century Marxist' value theory. Value relations are also irrelevant in the SSS interpretation, even though it obtains the equalities of Marx's transformation. The source of the problem is simultaneous valuation itself. *When one stipulates that the magnitude of a commodity's value is identical at two different moments in time, no matter how much the labour-time needed to produce it has changed, one has stipulated that labour-time is irrelevant to the determination of its value.*

The introduction of additional sectors does not affect this conclusion. In the simultaneous models, one commodity (or some aggregate) is singled out as the *numéraire*. No matter how much its *intrinsic* value – the labour-time needed to produce it – changes over time, its worth is declared to be constant. The only 'value' magnitudes that remain are *exchange-values*, relative prices. Hence the profit rate becomes a function solely of physical quantities (excluding labour-time)[11] and these relative prices, which are themselves only ratios of physical quantities. The essential logic remains that of the corn model. Unfortunately, Laibman's assertion that the '20th-century Marxist' stationary price models are 'entirely consistent with intrinsic value (value as abstract labour) [and] with the theory of exploitation and surplus value' is quite wrong.

Temporality, Value Conservation, and State-Capitalism

Another crucial difference between simultaneous and temporal conceptions of valuation is one to which Laibman himself points. He writes that '[s]imultaneous equation models ... capture one *essential* aspect of the capitalist economy: interdependence among atomistically separated units of control' and that they show exploitation to be 'inseparable from the entire web of interconnections in the structure of production *and exchange*' (emphases added).

These are indeed implications of the '20th-century Marxist' transformation.

They derive, however, not from Marx's own transformation, but from the simultaneous character of his critics' 'correction' of it, as Laibman astutely recognises. The implications of Marx's transformation are the *opposite*.

In *Capital* Volume III, Chapter 9, precisely when he begins to consider the division of surplus-value among 'atomistically separated units of control', Marx returns to the vantage-point of capital versus labour, the immediate process of production and its results, by *abstracting* from competition and multiple capitals. At one point, he supposes 'that the five different capital investments in the above example, I–V, belong to one and the same person'. Whether this person's accounts recorded profit where it arose or imputed it to each investment in proportion to its size, the 'total price of commodities I–V would ... be the same as their total value. ... And in the same manner [this is the case] for the commodities produced in society as a whole' (Marx 1981:259). Whether ownership is collective or atomised, the result is the same.

Elsewhere, Marx's transformation account abstracts from the multiplicity of capitals by examining the 'total social capital'. This concept has much the same import:

> in considering the total social product ... it is necessary to avoid falling into the habits of bourgeois economics, as imitated by Proudhon, that is to avoid looking at things as if a society based on the capitalist mode of production lost its specific historical and economic character when considered *en bloc*, as a totality. This is not the case at all. What we have to deal with is the collective capitalist (Marx 1978a:509).

For Marx, then, what gives capitalism its 'specific historical and economic character' is its mode of *production*. Whether this mode of production appears in the *form* of a competitive society of atomised owners, or a collectivised society in which the total capital 'belongs to one and the same person', its *essence* is unchanged.[12]

Thus, as he himself stressed, a main purpose of the Chapter 9 transformation, and of Volume III as a whole, was to show that competition and multiple ownership do not alter the laws of value and surplus-value (see Marx 1981:984–985). He had developed these laws in Volume I on the basis of the capital-labour relation in the immediate process of production, without regard to how they are mediated by competition. Now he wished to show that competition only alters the form in which the laws appear; in society as a whole they continue to hold exactly as he had developed them in Volume I.

How was he *able* to do so? By means of a temporal conception of valuation.

The problem is that competition does indeed matter. When Marx claimed that it does not alter the law of value, he was certainly not suggesting that competition has no effect. He was acutely aware that the exchange of last

period's outputs at prices different from their values will *affect* the capital outlays and thus the output prices, profits, and so on, of the current period. If one forgets this, 'it is always possible to go wrong' (Marx 1981:265).

Yet Marx held that value and surplus-value cannot be *created* in circulation. Competition cannot alter the sums of value and surplus-value that have already been created, because they have been created *before* the outputs go to market. 'The conditions for immediate exploitation and for the realisation of that exploitation are not identical. Not only are they separate in time and space, they are also separate in theory' (Marx 1981:352). Hence, current output prices, profits, and so on, differ from what they would have been had value been distributed differently in the past, but only because of *previous* periods' deviations of prices from values – 'this error in the past' (Marx 1981:265).

The key to Marx's reconfirmation of the law of value in the real world of competition was precisely his theorisation of the temporal and spatial separation of production and circulation – the circuit of capital (M–C...P...C′–M′). *First*, commodities are bought (M–C). *Then* they enter production (C...P...C′). *Then*, as soon as the living labour extracted therein has been objectified in new commodities, the total value and surplus-value have been produced. What happens *next*, when these commodities go to market and are sold (C′–M′), cannot change the value magnitudes produced or retroactively alter the capital advanced prior to production.

What's done is done. The profit rate is 'prior' to output prices, not 'ontologically', but temporally. It is the determination of the profit rate in the production process, before commodities go to market, that determines the magnitude of prices as a whole in Marx's theory.

By means of this temporal conception, Marx avoided being ensnared in the 'web of interconnections' to which Laibman refers:

> The annual process of reproduction is easily understood, as long as we look solely at the sum total of the year's production. But ... movements of the individual capitals and personal revenues cross and intermingle, and become lost in a general alternation of positions, i.e., in the circulation of society's wealth. This confuses the onlooker' (Marx 1976a:737).

The web of interconnections make it difficult to distinguish between the different effects of different processes: production 'determines' value, exchange 'determines' value, demand 'determines' value, and so on. In popular language, capitalists need all of these to 'make money'. Simultaneous equation models add to the confusion by making everything seem to be happening at once.

Yet by reconstructing the temporal and spatial separation of these distinct processes in the realm of theory, Marx was able to trace the money-making to its origin, to maintain that surplus-value, though realised for the capitalists in

the market, is created in the production process. He was able to avoid the circularity of 'cost of production' theories, which determine profit as the excess of price over cost and price as cost plus profit, by maintaining that the magnitude of profit is determined as a result of production, before the sale of outputs. He was thus able to separate the class antagonism between capital and labour in production from the rivalry of all against all in the market, and to maintain that the specifically capitalist mode of extorting surplus labour is the essence of capitalist society, whatever may be the forms of property and distribution through which it appears.[13]

2.4 SUMMARY AND CONCLUSIONS

This chapter has shown that all the usual 'proofs' of internal inconsistency in Marx's value theory have been decisively discredited by TSS research. It has argued and brought evidence showing that the TSS interpretation of Marx's value theory is superior – as an interpretation – precisely because it alone can replicate his theoretical conclusions. It has shown that his theory differs in several important ways from the value theory of the '20th-century Marxists'. And it has argued that temporal valuation is crucial for several important theoretical reasons, among them that only temporal valuation is consistent with the determination of value by labour-time.

Using his alleged self-contradictions as justification, Marx's sympathetic critics have 'corrected', fragmented, and truncated his critique of political economy, and/or subsumed it into other doctrines. Less sympathetic critics have used his alleged self-contradictions as a justification for dismissing Marx's works outright and for marginalising and silencing those who seek to learn from and develop them. All this must stop. The historical record must be corrected. Marx's critics should certainly be free to express their differences with his ideas, but to express them as *differences* and not as *'proofs'*.

The importance of putting an end to this ideological mystification extends far beyond its implications for economics. The current two-decade-long global economic crisis has also brought about a profound crisis of the imagination. Marx's body of ideas is an integral philosophic–economic–political totality which, above all, alters our categories so that a different mode of labour and life becomes thinkable. But 'knowledge' of his 'self-contradictions' is by no means limited to a small coterie of value theorists or even academic economists. Whether intentionally or unintentionally, the fragmentation, truncation, subsumption, and marginalisation of his body of ideas serves a definite purpose, that of making it all the more difficult for these ideas to be rediscovered, concretised, and developed. If the new research in value theory can help halt and reverse this process, it will be a success.

APPENDIX 2.1: BALANCED REPRODUCTION AND A UNIFORM PROFIT RATE WITH NONSTATIONARY PRICES

The only 'proofs' of self-contradiction in Marx's account of the transformation are those of Bortkiewicz. He claims to prove that, because prices in Marx's account are not stationary, balanced reproduction of the economy would be disrupted (Bortkiewicz 1952:6–7) and each department's sales and purchases would fail to coincide (Bortkiewicz 1984:212–13). Since a uniform profit rate and production prices require that all supplies equal demands, these 'proofs' would be decisive – were they correct.

Table 2.3 Marx's 'uncorrected' transformation'

Period		1				2			
Dept.		I	II	III	**Total**	I	II	III	**Total**
Revenue	m					33	22	15	**70**
	c	140	40	20	**200**	154	44	22	**220**
	v	36	48	36	**120**	33	44	33	**110**
	s	24	32	24	**80**	27	36	27	**90**
Output Value	c+v+s	200	120	80	**400**	214	124	82	**420**
Average Profit	p	44	22	14	**80**	51	24	15	**90**
Output price	c+v+p	220	110	70	**400**	238	112	70	**420**
Rates of 'Value'	s/(c+v)	13.6	36.4	42.9	**25.0%**	14.4	40.9	49.1	**27.3%**
Profit 'Price'	p/(c+v)	25.0	25.0	25.0	**25.0%**	27.3	27.3	27.3	**27.3%**

They are not. Table 2.3 puts Marx's 'uncorrected' transformation account in the context of simple reproduction. Departments I, II, and III produce means of production, means of subsistence, and luxury goods, respectively. *For simplicity*, I exclude fixed capital and assume that inputs are bought at their static equilibrium values in period 1 and at production prices in period 2.

Because simple reproduction is assumed, the means of production and subsistence used up in period 1 are replaced exactly in period 2. Yet because their prices have changed, the sums of value advanced for them (c and v) are now not 200 and 120, but 220 and 110. After advancing these sums, the capitalists

spend the residual proceeds (capitalists' revenue, m) left over from the sale of period 1's outputs on luxury goods. The whole social product is bought and sold at the new prices. Moreover, Department I's sales (IIc + IIIc) and purchases (Iv + Im) both total 66, as do Department II's sales (Iv + IIIv) and purchases (IIc + IIm). Department III's sales (Im + IIm) and purchases (IIIc + IIIv) both total 55.

Hence, even though prices are not stationary, simple reproduction has occurred, all supplies equal demands, and uniform profitability has been achieved.

APPENDIX 2.2: REFUTATION OF THE OKISHIO THEOREM

Consider an n-sector capitalist economy ($n > 1$). Call total profit P and total living labour extracted L. Assume that:

(1) all fixed capital is physically non-depreciating;
(2) no material inputs are used;
(3) the real wage equals zero;
(4) all P is reinvested; and
(5) $L_t = L_0 > 0$; that is, L is constant throughout time.

None of these assumptions, individually or jointly, is necessary to refute Okishio's (1961) theorem, and all five are compatible with it. (Roemer 1981, chapter 5, uses (1) to extend the theorem, and (3) makes the real wage a constant, as the theorem requires.)

Okishio does not employ Marx's theory of the determination of value by labour-time (DVLT). Yet Okishio's theorem cannot show *self*-contradiction in Marx's law of the falling rate of profit unless it can be employed. DVLT will thus be employed here.

Assumptions (1) through (3) imply that *total price equals* P and, together with DVLT, that *total value equals* L. TSS research confirms the internal consistency of Marx's demonstration that DVLT implies that *total price equals total value*. Hence $P = L$.

Together with $P = L$, assumptions (4) and (5) imply that L_0 is the new value sum invested each period. The fixed capital stock thus grows continually, as does the technical composition of capital (since L is constant). Since new investment equals L_0, then, letting K_t be the aggregate value of the capital stock in period t, $K_{t+1} = K_t + L_0$. The solution to this equation is

$$K_t = K_0 + (t)L_0.$$

(This is easily seen: $K_1 = K_0 + (1)L_0$; $K_2 = K_1 + L_0 = K_0 + (2)L_0$; and so on.) The profit rate in period t is thus

$$r_t = \frac{P_t}{K_t} = \frac{L_0}{K_0 + (t)L_0}$$

Since all terms on the right-hand side except t are constant, r falls continuously and approaches zero as t approaches infinity.

In deriving this result, no assumption concerning fixed capital requirements per unit of output(s) was made. Hence, if new production techniques are adopted that reduce these requirements continually over time in all sectors, r will fall continuously. The theorem requires that profit-maximising firms always adopt such techniques, but purports to prove that the net result cannot be a falling profit rate. *Hence, the theorem is refuted.*

Given these changes in techniques and assumptions (1)–(5), but not DVLT, Okishio's profit rate will not fall, but rise continuously. Hence, his results contradict Marx's law of the falling rate of profit *only because Okishio does not employ DVLT.*

NOTES

1. The term 'temporal single-system' first appeared in Skillman (1995). For an introduction to this interpretation, see the contributions by Carchedi, de Haan, Freeman, Kliman, and McGlone in Freeman and Carchedi (1996).
2. This and subsequent references to 'transformation' refer to the transformation of values into production prices in *Capital* III, Chapter 9.
3. I first made this comment in response to the initial draft of Laibman's chapter, which lacked the 'Analysis of a NOMist Transformation Tableau', but my judgement is unfortunately the same now. It requires a very careful reading of this section to see that Laibman actually concedes that our demonstration is valid: '*Reproduction equilibrium exists between periods*' (emphasis added) – contrary to what Bortkiewicz supposedly proved! But if the demonstration is valid, then Marx's own transformation is internally coherent. Because Laibman fails to acknowledge this, and indeed persists in alleging error on Marx's part, I must reiterate that he is disregarding our demonstration and accepting Bortkiewiczianism on faith.

   Some other noteworthy points: (a) Laibman's compression of our table omits the column that shows profit rates (in price terms) are indeed equal in each period and that therefore, contrary to what he suggests, surplus-value is fully redistributed in each period. (b) What he thinks is our procedure for computing constant and variable capital is wrong. Given the conditions he lists, the actual procedure (see McGlone and Kliman 1996) does result in convergence. (c) Yet these conditions are so numerous and restrictive that, contrary to Laibman's claim that 'all roads ... lead' to the simultaneous 'solution', a road to Atlantis is more likely. The results of this 'solution' are surely not 'general'. (d) Although our profit rates are not 'final', no profit rate is 'final' as long as capitalism exists. The notion of 'the' profit rate existing outside of time is a figment of the static equilibrium imagination. (e) Laibman claims it is 'absurd' to think that, given unchanged physical quantities, production prices and the profit rate can change. Yet what is absurd – and not merely contrary to the physicalist doctrine of the '20th-

century Marxists' – about the idea that prices and profit rates also depend on the sums of value invested? (f) Due to this dependence, it is true that production prices and general profit rates cannot be predicted without knowing the sums of value invested, but so what? Marx's transformation is not a predictive tool, but an illustration showing that – however prices may change – value and surplus-value are conserved in exchange. (g) It is therefore simply untrue that rejection of equilibrium methodology implies that 'anything can happen and therefore nothing can be said'. (h) Laibman fails to think about why we focus on Marx's 'twin equalities' and disregard other invariances. It has nothing to do with orthodoxy. Because the transformation refers to the difference between the values and prices of the outputs of a given period, nothing except sectoral prices and profits can be altered due to transformation. Since all other variables have already been determined, in the past, their magnitudes obviously cannot be altered, so it would be fatuous to make an issue of their constancy.

4. The opening quotation from Dunayevskaya refers to Hegel's critique of the 'intuitional school' of philosophy, which took subjective certitude to be the basis of truth.
5. s stands for surplus-value, c for constant capital, and v for variable capital.
6. See Kliman and McGlone (1999), which takes up these issues together.
7. I refer to Wolff *et al.* (1984), Moseley (1993b), and Lee (1993). These works hold that the value of capital depends on the prices (not values) of inputs, and that input and outputs in Marx's theory are valued simultaneously.
8. Moseley's (1993b) discussion of determination in his interpretation seems to contradict this. Yet, as in other SSS contributions, his input and output prices are simultaneously determined, and this makes physical quantities the sole functional determinants of the profit rate.
9. Those who object to one-sector examples or arbitrary monetary expressions of value may add a second sector. Assume that, in both years, it uses 1per cent as much corn and living labour as does the corn industry, pays 1per cent as much in corn wages, and produces 1.01 and 1.20 units of a money-commodity in years 1 and 2, respectively, where each unit is called $1. All quantitative results of this example remain unchanged.
10. I interpret Marx as holding that the sum of value transferred from means of production is determined by the cost of reproducing them when they enter production, not their historical cost, and not their post-production replacement cost. After examining all the textual evidence, including all the evidence cited by proponents of the replacement cost interpretation, I have concluded that none of it contradicts the pre-production reproduction cost interpretation, and that some – including Marx's critique of Torrens' – does contradict the replacement cost interpretation. See Kliman (1999) for further discussion.
11. That real wages are decomposable into labour-time and real wages per unit of labour-time does not imply that labour-time determines anything in these models.
12. This concept helps explain the rapid political transformation of Russian and Eastern European societies into 'free market' ones, often with little change even in state and managerial personnel.
13. 'If the capitalist is the actual owner of the capital with which he functions, he pockets the entire profit or surplus-value; it is all the same for the worker whether this is what he does or whether he has to pay one part to a third party .... [P]rofit is produced before this division takes place, and before there can be any talk of it' (Marx 1981:504–5). '[S]truggle or agreement among capitalists, or agents of the state, if you will, is of no concern to the proletariat [sic] whose sweat and blood has been congealed into this national surplus-value. What is of concern to him is his relationship to the one who performs the "function" of boss' (Dunayevskaya 1992:73).

3 The Return to Marx: Retreat or Advance

Fred Moseley

I have argued in a previous paper (Moseley 1993b) that the logical method employed by Marx in the construction of his economic theory in *Capital* is fundamentally different from that employed in Sraffian theory, and therefore that the currently dominant Sraffian interpretation of Marx's theory, which equates Marx's logical method with Sraffa's logical method (the method of linear production theory) is fundamentally mistaken. I have emphasised two main differences between Marx's logical method and that of Sraffa: (1) the order of determination between aggregate magnitudes (mainly the total amount of surplus-value) and individual magnitudes (the individual parts into which the total amount of surplus-value is divided), which also involves whether the rate of profit is determined prior to and simultaneously with the determination of individual prices; and (2) whether the inputs of constant capital and variable are taken as given in terms of money or are derived from given physical quantities of technical conditions of production and the real wage.

David Laibman (Chapter 1) has defended the Sraffian interpretation of Marx's theory and has criticised my 'macro-monetary' interpretation. The first section of my chapter briefly reviews my interpretation, as a prelude to my response to Laibman. More attention will be given to the second difference mentioned above, because this issue is the main disagreement with Laibman.

3.1 THE MACRO-MONETARY INTERPRETATION OF MARX'S LOGICAL METHOD[1]

Prior Determination of Aggregate Magnitudes and the Rate of Profit

The first important difference between the Sraffian interpretation of Marx's theory and Marx's own logical method has to do with the order of determination between aggregate magnitudes (such as total price and total surplus-value) and individual magnitudes (individual prices and the individual parts of surplus-value). The Sraffian interpretation generally ignores aggregate magnitudes,

but it implicitly assumes that these aggregate magnitudes are determined subsequent to individual magnitudes as the sum of these individual magnitudes. The Sraffian interpretation also assumes that the rate of profit is determined simultaneously with individual prices. I argue that in Marx's theory, to the contrary, aggregate magnitudes are determined prior to and independent of individual magnitudes. The general rate of profit is also determined by this aggregate analysis prior to the determination of individual prices. Individual magnitudes are then determined at a later stage of analysis, with the predetermined aggregate magnitudes and the general rate of profit taken as given. Marx expressed this assumed order of determination between aggregate magnitudes and individual magnitudes in terms of the distinction between 'capital in general' (or the 'total social capital') and 'many capitals' (or 'competition').

Volume I of *Capital* is concerned with an analysis of capital in general, or the determination of the total amount of surplus-value produced in the capitalist economy as a whole. Marx introduced the general theoretical framework for his analysis of the aggregate surplus-value in Chapter 4 of Volume I ('The General Formula for Capital'). As is well known, this general analytical framework is expressed symbolically as $M - C - M'$, where $M' = M + \Delta M$. I argue that, in this formula, M represents the aggregate money-capital invested in the capitalist economy as a whole, M' represents the aggregate money-capital recovered after some period of time through the sale of commodities, and ΔM represents the aggregate amount of surplus-value produced during this period in the capitalist economy as a whole, which includes not only industrial profit, but also merchant profit, interest, and rent. The remainder of Volume I is devoted primarily to an analysis of the determinants of the magnitude of the aggregate ΔM.

Volume III is then concerned primarily with the level of abstraction of many capitals. The main subject of the analysis of many capitals in Volume III is the division of surplus-value among individual capitalists and into individual component parts. In other words, the analysis of many capitals is concerned with the distribution of surplus-value, as subsequent to the production of surplus-value. Part 2 of Volume III analyses the distribution of surplus-value among the individual branches of production and Parts 4–6 analyse the further division of surplus-value into industrial profit, merchant profit, interest, and rent. In this analysis of the distribution of surplus-value, the total amount of surplus-value is taken as given, as determined in the prior analysis of capital in general in Volume I.

The 'transformation problem' is of course concerned with the distribution of surplus-value among individual branches of production. Since the distribution of surplus-value among branches of production is accomplished by means of the prices of individual commodities, the analysis of many capitals necessarily involves the determination of these individual prices. In this analysis of

individual prices and individual components of surplus-value, the total amount of surplus-value and the rate of profit as derived from the total amount of surplus-value are taken as given, as determined in Volume I (see below for a further discussion of this point).

Determination of Constant Capital and Variable Capital

The second important difference between the Sraffian interpretation of Marx's theory and Marx's own logical method has to do with the fundamental givens in Marx's theory, or the determination of the inputs of constant capital and variable capital. The Sraffian interpretation assumes that the fundamental givens of Marx's theory are the physical quantities of the technical conditions and the real wage, and that constant capital and variable capital are derived from these given technical conditions of production and the real wage, respectively, first in terms of the values of these given bundles of goods, and then in terms of the prices of production of these same given bundles of goods.

According to this interpretation, Marx's theory of prices of production in Part 2 of Volume III is logically incomplete and contradictory because Marx failed to transform the inputs of constant capital and variable capital in each industry from value magnitudes to price magnitudes. Also, according to this interpretation, because constant capital and variable capital change, the rate of profit also changes as a result of the transformation procedure. This change in the rate of profit has been a key point in the Sraffian critique of Marx's theory, because, they argue, if the rate of profit changes, then Marx's theory of the falling rate of profit, which is derived in terms of the value rate of profit, does not necessarily apply to the price rate of profit. Even if it can be shown that the value rate of profit has a tendency to fall, this is not necessarily true of the price rate of profit. Finally, perhaps the most important point in the Sraffian critique of Marx's theory is that, since both values and prices can be derived from the technical conditions and the real wage, value theory is itself 'redundant'. One can simply directly derive the prices of commodities and the rate of profit from the given technical conditions and real wage. The resulting prices and rate of profit are identical to the 'Marxian' prices and rate of profit (that is, the Sraffian interpretation of Marx's theory). Hence value analysis adds nothing essential to the determination of prices and the rate of profit.

I argue, to the contrary, that constant capital and variable capital are taken as given in terms of the quantities of money invested to purchase the means of production and labour-power. In other words, the fundamental givens with which Marx's theory begins are these quantities of money invested as constant capital and variable capital, not the physical quantities of the technical condition of production and the real wage. The following arguments are offered to support this interpretation.

To begin with, the general analytical framework for Marx's theory, as discussed above, is expressed by the general formula for capital, or M – C – M′.[2] The important point for our purposes is that the starting-point of this formula is M, a sum of money invested as capital to purchase means of production and labour-power. The purpose of Marx's theory of surplus-value is to explain how this given sum of money is increased in magnitude through the purchase, production, and sale of commodities. Therefore, the very structure of Marx's general formula for capital suggests that Marx's theory begins with a given sum of money.

Secondly, my interpretation, that the money-capital that initiates the circulation of capital is taken as given, is further supported by the logical relation between Parts 1, 2, and 3 of Volume I of *Capital*. In Part 1, the necessity of money is derived as the necessary form of appearance of the value of commodities. In Part 2, capital is defined in terms of this previously derived concept of money – as money that becomes more money. Part 3 then analyses the origin of the increment of money that is characteristic of capital, with the initial money-capital taken as given. Marx did not suddenly, in Part 3, ignore the prior logical development of money and capital in Parts 1 and 2 and introduce out of nowhere the technical conditions of production and the real wage as the fundamental givens in his theory. Instead, Parts 1 and 2 provide the logical presuppositions for Marx's theory of surplus-value in Part 3 and beyond. The Sraffian interpretation, on the other hand, has no explanation for Marx's analysis in Parts 1 and 2 or for the logical relation between these two parts and the theory of surplus-value in Part 3.

Finally, my interpretation is also supported by the numerous passages throughout the various drafts of *Capital* in which Marx referred to the money-capital which initiates the circulation of capital as the 'presupposed capital' or the 'postulated capital' or the 'starting point' or the 'point of departure' for his analysis of the circulation of capital (see, for example, Chapter 4 of Volume I of *Capital*, and the earlier drafts of this chapter in Marx (1973b:250–64, 1987a: 501–7, 1988:9–20)). Nowhere did Marx refer to the 'presupposed means of production' or the 'postulated means of production'. Either Marx – who, it should be remembered, had a doctorate in philosophy and paid a great deal of attention throughout the various drafts of *Capital* to questions of logical method – was extremely sloppy in these numerous passages or he intended the usual methodological meanings to the terms 'given', 'postulated', 'presupposed', and so on; that is, that they are the fundamental data with which his theory begins. An especially clear passage is the following from the manuscript entitled 'Results of the Immediate Process of Production':

> Here, where we are concerned with money only as the *point of departure* for the *immediate process of production,* we can confine ourselves to the observation: capital exists here as yet only as a *given quantum of value* = M

> (money), in which all use-value is extinguished, so that nothing but the monetary form remains. ... Thus in the original simple expression of capital (or of the capital to be) as money or value, every link with use-value has been broken and entirely destroyed. ... If the original capital is a quantum of value = X, it becomes capital and fulfils its purpose by changing into $X + \Delta X$, i.e. into a quantum of money or value = the original sum + a balance over the original sum. In other words, it is transformed into the given amount of money + additional money, into the *given value + surplus-value* (Marx 1976a:976).

This passage suggests that Marx's methodological procedure is to take an initial sum of money as given, and to explain how this given sum of money is increased in magnitude. Notice that, in this analysis, 'all use-value is extinguished, so that nothing but the monetary form remains ... every link with use-value has been broken and entirely destroyed'.[3]

Theory of Surplus-Value

We have seen in the previous subsection that Marx's theory takes as given the money-capital that initiates the circulation of capital. Marx divided this initial money-capital into two component parts: constant capital (C) and variable capital (V); that is, $M = C + V$. According to Marx's theory, these two components of the initial money-capital play entirely different roles in the determination of the aggregate price of commodities and thus in the determination of the aggregate amount of surplus-value. The quantity of constant capital becomes one component of the aggregate price of the output. In other words, the constant capital is 'transferred' to the price of the output. The amount of value transferred from the constant capital to the price of the output cannot be greater than the value of the constant capital. Hence the constant capital component of the price of commodities cannot be a source of surplus-value. On the other hand, the variable capital does not become a component of the price of the output. Instead, the variable capital is replaced by current labour, and this current labour produces new-value, which becomes the second component of the price of the output (that is, $P = C + N$). This new-value component of the price of commodities both replaces the variable capital invested in labour-power and provides the surplus-value of capitalists (that is, $S = N - V$).

The main point to be emphasised here is that, in Marx's theory of surplus-value, both constant capital and variable capital are taken as given as sums of money invested to purchase means of production and labour-power, not derived as the values of given means of production and means of subsistence. Marx originally assumed in Volume I that the prices of the means of production and the means of subsistence are equal to their respective values, because there was no basis for any other assumption consistent with the labour theory of

value, since the determination of individual commodities, or subsets of commodities such as the means of production and means of subsistence, are not considered in Volume I. Strictly speaking, this equality applies only to the total commodity product. However, this provisional assumption plays no essential role in Marx's theory of surplus-value in Volume I. The magnitudes of constant capital and variable capital are not *determined* by the value of the means of production and means of subsistence; that is, they are not *derived* from the means of production and means of subsistence. The physical quantities of means of production and means of subsistence play no role in Marx's theory of surplus-value. Instead, the magnitudes of constant capital and variable capital are *taken as given* ('given preconditions') as the quantities of money-capital that initiate the circulation of capital. In Marx's theory of prices of production in Volume III, it is determined that the prices of production of individual commodities and of the means of production and means of subsistence are not equal to their respective values. However, this more precise determination of the prices of the means of production and means of subsistence does not change the magnitudes of constant capital and variable capital. The magnitudes of constant capital and variable capital do not change because they are taken as given, not derived first as the value, and then as the price of production, of the means of production and means of subsistence.

Theory of Prices of Production

According to the interpretation of Marx's theory presented here, the prices of production of commodities are determined according to the following equation:

$$P_i = (C_i + V_i) + r(M_i) \qquad (3.1)$$

where P_i stands for the price of production of each commodity, C_i for the periodic flow of constant capital consumed in each industry, V_i for the periodic flow of variable capital expended in each industry, r for the general rate of profit, and M_i for the total stock of money-capital advanced in each industry. In this equation, C_i, V_i and M_i are taken as given sums of money, and r is taken as given as determined in the Volume I analysis of capital in general.

This determination of prices of production is quite simple and straightforward. And it is fundamentally different from the Sraffian interpretation of Marx's theory, according to which prices of production are determined simultaneously with the rate of profit, and both are derived from given technical conditions and the real wage, according to the well-known equation:

$$P = (1 + r)(PA + PLB) \qquad (3.2)$$

where A is the given input–output matrix (the technical conditions of production), L is the vector of direct labour coefficients, and B is the given vector of wage-goods. A and B, defined in terms of physical quantities of goods, play no role in Marx's theory of prices of production given in equation (3.1) above.

Finally, I have shown in my previous paper that, if this interpretation of Marx's logical method is accepted, then the following conclusions follow: (1) Marx's theory of prices of production is not 'incomplete', that is, Marx did not fail to transform the inputs of constant capital and variable capital from values into prices of production. Instead, in Marx's theory of prices of production, constant capital and variable capital are taken as given as sums of money, which are assumed to be equal to the prices of production of the means of production and labour-power, respectively. Constant capital and variable capital do not need to be transformed from value magnitudes to price magnitudes because constant capital and variable capital are never determined as the values of the means of production and wage-goods, and then later determined as the prices of these given bundles of goods. Instead, constant capital and variable capital are taken as given sums of money, regardless of whether or not the prices of the means of production and wage-goods are proportional to their values. (2) Marx's two aggregate equalities both are true simultaneously, as Marx himself concluded. (3) The rate of profit does not change as a result of the determination of prices of production. Instead, the rate of profit is taken as given in Marx's theory of prices of production, as determined in the prior analysis of capital in general. (4) The labour theory of value is not 'redundant', because values as defined by Marx cannot be derived from the technical conditions of production. The prices of production as determined by Marx's theory are different from the prices of production determined by the technical conditions of production (as in the Sraffian interpretation of Marx's theory), or in Sraffian theory.

3.2 RESPONSE TO LAIBMAN

I am very grateful to David Laibman for his willingness to engage in discussion with the 'new orthodox Marxists' about the new interpretations of Marx's theory they have presented in recent years. He is almost alone (so far as I know) among the 'old orthodox Marxists' and the Sraffian critics of Marx in engaging in such a discussion.

Laibman's General Interpretation of the Transformation Problem

In his chapter, Laibman repeats the long-standing criticisms of Marx's theory of prices of production: that he failed to transform the inputs of constant capital and variable capital, that the rate of profit changes, and that Marx's two

aggregate equalities do not hold simultaneously. These criticisms are based, as always, on the implicit interpretation, criticised above, that the fundamental givens in Marx's theory are the physical quantities of the technical conditions of production and real wage, and that constant capital and variable capital are derived from these given bundles of goods. However, Laibman, like many 'old orthodox Marxists' (for example, Sweezy, Shaikh) does not consider these criticisms to be weaknesses of Marx's theory, but rather calls for its further development. He argues that, even though Marx's theory of the distribution of a given amount of surplus-value is not quantitatively true, it remains qualitatively true.

It is not entirely clear what is meant by 'qualitatively true', but the fact that Marx's theory is no longer considered to be quantitatively true is a major concession to Marx's critics. At the very least, the significance of the quantitative errors in Marx's theory should be discussed (perhaps Laibman has done this in other papers I have overlooked). How great are the differences between the total amount of profit and the total amount of surplus-value, or/and between the total price and the total value, or between the price rate of profit and the value rate of profit? How likely is it that the price rate of profit will have a significantly different trend from the value rate of profit, as the Sraffian critics have claimed?

Laibman also does not respond in his short chapter to the Sraffian critique of the 'redundancy' of the labour theory of value (again, maybe he has presented such a response in other papers). If both the values and the prices of production are derived from the technical conditions and the real wage, why not derive prices directly from these given physical quantities?

Marx's Admissions of Errors

Laibman also repeats the often-made argument that Marx himself acknowledged in several passages that he had made an error in his own explanation of prices of production by failing to convert the inputs of constant capital and variable capital from value terms to price terms. Laibman states:

> It should be mentioned that Marx himself repeatedly referred to the 'possibility of error' in disregarding the effect of formation of prices of production upon the valuation of inputs. Marx is therefore the first 20th-century Marxist, despite strenuous, and at times admirable, efforts by some of the NOMists to discount and explain away these passages.

In response, I will discuss three passages that are usually cited as Marx's 'admissions of errors' (Laibman does not cite specific references), all of which are from Part 2 of Volume III of *Capital*.

The first passage is from Chapter 9 of Volume III of *Capital*:

> Apart from the fact that the price of the product of capital B, for example, diverges from its value, because the surplus-value realized in B is greater or less than the profit added in the price of the products of B, the same situation also holds for the commodities that form the constant part of capital B, and indirectly, also, its variable capital, as means of subsistence for the workers... However, this is always reducible to the situation that whenever too much surplus-value goes into one commodity, too little goes into another, and that the divergences from value that obtain in the production prices of commodities therefore cancel each other out (Marx 1981:261).

It seems to me that this passage says: (1) The prices of production of the means of production and the means of subsistence are in general not equal to their values. (2) However, these inequalities between the prices of production and the values of the means of production and the means of subsistence affect only the distribution of surplus-value; they do not affect the total amount of surplus-value or the total price of all commodities produced (that is, 'the divergences cancel each other out'). Marx did not say anything in this passage to the effect that, 'in my explanation of the determination of prices of production, I left constant capital and variable capital in value terms, that is, as the labour-time contained in the means of production and means of subsistence, and this error should be corrected, that is, constant capital and variable capital should be transformed from the value to the price of production of the means of production and means of subsistence'. He simply called attention to this more precise determination of the prices of the means of production and the means of subsistence.

The second passage is from a few pages later in Chapter 9 of Volume III:

> It was originally assumed that the cost price of a commodity equalled the *value* of the commodities consumed in production. But for the buyer of a commodity, it is the price of production that constitutes its cost price and can thus enter into forming the price of another commodity. As the price of production of a commodity can diverge from its value, so the cost price of a commodity, in which the price of production of other commodities is involved, can also stand above or below the portion of its total value that is formed by the value of the means of production going into it. It is necessary therefore to bear in mind this modified significance of the cost price, and therefore to bear in mind too that if the cost price of a commodity is equated with the value of the means of production used up in producing it, it is always possible to go wrong. Our present investigation does not require us to go into further detail on this point. It still remains correct that the cost price of commodities is always smaller than their value. For even if a commodity's cost price may diverge from the value of the means of production

> consumed in it, this error in the past is a matter of indifference to the capitalist. The cost price is a given precondition, independent of his, the capitalist's, production, while the result of his production is a commodity that contains surplus-value, and therefore an excess value over and above its cost price (Marx 1981:264–5).

It seems to me that this passage says: (1) In Volumes I and II, it was originally assumed that the prices of the means of production and the means of subsistence are equal to their respective values. (2) However, once the individual prices have been determined, we see that the prices of production of the means of production are in general not equal to their values. (3) Therefore, if the price of the means of production is equated with their value, this would be a mistake. (4) (Most importantly for our purposes) even if the cost-price of the means of production is not equal to the value of the means of production, this cost-price is what is taken as given (a 'given precondition') in the theory of surplus-value.

According to Marx's critics, the phrase 'originally assumed' in the first sentence in the above passage refers to earlier in Chapter 9 of Volume III, where Marx had presented his explanation and numerical example of the determination of prices of production. Thus, Marx's critics conclude that Marx assumed in his explanation of prices of production that the inputs of constant capital and variable capital are equal to the values of the means of production and means of subsistence. However, aside from all the arguments and textual evidence to the contrary presented above, I argue that Marx's phrase 'originally assumed' refers, not to the opening pages of Chapter 9 of Volume III, but rather to Marx's theory of surplus-value in Volume I. I have discussed above the nature of Marx's 'original assumption' that the prices of the means of production and the means of subsistence are equal to their respective values, and I have emphasised that this provisional assumption plays no essential role in Marx's theory of surplus-value and that relaxing this provisional assumption in Volume III does not alter the magnitudes of constant capital and variable capital.

Therefore, I argue that this passage, instead of being an 'admission of error', actually supports my interpretation that constant capital and variable capital are taken as given as sums of money-capital that initiate the circulation of capital. In this passage, Marx was simply pointing out again that he was no longer assuming that these sums of monetary constant capital and variable capital purchase means of production and labour-power at prices which are equal to their values. He did not say that he himself had made the mistake of equating constant capital and variable capital with the values of the means of production and means of subsistence in his earlier determination of prices of production, but only said that, if someone did make this equation,

it would be a mistake.

The third passage is from Section 2 of Chapter 12 of Volume III on 'prices of production of commodities with average composition'. Marx began this section by reviewing the two reasons why the prices of production of commodities diverge from their values: (1) because the profit included in the price of commodities is not equal to the surplus-value contained in them and (2) because the prices of production of the means of production which enter into the production of other commodities are also not equal to the values of these means of production.

Marx then continued, with respect to commodities produced with capitals of average composition of capital:

> It is quite possible, accordingly, for the cost price to diverge from the value sum of the elements of which this component of the price of production is composed, even in the case of commodities that are produced by capitals of average composition...
>
> Yet this possibility in no way affects the correctness of the principles put forward for commodities of average composition. The quantity of profit that falls to the share of these commodities is equal to the quantity of surplus-value contained in them. For the above capital, with its composition of 80c + 20v, for example, the important thing as far as the determination of surplus-value is concerned is not whether these figures are the expression of actual values, but rather what their mutual relationship is; that is, that v is one-fifth of the total capital and c is four-fifths. As soon as this is the case, as assumed above, the surplus-value v produces is equal to the average profit. On the other hand, because it [the surplus-value – FM] is equal to the average profit, the prices of production = cost price + profit = k + p = k + s, which is equal in practice to the commodity's value (Marx 1981:309–10).

It seems to me that this passage says: (1) Cost-price diverges from value even in the case of commodities produced with capitals of average composition. (2) However, the profit included in the price of these commodities is equal to the surplus-value contained in these commodities. (3) (Most importantly for our purposes) the cost-price of these commodities (which is *not* equal to the values of the means of production and means of subsistence) is one component of *both* the price of production of these commodities *and* of the value of these commodities. This key point is indicated by the fact that, in Marx's equations, the same k (the cost-price of commodities) is added *both* to the surplus-value, to obtain the value of these commodities, *and* to the profit, to obtain the price of production of these commodities. If Marx was admitting in this passage that he failed to transform the inputs from values to prices in his earlier theory of prices of production, then he quite stupidly continued immediately to

make the same mistake again, with respect to commodities produced with capitals of average composition. I don't think Marx made such a stupid mistake. (4) Since the cost-price is the same in the determination of both the value and the price of production of these commodities, and since profit is equal to surplus-value for these commodities, the price of production of commodities of these commodities is equal to their value.

In other words, Marx was saying in this passage that, for commodities produced with capitals of average composition, the fact that the prices of production of the means of production and the means of subsistence are not equal to their values does not affect the cost-price of these commodities, because this cost-price is taken as given, in the determination of both the value and the price of production of these commodities. If this invariance of the cost-price (constant capital and variable capital) is true for commodities produced with capitals of average composition, then this invariance is also true for all other capitals. All other commodities are characterised by the same inequality between the price and value of their inputs. But, as in the case of commodities produced with capitals of average composition, this inequality does not alter the magnitude of their cost-prices, which are taken as given. Far from acknowledging that he had failed to transform the inputs of constant capital and variable capital from values to prices, this passage and its algebraic formulation state the opposite: that constant capital and variable capital are not transformed in the determination of prices of production, but are instead taken as given as the same quantities of money-capital, both in the theory of value and surplus-value in Volume I and in the theory of prices of production in Volume III.

Therefore, all three of these passages, which have been interpreted by many, presumably including Laibman, as 'admissions of error', are in fact nothing of the kind. In none of these passages did Marx say that his explanation of the determination of prices of production left the inputs of constant capital and variable capital in value terms, which is a mistake, and which remains to be corrected. To the contrary, these passages provide additional and important textual evidence for the alternative interpretation of Marx's theory presented here: constant capital and variable capital are taken as given in the determination of prices of production and thus remain invariant in this determination. The Sraffian criticism of Marx's determination of prices of production is valid only within the framework of the Sraffian interpretation of Marx's theory; it is not valid within the framework of Marx's own logical method.

Laibman's Critique of the 'Methodological' Interpretation

Laibman begins his critique of the 'methodological' interpretation of Marx's theory by stating that this interpretation 'rests on an invocation of the sanctity

of Marx's method'. It is not entirely clear what is meant here by the 'sanctity' of Marx's method. But the word 'sanctity' seems to imply that Marx's method is considered to be necessarily true and without fault.

However, that is not what I am arguing. I am not arguing that Marx's theory must be correct; rather I am arguing that an evaluation of the logical consistency of Marx's theory should be based on a correct understanding of Marx's own logical method, not on the basis of an altogether different logical method. The critics of Marx's theory of prices of production, including Laibman, argue that Marx made a logical error – he failed to transform the inputs of constant capital and variable capital from values to prices of production. Surely, the validity of this criticism depends on whether or not the logic of Marx's theory has been correctly understood. That is the reason I insist that Marx's logical method be re-examined, in order properly to evaluate whether or not there is a logical error in Marx theory, not because I regard Marx's theory to be necessarily true and without error.

I have argued that this long-standing criticism of Marx's theory assumes that Marx's logical method is essentially the same as the logical method of Sraffa's theory, and that this assumption is wrong. I have argued further that, within the framework of Marx's own logical method, he did not commit a logical error. That is, he did not fail to transform the inputs of constant capital and variable capital from values to prices of production because, according to Marx's logical method, constant capital and variable capital are taken as given in terms of money, not derived from given technical conditions of production and the real wage. Therefore, the correct judgement on the logical consistency depends on which of these two interpretations of Marx's logical method is correct. One cannot simply brush aside this issue of the correct interpretation of Marx's logical method and refuse to consider it. One who follows the Sraffian interpretation, including Laibman, should not simply continue to presume and reassert that the fundamental givens in Marx's theory are the technical conditions and the real wage, and that constant capital and variable capital are derived from these fundamental givens, but should rather present arguments and textual evidence to support this interpretation, and should also criticise the arguments and textual evidence that I and others have presented to support the alternative interpretation.

Laibman states at an earlier point in his chapter that 'if Marx's method can only be evaluated internally, and if it is by definition what he did, then it is rendered immune from criticism'. I am not sure exactly what is meant by 'Marx's method can only be evaluated internally'. I have indeed argued that the correctness of Marx's logic should be evaluated within the framework of Marx's own logical method, not by imputing to Marx's theory an altogether different logical method. Surely this is correct. But I do not argue that the criteria of this evaluation should somehow be internal to Marx's theory. Rather,

I argue that the criteria for this evaluation should be the usual logical criteria of consistency, completeness, and so on. Such an evaluation does not render Marx's theory immune to criticism. It is still possible that, within the framework of Marx's logical method, Marx made a logical error (or errors). But whether or not Marx made such a logical error should be evaluated in terms of Marx's own logical method.

Laibman argues further that the 'methodological interpretation confuses two meanings of the word "constant"'. Specifically, it is argued that constant capital and variable capital are held constant in the transformation of values into prices of production because they must be held constant in order to explain the origin of surplus-value. Laibman writes:

> To isolate the source of the increase [that is, the source of surplus-value; FM], in the purchase and sale of labour-power, the original M must be held constant. From this we deduce that the value magnitudes of inputs are not transformed when (direct) values are transformed into prices of production.

However, this is not my argument regarding why constant capital and variable capital remain constant in Marx's theory of the determination of prices of production. My argument, as presented in Moseley (1993b) and summarised in the first section above, is that constant capital and variable capital are held constant because Marx's logical method takes constant capital and variable capital as given, as the sums of money used to purchase the means of production and labour-power in the first phase of the circulation of capital. Marx's theory of surplus-value in Volume I of *Capital* takes as given the aggregate amounts of constant capital and variable capital, and his theory of prices of production in Volume III takes as given the individual amounts of constant capital and variable capital invested in each industry. The sum of the individual amounts of constant capital and variable capital taken as given in Volume III is equal to the aggregate amounts of constant capital and variable capital taken as given in Volume I.

Constant capital and variable capital are not first determined as the values of the means of production and the real wage, and then later determined as the prices of production of these bundles of goods, as in the Sraffian interpretation. Therefore, my argument for why constant capital and variable capital are held constant in Marx's theory of prices of production does not confuse two meanings of the word 'constant'. Instead, it is based on a different interpretation of the fundamental givens in Marx's theory, an interpretation for which I have provided substantial arguments and textual evidence.

I have presented three arguments to support this interpretation that constant capital and variable capital are taken as given in terms of money. (1) The fact that Marx's general formula for capital, M – C – M′, begins with a sum of

money, which suggests that this sum of money is the fundamental given in Marx's theory. (2) The logical relation between Parts 1, 2, and 3 of Volume I, according to which the concept of money is developed as the logical presupposition to his theory of capital and surplus-value. (3) The numerous passages in which Marx stated that the quantity of money-capital that initiates the circulation of capital is given or presupposed in his theory of surplus-value.

Laibman has not responded to any of these arguments in his chapter. Rather, he continues to assume, without argumentation or justification except the authority of the prevailing interpretation, that the fundamental givens in Marx's theory are the technical conditions of production and the real wage, and that constant capital and variable capital are derived from given physical quantities, first in terms of values and then in terms of prices of production.

Finally, Laibman also argues that, according to my interpretation of Marx's method, constant capital and variable capital are left in terms of value, that is, as the value of the means of production, and wage goods, respectively. I hope it is clear from the above discussion that this criticism is not valid. According to my interpretation, constant capital and variable capital do not remain in terms of value because constant capital and variable capital are never determined in terms of value. Rather, these variables are taken as given as sums of money-capital, not derived first as values of the means of production and wage goods and later as the prices of production of these bundles of goods.

Laibman's Concluding Remarks

In conclusion, Laibman suggests three lessons that follow from his critique of 'new orthodox Marxism': (1) Simultaneous determination and equilibrium are necessary ingredients in a comprehensive Marxian theory of capitalism. Simultaneous determination of the rate of profit and prices does not violate the 'ontological priority' of the rate of profit. (2) The 20th-century 'eigenvector' interpretation of Marx's theory (that is, the Sraffian interpretation) is a valid interpretation of Marx's theory and is the closest thing we have to a coherent theory of price determination. (3) Most importantly (according to Laibman), we should avoid dishonouring Marx by treating him as a 'holy prophet'. There is only one path from the 19th to the 21st century and it goes through the 20th century.

With regard to the first two points, I have argued that the 'eigenvector' interpretation is not a valid interpretation of Marx's logical method. The 'eigenvector' logical method differs from Marx's own logical method in the fundamental respects discussed above. In particular, I have also argued that Marx's logical method is not that of simultaneous determination. Instead, constant capital and variable capital are taken as given, both in the theory of surplus-value and in the theory of prices of production. The total amount of

surplus-value and the general rate of profit are then determined *prior* to the determination of prices of production. It is not clear what Laibman means by the 'ontological priority' of the rate of profit, but Marx's theory is clearly based on the *logical* priority of the rate of profit. I think I have provided much more logical and textual support for this interpretation of Marx's logical method than has been presented for the 'eigenvector' interpretation.

But even if this strong conclusion is not accepted, can we not agree that the 'eigenvector' interpretation is not the *only* possible interpretation of Marx's theory, that there are other possible interpretations of Marx's theory that have at least as much methodological and textual support in Marx's writings as the 'eigenvector' interpretation? If this minimum conclusion is accepted, then it should be acknowledged that at least some of these valid interpretations of Marx's theory (including mine) come to very different conclusions regarding the logical consistency of Marx's theory of prices of production; that is, that (1) Marx did not make a logical mistake in his theory of prices or production (he did not fail to transform the inputs from values to prices); (2) the rate of profit does not change as a result of the determination of prices of production; and (3) Marx's two aggregate equalities both are true simultaneously. At the very least, it should be acknowledged that these conclusions cannot be dismissed out of hand, as having already been proven false, but instead follow from an interpretation of Marx's theory that has at least as much validity as the 'eigenvector' interpretation.

Finally, with regard to treating Marx as a 'holy prophet', I have argued above that the 'new orthodox Marxism' does not treat Marx as a holy prophet, but instead is trying to better understand Marx's theory as a necessary preliminary step toward a proper evaluation and the further development of Marx's theory. To re-examine Marx's theory seriously, with special attention to the logical method employed, is not to dishonour Marx as a holy prophet; rather it is to honour him by taking his theory seriously enough to study it thoroughly and on its own terms, not from the perspective of some other theory. As a result of this re-examination, many of us have come to the surprising and disappointing conclusion that Marx's theory has been fundamentally misunderstood for most of the 20th century. Paradoxical as it may seem, if we want to develop a theory of capitalism based on Marx's own logical method, then we are forced, at the end of the 20th century, to re-examine and restudy Marx's 19th century writings. This re-examination of Marx's theory may look like a retreat. But in terms of the development of Marx's theory, it is clearly an advance, which is long overdue. Whether or not the better understanding and further development of Marx's theory turns out to be an advance with respect to understanding 21st century capitalism remains to be seen. But if the 'new orthodox Marxists' are correct, and Marx's theory is fundamentally different, not only from neoclassical theory, but also from Sraffian theory, then the rediscovery of Marx's

theory at least provides us with another alternative theory with which to try to understand capitalism as it evolves into the 21st century.

NOTES

1. Please see Moseley (1993b) and Moseley (2000) for a more complete exposition of my interpretation.
2. This is the abbreviated form in which the circulation of capital appears in the sphere of circulation. As is well known, the complete form of the circulation of capital, including the sphere of production, is M–C...P...C´–M´.
3. The interpretation of the fundamental givens in Marx's theory presented here is similar to the 'new solution' interpretation presented by Foley, Duménil, and others, in the sense that the 'new solution' also argues that Marx's theory takes the initial variable capital as given in money terms. However, the 'new solution' is different from the interpretation presented here in that it argues that constant capital is not taken as given in money terms, but is instead derived from the technical conditions of production, as in the Sraffian interpretation. Therefore, there is a methodological inconsistency in this 'new solution'. Since both constant capital and variable capital are components of the general concept of capital, these two components should be determined in parallel, consistent fashion. Either they should both be taken as given in terms of money or they should be derived from given physical quantities. Nowhere in Marx's theory is there a suggestion that constant capital and variable capital are determined in different ways. See Moseley (2000) for a further discussion of the 'new solution'.

4 The Case for Simplicity: a Paradigm for the Political Economy of the 21st Century

Alan Freeman

4.1 WHAT ROAD TO THE 21st CENTURY?

In his prodigious *History of Astronomy*, Neuberger says that Copernicus added only one argument to the evidence that the earth was not the centre of the universe: it was simpler to suppose it went around the sun.

Since William of Ockham said that 'the simplest explanation should suffice' every advance in thought has, I think, replaced many complex propositions by a smaller number of simpler but more powerful propositions. The real difficulty in a new standpoint is never the complexity of its conclusions. It is the violent shift of perspective needed to accept its premises.

Before we accept the appealing argument that the road to the 21st century lies through the 20th, it is worth noting where Copernicus' discovery came from. Actually, he did not invent it. It was laid down in the second century B.C. by Aristarchus of Samos. It came, not just from a previous century but from a previous millennium, entombed by fourteen centuries of obscurantism.

The following one and a half millennia perfected, with a complexity so great that it is still hard to follow today, an alternative system invented by Eudoxus, sanctified by Aristotle and perfected by Ptolemy. The movement of all heavenly bodies was explained by fifty-three concentric spheres, complete with epicycles, each turning on a different axis. This system predicted almost all the observed positions of the stars and planets, as well as eclipses, with very great accuracy. Except for comets, it was only when Galileo turned his telescope on the moons of Jupiter that any really serious conflict between theory and observation emerged.

Yet progress did not come through a forward development of this dazzling system, now unknown and forgotten. It arose in a return to an *earlier* system of thought with two, and only two, features to recommend it. It was easier; and it was right.

It is my argument that the present state of political economy calls for a revolution of this character, rooted in a thoroughgoing reinstatement of the earlier and better value theory of Marx. It is my argument also that this, sadly, involves the rescue of Marx's value theory from a great deal of what has been put forward in his name.

Laibman's view of what the so-called 'New Orthodox Marxists' are trying to do is based on a fundamental misconception; that progress in science is linear. Actually, thought does not progress linearly. The neoclassical 'revolution' was a counter-revolution, refining and honing to a mathematically brilliant but socially bankrupt edge the most reactionary aspects of political economy of the day, as it stood in the 1870s.

This counter-revolution has proceeded by imposing the linear view on its predecessors, judging them all from its own standpoint. It presents a coherent but fundamentally apologetic account in which, via the postulate of equilibrium, the assumption that the market 'works' was transformed into an axiom. This axiom has permeated and transformed the entire conceptual apparatus of economics, to the extent that it is incapable of *thinking* the concepts appropriate to a market that does not work. The very idea of a price that differs from its market-clearing magnitude is alien. If such an idea is entertained, the equations which 'define' price can no longer be written down. Concepts and relations which include within them such price variation have become literally unthinkable, sadly even to Marxists.[1]

The issue is not at all whether 'everything Marx says is right'. It is that modern thinking makes it impossible to find out. It defines not just his individual ideas, but his entire conceptual framework, to be logically impossible, and substitutes its own conceptual framework as the standpoint from which these individual ideas must be judged. This is a fundamental attack on science; it denies today's researchers the right, and the freedom, to test *all* theories, Marx's included, against the observed facts. To establish, as we have done, that the 'proof' of Marx's error is itself erroneous, is a blow for science, not dogmatism; it places at the disposal of today's researchers the *full* range of yesterday's theories.

Thus, what is required is not just to do the mathematics differently, but to rethink the conceptual structure with which we do the mathematics. The current state of the debate resembles the discussion which Copernicus provoked. Two sides might both use the word 'value' much as two astronomers used the word 'orbit'; but the words simply do not mean the same thing. For Ptolemaics the idea that the earth moves was not merely wrong but inconceivable. The earth by definition was the centre of the universe.[2] In like manner the words 'value' and 'price' have become by definition the solution to a simultaneous equation. The words are the same, but the concepts are universes apart.

Earlier debates focused to some extent on mathematical technicalities. This was, I think, inevitable. One of the limits reached by the simultaneist paradigm

is the supposed 'errors' it finds in Marx's writing which disappear in the non-dualist and temporalist paradigm. This had to be demonstrated mathematically before the current paradigm could be challenged. The methods of working and the results of the new paradigm had to be established rigorously and to some extent on the terrain established by the existing paradigm. The dispute between temporalism and simultaneism has therefore appeared, on the surface, as a battle between rival mathematical systems.

This superficial appearance is misleading. In the first place, every conclusion that can be drawn from a simultaneous approach is a special case of an identical conclusion that can be drawn from a temporal approach, by assuming no technical change and no price variation. The temporal approach is thus not a replacement but a generalisation, just as Newtonian mechanics appears as a special case of relativity.

But, to extend the parallel, a fundamental conceptual reorientation is required before this relation can be understood. To a two-dimensional being, solid objects are inconceivable. In the simultaneous paradigm, an entire dimension – time – is missing. The concepts and results of the more general formalisation appear as shadowy intrusions or incomprehensible paradoxes. Just as the relation between Newtonian and Einsteinian mechanics is comprehensible only to an Einsteinian, the differences which temporalism has with simultaneism can only be grasped if the restriction of simultaneous time is removed.

This can make temporalism appear to the simultaneists as a crusade; we appear to be saying that we alone have seen the light, and that only belief can deliver the holy. This has led David Laibman to characterise temporalism as a new orthodoxy.

So is there a basis for a dialogue? I wish to approach this problem from a different angle: I want to argue that while the results of the temporalist approach are more general, its concepts are simpler, by arguing for the removal of the unnecessary restrictions of the standard simultaneous assumption – for example, the restrictive assumption that there is no technical change, the restrictive assumption that prices do not fluctuate, the restrictive assumption that profit rates equalise, and so on.

The question, quite simply, is this: can we explain the concepts of value theory without these restrictions? Can we define what value is, without requiring goods to exchange in proportion to their value? Can we explain what price is, without requiring profit rates to equalise? Can we explain what reproduction consists of, without requiring that the gross product should be reproduced with its composition and size unaltered every year for eternity?

I will show it is possible, with very little mathematical apparatus or technical sophistication – yet preserving all the rigour of Marx's conceptual analysis. No-one working in a simultaneous framework has to accept the whole raft of

results, methods and conclusions advanced by those working in the temporal framework if they consider it too risky a leap of faith. They need only drop the restrictions with which they work – restrictions imposed not by Marx but by his 20th century interpreters. They need only generalise from their present assumptions. In short, the Marxists need to throw off the chains which they themselves have forged. This is all they have to lose.

4.2 PRICE AND VALUE AS THEY APPEAR IN THE WORLD

Consider the following:

- In 1984 in round figures the capitalist class of Britain spent a total of £265bn on intermediate goods.
- In 1984 they realised £545bn in sales on the goods they produced.

Where did the difference of £280bn come from, and where did it go? Let us ask where it went first. £180bn went on wages and £100bn on profits.[3]

If we take the most extremely simplified, naïve view of Marx possible we would make the following identification (all units in billions):

C	V	S
£265bn	£180bn	£100bn

$$C + V + S = £265bn + £180bn + £100bn = £545bn$$

Where did this sum of £545bn come from? There are two views. The 'adding up' view of Adam Smith, perpetuated by neoclassical theory, tells us that the 'labour' factor added £180bn and the 'capital' factor added £100bn. An alternative is to say: no, 'labour' added the whole £280bn, of which the capitalists took £100bn.[4]

This way of dividing up value added is fully compatible with the normal national accounting framework itself which, for example, categorises a payment to a state pensioner as a 'transfer' payment – money that came from value created by someone else. When the same pensioner receives income from a privatised savings institution, it is treated as value added, because the pensioner is now considered to be a supplier of the factor 'capital'. In asserting that 'labour' is the sole factor of production, all we have done is categorise all payments to capitalists as transfers, so that we treat the state pensioner in the same way as the private saver, and, more consistently than the national accounts, treat all owners of capital in the same manner.

Having made this basic division of value added, we can then calculate how long it takes a worker to create a certain amount of value added, in money terms. Table 17.1 of the Blue Book tells us that there were 21 million employed workers in that year.[5] Therefore on average, each one of these 21 million workers added, each year, £13,333 in *value-product* (£282bn/21mn) and was paid £8571 (180/21), the remaining £4762 being the monetary equivalent of the unpaid labour of this average worker.

This gives us a direct, quantitative relation between time of work, and value added. One worker, working for one year, creates £13,333. That is, £13,333 is the *monetary expression* of one year of living labour in 1984.[6]

Now let us look at some of the individual sectors of the economy. Consider, for example, the oil and gas sector. The Blue Book tells us that this employed 616,000 workers. The I/O accounts tell us that they were paid £5736bn, more or less the average wage.

But the profits of this sector were rather different: they were £21,248 bn or about £40,000 per worker – nearly eight times the average. The intermediate purchases of this sector being about £33bn, we find that for this sector the breakdown of the product appears to read thus:

C	V	S
£33bn	£6bn	£21bn

$$C + V + S = £60bn$$

Moreover in this sector, each worker added £43,831 or over three times the national average. The rate of exploitation appears also to be much higher.

If we make a similar calculation in other sectors of the economy we find that in some cases the total value added is greatly in excess of the national average and in others greatly less.

What are we to make of this? We could of course accept appearance for essence and take it as literally true that an oil worker is eight times as productive as everyone else. Or we could adopt the account of both Marx and Ricardo, who assume that all labour has already been reduced by the market to simple labour. If each worker had merely added the national average of £13,333, we would have obtained the following:

C	V	S
£33bn	£6bn	616,000 × £13,333 = £8.21bn

In my view, the simplest and most direct – but also the most rigorous – interpretation of Marx's theory of value is to say that this *is* the value of the output of the oil sector. That is, the value of this output of this sector was the sum of the

dead labour, represented by the £33bn spent on inputs, and living labour, that is the £8.21bn added on the basis that average, simple labour adds the same amount of value per unit time throughout the economy, namely £13,333 per year per worker. The price of the same output, namely £21bn, is what we find in the national accounts, and is different from the value of this output. Hence:

(1) This gives a perfectly clear distinction between value and price. There is no question of price being directly identical to value.
(2) The price–value difference is simply the difference between gross price and gross value, that is $(33 + 6 + 21) - (33 + 6 + 8.21) = £12.79$bn.
(3) Surplus-value and hence exploitation is clearly defined: it is the difference between the value added by the workers and the wages they receive.
(4) There is a clear difference between surplus value and profit. Profit in the oil sector, for example, is £21bn but surplus value is £8.21bn: difference, £12.79bn.
(5) If we add up all the price–value differences over the whole economy, they must total zero, since the figure of £13,333 per worker is a social average.
(6) If we add up all the profit–surplus-value differences over the whole economy, they must total zero by the same token.

I now want to make a straightforward case: in relation to the main points that have always been considered distinctive in Marx's theory, this is Marx's value analysis.

4.3 THE FINDINGS AND DISTINCTIONS OF VALUE THEORY

The analysis above could hardly be said to require mathematical sophistication. It contains not a trace of matrices, eigenvalues, or even equations. Does it *lose* anything we obtain from the more complex and difficult – but more restrictive – simultaneous equation approach? On the contrary:

- There is a clear distinction between value and price.
- Labour is clearly accounted for as the source of all value.
- Value is neither reduced to money nor to abstract labour but subsumes a definite relation between the two.
- Exploitation is quantitatively clear.
- Abstraction is quantitatively as well as qualitatively manifested; the only difference between oil workers and any others is the amount of value that they add, and quantitatively this value is the same for all workers.
- Marx's two equalities are satisfied.

Does this demonstrate the full complexity of Marx's analysis? No. It may be

that in one sector or another, labour is actually more intense and that a closer investigation of the sector would reveal that. It may be that the value added per worker per hour fluctuates over time either due to monetary inflation or technical change. And the particular reasons why the oil sector realises higher profits (rent, technical superiority, and so on) have not yet been investigated.

But a paradigm is not to be judged on whether it explains all known phenomena instantly. If this could be done there would be no need for scientific labour; either mere observation would suffice or, once we knew the appropriate concepts, everything would be totally clear. The issue is whether we possess concepts which render it *possible* to explain currently-known phenomena, or whether we are saddled with concepts which obstruct this understanding. This in turn reduces to the following question: do the concepts of the paradigm allow us to make all the necessary distinctions between the variety of phenomena we see, without introducing extraneous or accidental issues?

In relation to most of the central and entirely practical questions of economics, value theory as defined above satisfies this criterion.

Real and Inflationary Increases in Price

How could the total amount of value in the economy be changed in 1985? In actual fact we don't know the gross product of 1985 because I/O accounts are not kept. But it is not difficult to deduce, since we know what consumers bought in 1985, we know what the government spent and we know investment. The remainder must be the raw materials consumed during 1985, and we know the net product of 1985. The new gross product turns out on the basis of back-of-an-envelope calculations to be around £570bn.

What were the possible causes of this increase? Actually there are three possible sources of the increase, which we can explain by taking four extreme cases:

(1) It could be that because of technical changes, more raw materials (C) were consumed.
(2) It could be that all prices rose, without any increase in either the productivity of the workers in use-value terms, or any change in employment. In this case, we are dealing with a purely inflationary increase in nominal values.
(3) It could be that the workers produced more actual product so that at the same prices, its price increased.
(4) It could be that the workers actually worked longer. In this case, more actual value was added.

By distinguishing net from gross output it can be seen that raising £C has no impact on the mass of profits, but raises only turnover.

With a clear relation between money and labour time, any sum of money can

be reduced to a quantity of labour hours and *vice versa*.[7] Using this we can convert the gross output of society into labour hours and arrive at a genuinely universal measure of output and profitability which discriminates between purely inflationary increases in price and genuine increases in value.

The analysis demonstrates that a rise in physical output will not raise aggregate profits, because a proportionate reduction in unit values results if labour hours worked are constant, a simple result with no counterpart in neoclassical theory. More productive enterprises may secure artificially high relative prices – particularly if they are the first to innovate and secure a differential technical rent, or superprofit; this appears in the accounts as if labour in the high-profit sectors were more productive, but value analysis shows that this is really due to a transfer of value from the low-profit sectors, brought about by the working of the price system. Over the whole of the economy, any such aggregate rise in prices is inflationary. Moreover the apparent differences in productivity between workers in different enterprises, and particularly in different countries, are revealed for what they really are: inequalities in the distribution of capital.

Finally the analysis shows that extra profit – measured in money prices correctly deflated to reduce them to constant labour hours – can result only either from extra work or from the consumption of a decreased share of the total produce of society, whether measured in money or in labour hours. This 'law of value' result does not emerge from traditional index theory. Unlike various versions of the 'Fundamental Marxian Theorem' it is neither an inequality nor approximate but a mathematically precise invariant relation. This analysis clearly differs from neoclassical theory, for which 'real value' is given by the price-index-deflated cost of goods, rather than the activity of the workers.

The analysis clearly discriminates between the four principal different sources of a rise in the money denomination of gross outputs: inflation, rising productivity, a higher intensity of work and increased non-labour content. Moreover, no other body of economic theory can make these necessary discriminations without introducing extraneous or accidental causal factors. That is, Marx's analysis is the simplest, and it suffices. It passes Ockham's razor.

The Falling Profit Rate

Let us now consider a third sense in which this analysis allows us to explain what is happening in an economy. Here we shall illustrate with more hypothetical figures, for simplicity. Suppose in a given year that the capitalists begin with a capital stock of

$$K = £1000$$

Now suppose that in this same year they consume one-fifth of this stock, £200:

$$C = £200$$

Suppose that they pay wages of

$$V = £300$$

and finally suppose they produce new product that sells for £1000. In this case

$$S = £500$$

and the product C′ is given by

$$C' = C + V + S = £1000$$

Thus at the end of the year the capitalists have the following assets:

$$K = £800$$
$$C' = £1000$$

so that the capital stock K has grown into a new stock of £1800. Clearly, if the capitalists want to resume production at the same level of money investment, they will have to spend £200 on replacing C. Let us also assume they spend £300 on replacing V. Notice, however, that they do not have to spend these identical amounts and in general they do not. But on the assumption that they do, we now have

$$K = £1000 \text{ again}$$
$$V = £300 \text{ again}$$

and profit of £500 remains. What will they do with this profit? If they consume it all, we will have simple reproduction. But we know for a fact that they don't. They reinvest it. They accumulate. Suppose they accumulate half of it, and suppose the proportions are the same (again, they don't have to be: this assumption is purely for simplicity). The new capital stock will then be

$$K = £1100$$
$$V = £450$$

The surplus value produced, if nothing else changes, will be a straightforward 50 per cent more, that is £750. The capital stock having risen from £1300 ($K_0 + V_0$) to £1550, the rate of profit will rise, but notice that the capital stock has increased.

However, the variable capital cannot, in non-inflationary terms, rise indefinitely because it is limited by the size of the workforce.

How is this contradiction to be resolved? We could, if we just stuck with simple reproduction, declare that some kind of crisis will result when there are no more workers. But we know this is not what actually happens.

What actually happens is technical innovation. The capitalists do not in fact have to increase the labour force in order to get the same output in use-value terms. A more realistic assumption is that V remains at £300. But now we can see a very straightforward fact. K must increase if any part of the surplus is invested, and if the rate of exploitation does not rise, the rate of profit must fall.

The rise in the organic composition of capital therefore arises very straightforwardly and irrefutably out of the simple fact that the capitalists invest at least a part of their surplus.

Of course, the underlying physical relations will be more or less complicated. Some of the capital stock will cheapen, there will be rises in productivity distributed all over the place, and so on. But the crucial point is whatever the phenomenal physical form of the growth, in money terms the organic composition of capital must rise.

We thus see that, without at all abandoning the basic insight that every sum of money represents a definite portion of total social labour, nevertheless we can trace, through the movement of the total money in the hands of the capitalist class, a necessary law of motion of accumulation which is not only observed in reality to be the case, but constitutes one of Marx's most contentious assertions: the rate of profit falls as a direct consequence of capitalist accumulation, and can be permanently offset only by a periodic interruption of capitalist accumulation, namely crisis.

Inequality

We stated earlier that mere rises in productivity cannot increase the value at the disposition of the capitalist class. However, it can transfer value from one section of the capitalist class to another. Marx's treatment of rent can easily be extended, as we have done in Freeman (1996a) by looking at the way technical rent is produced and its relation to moral depreciation, to show how a systematic inequity in the accumulation process must result even under perfect market conditions, such that the producers of means of production which raise productivity must enjoy a permanent superprofit.

4.4 SUMMARY

This analysis took a handful of pages. In it:

- We refuted all the principal alleged 'errors' in Marx's theory.
- We contradicted none of what Marx wrote.
- We showed that value theory can account for the outstanding phenomena of the modern global market: mass world poverty in the midst of technical progress and recurrent crisis.
- We maintained all the standard distinctions between value and price, surplus value and profit.
- We made none of the standard 'simplifying assumptions'; the method adopted was fully general and applies to the analysis of any economy. In particular it does not assume the equalisation of profit rates which, as our data show, does not happen.
- It is greatly simpler than the complex alternatives which arise from the standard treatment.

Is it rigorous? I think it is. In the book edited by myself and Mino Carchedi (Freeman and Carchedi 1996), and in the work of numerous authors working in this paradigm, we have shown that this is completely rigorously and mathematically sustainable.

Up until now, temporalism has been forced, by the excessively mathematical and, I would say, arrogantly superior approach of Marx's detractors, to take the same ground and show that mathematically speaking there is a complete alternative.

But this mathematical activity is by no means necessary to carry out work in this paradigm. On the contrary, what we have shown is that the way a 'naïve Marxist' thinks is theoretically consistent both internally, and with Marx. This is not to worship naïvety as a source of truth but to assert something rather different which economics has largely forgotten; usually, a truly scientific way of conceiving the world is very hard to arrive at and to grasp, but once grasped, renders the world less, not more, complicated. The temporalist, single-system account is simpler than the orthodox approach, more rigorous, and explains the known phenomena with the minimum of extraneous factors. I think, therefore, that the time is ripe to begin work in a new empirical framework, to relaunch Marx's original project and the purpose of his enquiry: to discover the law of motion of the modern economy.

NOTES

1. Contrast Sraffa's starting assumption – 'day in, day out, production continues unchanged' – with Marx's (1978b:61): 'It is the variations of supply and demand that show the producer what amount of a given commodity he must produce in order to receive in exchange at least the cost of production....If M. Proudhon admits that the value of products is determined by labour time, he should equally admit that it is the fluctuating

movement alone that makes labour the measure of value. There is no ready-made constituted 'proportional relation' but only a constituting movement'. These are not just two different ways of looking at price. They express two different concepts of price.

2. The entire focus of cause and determination was also different. For the Ptolemaics, the issue was to explain where the orbit of the planet must be situated. The actual motion of the planet in this orbit was more or less secondary. But for Newtonian physics, it is the motion of the planet that must be determined, and the location of the orbit itself is an unexplained accident of history. In like manner the focus of equilibrium economics is to 'determine' ideal prices that never actually exist, while Marx's focus was to explain society's law of motion.
3. £7274m went on taxes. Since these are taxes on business we make the simplifying assumption that the capitalists receive the sole benefit of it, and it is just a part of profit.
4. Further corrections must be made for unproductive labour; this involves correcting the numbers, not their presentation. To keep the presentation short, I omit this complication.
5. The correction for unproductive labour is: (1) establish which workers were productive, (2) divide the remainder into unproductive workers paid out of wages and unproductive workers paid out of profits, (3) correct the profit figure of £100bn by adding the wages of the second group of unproductive workers.
6. This calculation, the same as that proposed by the New Solution, has to be developed into a more general form once we want to allow for inflation, which alters the relation between dead and living labour expressed in monetary terms. This temporal effect is a decisive one, ignored in simultaneous frameworks. Space does not allow me to enter into this complication here, which is discussed in Freeman (1997).
7. The relation does change, as indicated in note 6, when stocks of capital are considered. The 'value of money' is in my view not reducible to the ratio of net hours worked to net money value added, in the presence of technical change and/or monetary inflation. In this case, the number of hours represented by one pound is equal to the total money price of all commodities in existence (including fixed capital) divided by the total value in hours of these same commodities. A development of the method above (Freeman 1997) yields this magnitude.

5 Labour, Money, Labour-Saving Innovation and the Falling Rate of Profit

Alejandro Ramos Martinez[1]

> Money is labour time in the form of a general object, or the objectification of general labour time, labour time as a general commodity. [Marx 1973b:168]

> The immediate purpose of capitalist production is not 'the possession of other goods', but the appropriation of value, of money, of abstract wealth. [Marx 1968:503]

Mikhail Tugan-Baranowsky's book, *Theoretische Grundlagen des Marxismus* (1905), has had a deep and long-standing influence on the interpretation of Karl Marx's critique of political economy. In this work, Tugan proposes a method for calculating the rate of profit when innovations that raise labour productivity are introduced. According to this method, the effect of these innovations would be to raise the profit rate, a result that contradicts the law of the tendential fall in the rate of profit proposed by Marx in *Capital* III. In Tugan's approach, the profit rate would fall only as a result of an exogenous rise in the real wage. This method has been developed further by several authors, such as Moszkowska and Shibata, and formalised by Nobuo Okishio in 1961. Today, this proposition is known as the Okishio Theorem.[2]

However, in recent years, various authors have shown that the Okishian calculation of the profit rate is a partial and erroneous formalisation of Marx's point of view.[3] This critique of the Okishian procedure has underlined the *temporal* nature of capital cycle and the fact that capitalism operates normally outside the stationary state. Differing from the traditional approach, in which only *one* set of prices is calculated *simultaneously* for each cycle, the alternative procedure isolates *two* sets of prices dated *sequentially*. Without the assumption of an eternal stationary state, two different sets of prices prevail, one at the beginning ('input prices') and another at the end of the cycle ('output prices'). The *real* rate of profit stems from a comparison between these tempo-

ral magnitudes expressed in social labour-time. In this view, the Okishian procedure is an improper extension of the stationary-state analysis.

The present chapter explores, in abstract fashion, the monetary consequences of the temporal approach. Money is introduced not only as a *numéraire* or symbol-money, but also as a *reserve of value*, a thing able to store a given amount of social labour-time in an objective form, i.e. as *reserve-money*. As will be shown, a key concept for analysing the effect of labour-saving innovation on the profit rate is the monetary expression of labour-time (MELT), the quantitative relation between the form (specifically, the symbol-money form) and the substance (labour-time) of value.[4] Considering the dynamic of this relation permits one to contrast the Okishio Theorem to Marx's proposition and to formalise the latter.

The Okishian approach can be presented in the following way: let us focus on an economy in two different periods. In both periods, the same *numéraire* – a kind of symbol-money, e.g., paper money – serves to measure commodity prices. In the second period, a labour-saving innovation occurs, reducing the labour-time needed to produce the commodities. According to the Okishio Theorem, this change raises the rate of profit measured in *numéraire* prices. However, this is only one consequence of the labour-saving innovation. It also increases the MELT, a result ignored by the Okishio Theorem. A rising MELT implies that symbol-money represents less labour-time, an effect I will call *inflation of symbol-money*. Inasmuch as this endogenous inflationary effect offsets the rise in the Okishian rate of profit, the innovation provokes a reduction in the profit rate measured in labour-time. Thus, the Okishian rate of profit can be interpreted as a *nominal* rate of profit, measured in terms of symbol-money.[5]

The first two sections show this by means of a simple numerical example that assumes one-time technical change, prices = values, and a monetary system similar to that depicted by Marx in *Capital* I, Chapter 3. In a very simplified way, the third section focuses on the monetary consequences of the labour-saving innovation. The induced inflation provokes a crisis in the monetary system, expressed by a devaluation of the symbol-money in terms of the *reserve-money*, which manifests the falling rate of profit externally. The fourth section considers some factors that counteract and enhance the falling rate of profit.

5.1 A STATIONARY ECONOMY

The following presentation will assume that prices = values; the inclusion of divergences between values and production prices complicates the exercise but adds nothing to the basic results. This framework also shows that the Okishian calculation fails to represent the dynamic of the rate of profit for reasons which are not linked with the so-called 'transformation problem'.

In this section, I consider a two-department economy – means of production and means of consumption — undergoing stationary reproduction, i.e. no technical change. The following matrices and vectors depict this economy:

$$X_t = \begin{bmatrix} 960 \\ 960 \end{bmatrix} \quad A_t = \begin{bmatrix} 0.25 & 0.25 \\ 0 & 0 \end{bmatrix} \quad B_t = \begin{bmatrix} 0 \\ 0.1 \end{bmatrix} \quad L_t = [2.5 \quad 2.5]$$

$$M_t = A_t + B_t L_t = \begin{bmatrix} 0.25 & 0.25 \\ 0.25 & 0.25 \end{bmatrix} \quad Y_t = (I - A_t)X_t = \begin{bmatrix} 480 \\ 960 \end{bmatrix}$$

X_t is the physical output vector; A_t is the matrix of means of production coefficients; L_t is the vector of living labour coefficients; and B_t is the real wage vector, means of consumption per working day. M_t is the 'augmented input–output matrix' and Y_t is the physical net product.

It is known that the *stationary* rate of profit of this economy is $\pi_t = (1/\varepsilon_t) - 1$, where ε_t is the maximum eigenvalue of M_t. In the example, $\varepsilon_t = ½$ and thus $\pi_t =$ 100%. Relative prices (= values) are obtained by the following system of homogeneous equations:

$$P_t[M_t - \varepsilon_t I] = 0 \tag{5.1}$$

where P_t is the vector of relative prices. This system may be normalised by $P_2 =$ 1, thus defining the physical exchange proportion between the two commodities:

$$P_t = [1 \quad 1] \tag{5.2}$$

It is important to note that the above procedures for obtaining the rate of profit and calculating relative prices are valid *only* under stationary conditions.

5.2 THE MONETARY SYSTEM AND THE NOMINAL RATE OF PROFIT

In capitalist society, exchanges are carried out by means of *money*, and not by barter, as (5.2) suggests. In *Capital* I, Marx distinguishes three functions of money: money as measure of value, money as means of circulation and 'money-as-money'. Money considered 'as money' functions as an instrument of hoarding, means of payment and world money.[6] These functions are actually performed under some set of socially valid rules and institutions, i.e. under a *monetary system.*

In this chapter, I consider a monetary system in which the form of value is constituted by two closely related aspects or kinds of money, *symbol-money* and *reserve-money*. Commodities are compulsorily exchanged by means of symbol-money – the *pound*, £ – paper money without intrinsic value, issued by a national monetary authority, which has 'objective social validity... [acquired by] its forced currency' (Marx 1976a:226). There is also a commodity-money – *gold* – which has parity with the £, sanctioned by the monetary authority. Hence, in this framework, reserve-money is a commodity with intrinsic value and it thus contains, represents and can store a given amount of social labour-time.[7] The monetary authority can issue only paper money, so it has no influence, for example, on the rate of interest.

Since Marx does not have a 'metallist' interpretation of money, this is the simplest monetary system that can be conceived on the basis of his theory.[8] The monetary system is thus organised by means of paper money endowed with forced currency and guaranteed by gold, the reserve-money. Additionally, I assume that, under certain circumstances, symbol-money can perform *any* monetary function. As Marx (1976a:227) says, commodity-money ('gold') can act 'as money' either 'in person or by a representative' which means, for example, that symbol-money can be hoarded.[9] In particular, the possibility of a continuous use of symbol-money instead of gold is given by the stability of the parity £/gold. Contrarily, a rise in this relation would provoke the loss of monetary functions by symbol-money and, consequently, an increase in the use of gold as money.

So the first relation defining the monetary system is the *parity pound/gold* (G_t), the amount of pound notes freely exchangeable with one ounce of gold. In period t, the specific parity pound/gold sanctioned by the monetary authority is £1 = 1 ounce of gold.

Because reserve-money in this monetary system is a commodity (*gold*), it *contains* and *represents* a certain amount of labour-time. However, I will suppose that gold is not produced in this economy. The labour-time contained in, and represented by, one ounce of gold defines a second relation of the monetary structure: the *parity labour-time/gold* (γ_t). This is a relation between the substance of value – labour-time – and one specific aspect of the form of value – reserve-money. Frequently, Marx calls it 'value of money', which is an ambiguous designation for two reasons. First, it is a relation between *labour-time* and reserve-money, not between '*value*' and '*money*'. Second, it can be confused with another relation, that between *labour-time* and *symbol-money*, which will be examined below.

Concerning γ_t, I will suppose first that, in period t, the labour-time contained in one ounce of gold is equal to that contained in each of the produced commodities and, second, that this relation is constant over time, i.e., $\gamma_t = \gamma_{t+1}$. The latter is an important assumption that Marx (1981:142) makes in *Capital*

III in order to analyse the dynamic of profit rate: 'Firstly, the *value of money*. This we can take as constant throughout'.[10]

The explicit consideration of *symbol-money* permits one to establish a third relation in the monetary system: the *monetary expression of labour-time* ($MELT_t$), a ratio between the *pound* (£) and the substance of value (labour-time), the dimension of which is £/w.d., where w.d. stands for working day.

Since there is forced currency of paper money, labour-time is necessarily expressed through *pounds*. This defines the $MELT_t$ as the amount of symbol-money that represents one unit of labour-time in a given period.[11] (In section 5.3, I will show that only under stationary conditions does $MELT_t = G_t/\gamma_t$.)

Because, in period t, the labour-time contained in one ounce of gold is the same as that contained in each of the produced commodities, and G_t = £1/1 ounce of gold, the vector of symbol-money prices – i.e., the exchange ratios of commodities (5.2) expressed in paper money – is $P_t^{£} = [£1 \quad £1]$. Using the data presented above, it is then possible to construct the scheme of reproduction given in Table 5.1. Numbers in the first line of each department are measured in £, while numbers in parentheses are measured in working days. The calculation of the latter will be explained below. Since prices = values, in each department the surplus value (SV) produced is equal to the appropriated profit (PR) and objectified value (VA) is equal to production price (PP). The stationary rate of profit is $\pi_t = 100\%$ and the rate of surplus value is $\sigma_t = 200\%$.

For reproduction to be accomplished, a mass of symbol-money (μ_t) must exist. Assuming that only current output is exchanged, this mass is defined as:

$$\mu_t = \frac{P_t^{£} X_t}{V_t} \tag{5.3}$$

Table 5.1 Scheme of reproduction with stationary MELT

	C	V	C+V	SV=PR	VA=PP
I	240	240	480	480	960
	(800)	(800)	(1600)	(1600)	(3200)
II	240	240	480	480	960
	(800)	(800)	(1600)	(1600)	(3200)
Σ	480	480	960	960	1920
	(1600)	(1600)	(3200)	(3200)	(6400)

where the scalar V_t is the velocity of circulation of symbol-money (Marx 1976a:216). I will suppose that $V_t = 1$, so the mass issued by the monetary

authority is μ_t = £1920.

The MELT corresponding to living labour can be defined as the ratio between the *value-product* (£-prices multiplied by physical net product) and total living labour L_tX_t. Under the stationary conditions prevailing in period t, this quotient is equal to the MELT corresponding to the whole labour-time objectified in the economy. Therefore, $MELT_t$ can be calculated as:

$$MELT_t = \frac{P_t^{£}Y_t}{L_tX_t} = \frac{£1440}{4800\text{w.d.}} = £0.3/\text{w.d} \qquad (5.4)$$

(In section 5.3, a more general calculation of the MELT will be presented.) Thus, in period t, one w.d. is expressed through £0.3, or, in other words, £1 expresses 1/0.3 = 3.33 w.d.

Always taking into account that, in period t, stationary conditions prevail and prices = values, it is easy to calculate the vector of labour-times contained in commodities, either by $P^l_t = P^{£}_t(1/MELT_t) = [3.33 \text{ w.d. } 3.33 \text{ w.d.}]$, or by $P^l_t = L_t[I - A_t]^{-1}$. By means of vector P^l_t, the labour-time magnitudes in Table 5.1 (numbers in parentheses) are worked out. For instance, the labour-time contained in constant capital is $(P^l_t A_t)_j(X_t)_j$; so, for Department I, the calculation is $3.33 \times 0.25 \times 960 = 800$ w.d.

Since the labour-time contained in one ounce of gold (relation γ_t) is assumed to be equal to that contained in each of the produced commodities, the *parity labour-time/gold* is γ_t = 3.33 w.d. per ounce of gold.

5.3 THE DYNAMICS OF THE LABOUR RATE OF PROFIT

The Okishio Theorem states that the rate of profit varies *inversely* with changes in the use of any input per unit of output. Thus, an *input-saving* innovation, reducing the intensity of either means of production or living labour, would increase the profit rate.

This approach is especially controversial for Marx's theory regarding the effect of reductions of living labour on the profit rate. If a labour-saving innovation provokes an increase in the profit rate, this would mean that profit is not a form of exploited labour, i.e., profit would arise from a source other than human labour.

The main issue posed by Okishio's approach is the effect on the profit rate of a 'saving' of living labour. Therefore, the following exercise will consider a pure labour-saving innovation, one that leaves constant the amount of means of production per unit of output and reduces the amount of living labour per unit of output. According to the Okishio Theorem, this must result in an in-

£1920, which is not enough to allow the circulation in t+1. According to equation (5.3), this restriction could be overcome either by an increase in V_{t+1} or by an increase in μ_{t+1}. It will be supposed here that V_{t+1} remains constant and that the monetary authority raises μ_{t+1} to £3840.

Table 5.2 Period t + 1

	C	V	C+V	SV=PR	VA=PP
I	480	216	696	1224	1920
	(1600)	*(720)*	*(2320)*	*(1440)*	*(3760)*
II	480	216	696	1224	1920
	(1600)	*(720)*	*(2320)*	*(1440)*	*(3760)*
Σ	960	432	1392	2448	3840
	(3200)	*(1440)*	*(4640)*	*(2880)*	*(7520)*

In Marx's theory, money – from the simplest to the most complex form – is essentially a representation of labour-time. As he says: 'Money is labour time in the form of a general object' (Marx 1973b:168). So the symbol-money advanced by capitalists at the start of t+1, £1392,[14] is simply the representation of a certain amount of labour-time. Since the labour-saving innovation had not yet been introduced at the start of t+1, the relation between symbol-money and labour-time still equalled £1 = 3.33 w.d. So, since the MELT at the start of t+1 is necessarily equal to the MELT at the end of t, £1392 represents £1392 × 3.33 = 4640 w.d.

Surplus-labour is the difference between total living labour, $L_{t+1}X_{t+1} = 4320$ w.d., and *necessary labour*, the labour represented by the £432 advanced as variable capital. Since necessary labour is £432 × 3.33 = 1440 w.d., surplus-labour is 4320 – 1440 = 2880 w.d. The total labour-time objectified in t+1 is equal to the labour-time represented by the capital advanced + surplus-labour, 4640 + 2880 = 7520 w.d.

This allows us to calculate the rate of profit in labour-time terms, π^*_{t+1}:

$$\pi^*_{t+1} = \frac{2880\text{w.d.}}{4640\text{w.d.}} = 62\% \qquad (5.6)$$

which is less than the nominal rate of $\pi_{t+1} = 176\%$. It is also less than $\pi^*_t = 100\%$; the profit rate in labour-time terms has therefore fallen. The rate of

exploitation is 2880 w.d./1440 w.d. = 200%, less than the nominal rate of surplus-value σ_{t+1} = 576% but equal to the nominal rate of period t, σ_t.[15]

The $MELT_{t+1}$ corresponding to total production can be expressed as:

$$MELT_{t+1} = \frac{P^{£}_{t+1}X_{t+1}}{P^{£}_{t}A_{t+1}X_{t+1}(1/MELT_t) + L_{t+1}X_{t+1}} = £0.5106/w.d. \qquad (5.7)$$

Equation (5.7) relates total output, measured in £, and total labour-time objectified in period t+1. The latter is the sum of the past labour-time, transferred from advanced constant capital, plus the living labour-time added. The price of the means of production used in period t+1 is determined at the end of period t, so that, when period t+1 starts, capitalists have already paid this price. Therefore, $P^{£}_{t}A_{t+1}X_{t+1}(1/MELT_t)$ gives the past labour-time corresponding to period t+1.[16]

As was noted in section 5.1, after labour-saving innovation has been introduced, the $MELT_{t+1}$ corresponding to total production (equation (5.7)) differs from that of *living labour*. The latter ($MELT^{L}_{t+1}$) is given by:

$$MELT^{L}_{t+1} = \frac{P^{£}_{t+1}X_{t+1} - P^{£}_{t}A_{t+1}X_{t+1}}{L_{t+1}X_{t+1}} = £0.67/w.d. \qquad (5.8)$$

This formula relates the *value-product* (Marx 1976a:321, 669), measured in £, to living labour. The value-product is the difference between total output and advanced constant capital, determined by the price of the means of production prevailing at the start of t+1.

The vector of living labour contained in commodities in t+1 is $P^{l}_{t+1} = P^{£}_{t+1}(1/MELT_{t+1}) = P^{l}_{t}A_{t+1} + L_{t+1}$ = [1.9583 w.d. 1.9583 w.d.]. A logical consequence of the labour-saving innovation is that $P^{l}_{t+1} < P^{l}_{t}$ = [3.33 w.d. 3.33 w.d.]. In contrast to the stationary situation considered in section 5.1, it is now no longer possible to calculate $P^{l}_{t+1} = L_{t+1}[I - A_{t+1}]^{-1}$. This calculation would imply the strange situation that, given a labour-saving innovation, the labour contained in commodities at the end of t+1 would be *equal* to the labour contained at the beginning of this period. It is important to stress that *money advanced* at the beginning of t+1 is an *irreversible cost*, representing an amount of labour-time, which is the *real cost-price* of commodities. Moreover, it is this *real* cost – the labour-time already expended – that must be compared with the surplus-labour exploited during t+1.

What is the effect of the labour-saving innovation on $1/MELT_{t+1}$, the labour-time represented by £1? According to equation (5.7), £1 now represents 1/0.5106 = 1.9583 w.d. while, in period t, it represented 3.33 w.d. Therefore, as

a result of the labour-saving innovation, symbol-money represents less labour-time. Now, more monetary symbols are needed to represent one working day. This is a measure of the endogenous inflationary effect of the labour-saving innovation on symbol-money.

Therefore, the labour-saving innovation has two effects: it increases the nominal rate of profit but also raises the MELT, thereby reducing the capacity of symbol-money to represent labour-time. The Okishio Theorem takes only the first effect into account, neglecting the increase in the monetary expression of labour-time. However, Marx (1976a:136–7) implicitly states this twofold result:

> In itself, an increase in the quantity of use-values constitutes an increase in material wealth. Two coats will clothe two men, one coat will only clothe one man, etc. Nevertheless, an increase in the amount of material wealth may correspond to a simultaneous fall in the magnitude of its value.

Effectively, π describes the 'material rate of profit' (Ernst 1982:90), which rises with an increase in 'material wealth', *ceteris paribus*. Yet the innovation also produces a 'simultaneous fall in the magnitude of value'. This 'fall' is formalised, not by π – which is therefore a one-sided representation of the dynamics of capitalist wealth – but by the increase in the MELT. In capitalist society, the increase in material wealth is not an aim in itself: 'The immediate purpose of capitalist production is not the 'possession of other goods' but the appropriation of value, of money, of abstract wealth' (Marx 1968:503).

The reduction in the amount of the *substance of value* – the labour-time used – implies that, now, a given amount of symbol-money – one of the aspects of the form of value – represents less value, less social labour-time. Value is the unity of substance and form; it is an amount of labour-time that must be expressed through money. Therefore, the 'simultaneous fall in the magnitude of value' is expressed by a modification in the MELT, the quantitative relation between the two poles of value (Ramos 1996).

The 'simultaneous fall in value' provokes the reduction in the rate of profit in labour-time terms, which has been arithmetically calculated in (5.6). The following is an algebraic expression of this rate:

$$\pi^*_{t+1} = \frac{P^{\pounds}_t M_{t+1} X_{t+1}(1+\pi_{t+1})(1/MELT_{t+1}) - P^{\pounds}_t M_{t+1} X_{t+1}(1/MELT_t)}{P^{\pounds}_t M_{t+1} X_{t+1}(1/MELT_t)} \qquad (5.9)$$

Multiplying both numerator and denominator by $MELT_t$, and cancelling the expression of cost-price, one obtains:[17]

$$1+\pi^*_{t+1} = (1+\pi_{t+1})\frac{MELT_t}{MELT_{t+1}} \qquad (5.10)$$

It is clear that $\pi^*_{t+1} = \pi_{t+1}$ when $MELT_{t+1}/MELT_t = 1$, i.e., when there is no labour-saving innovation. An alternative formula for π^*_{t+1} is

$$\pi^*_{t+1} = \frac{1+\sigma_{t+1}-\alpha_{t+1}}{\alpha_{t+1}(1+K_{t+1})} \tag{5.11}$$

where σ_{t+1} is the *nominal* rate of surplus-value (£2448/£432 = 567%), K_{t+1} is the nominal composition of capital (£960/£432 = 2.22), and α_{t+1} is the ratio between the MELT corresponding to living labour (equation (5.8)) and the $MELT_t$, so $\alpha_{t+1} = MELT^L_{t+1}/MELT_t = 0.67/0.3 = 2.22$.

Labour-saving innovation reduces symbol-money's ability to represent labour-time – an inflationary effect – and raises the nominal profit rate (π). The inflationary effect is captured by $MELT_t/MELT_{t+1} < 1$ in (5.10), and by $\alpha_{t+1} > 1$ in (5.11). These equations have an important, Marxist, property: continuous labour-saving innovation will cause a continuous rise in the MELT. If the amount of living labour tends toward zero, the MELT tends toward infinity, and π^* tends toward zero. This overcomes the paradox of an economy without living labour having $\pi > 0$.

The two effects caused by the labour-saving innovation (increasing π *and* increasing MELT) can be formalised by the following inequalities:

$$\frac{MELT_{t+1}}{MELT_t} > \frac{1+\pi_{t+1}}{1+\pi_t} > 1 \tag{5.12}$$

Recalling that, in period t, $\pi_t = \pi^*_t$, and using equation (5.10), it is clear that

$$\pi^*_{t+1} < \pi^*_t \tag{5.13}$$

The law of the tendential fall in the rate of profit can be stated by saying that a labour-saving innovation provokes an increase in the MELT that is relatively greater than the increase in the nominal rate of profit.

5.4 THE RESERVE-MONEY RATE OF PROFIT AND THE MONETARY CRISIS

We have seen that, insofar as a dynamic situation is considered, there are two rates of profit, one expressed in symbol-money, $\pi_{t+1} = 176\%$, and the real profit rate, expressed in labour-time, $\pi^*_{t+1} = 62\%$. Equation (5.10) shows that the relation between these rates is a function of the ratio of the monetary expressions of labour, $MELT_t/MELT_{t+1}$. The difference between π_{t+1} and π^*_{t+1} arises from the increase in the MELT caused by the labour-saving innovation, which

diminishes the capacity of symbol-money to represent labour-time.

Although π^*_{t+1} is the real rate of profit, it must be expressed, in some way, through the external measure of value, namely *money.*[18] The monetary expression of π^*_{t+1} could be carried out by means of either symbol-money or reserve-money.

First, let us consider how π^*_{t+1} could be expressed by means of symbol-money. It is clear that, although the labour-saving innovation has reduced the *quantitative* capacity of symbol-money to represent labour-time, this does not affect its *qualitative* function. Labour-time magnitudes forming the real profit rate can be converted into symbol-money magnitudes simply by multiplying them by a constant MELT, for instance by $MELT_t$ = £0.3/w.d. Thus, the cost-price is 4640 w.d. × 0.3 = £1392 and surplus-labour is 2880 w.d. × 0.3 = £864; the profit rate is £864/£1392 = 62%. These are ideal symbol-money figures, since the MELT actually does not stay constant. However, the fall in the profit rate would not be felt by capitalists were money only a symbol. To have a real expression of this effect, it is necessary to take into account the other type of money, reserve-money, gold.

In period t, we have assumed that the *parity labour-time/gold*, γ_t, was 3.33 w.d. per ounce of gold. Gold is not produced in this economy, so the labour-saving innovation has not affected it. Hence, the amount of labour contained in gold remains constant during period t+1, γ_{t+1} = 3.33 w.d. per ounce of gold. So, dividing the cost-price in labour-time terms and surplus-labour by this *constant* γ, one obtains the same rate of profit already obtained using a constant MELT.

The falling rate of profit appears clear to capitalists only insofar as they actually try to express and appropriate their profit in terms of gold. At the beginning of period t+1, they advanced £1392 which, at this time, was freely exchangeable with 1392 ounces of gold because both forms of money represented the same amount of labour-time: 4640 w.d. The *parity pound/gold* sanctioned by the monetary authority was G_t = £1/1 ounce of gold. At the end of t+1, capitalists pocket £2448, which represents 2880 w.d. of surplus-labour (see Table 5.2). This amount of surplus-labour, appropriated under the form of symbol-money, can no longer be converted into 2880 ounces of gold, as it could in period t, but only into 864 ounces of gold, i.e. the quantity of reserve-money that represents this labour-time (2880 w.d./3.33). Therefore, the parity pound/gold G_{t+1} has risen from G_t = £1/1 ounce of gold to G_{t+1} = £2.83/1 ounce of gold (£2448/864 ounces of gold). In period t, $G_t = MELT_t \times \gamma_t$, but now $G_{t+1} = MELT^s_{t+1} \times \gamma_{t+1}$, where $MELT^s_{t+1}$ is the monetary expression of *surplus-labour* (£2448/2880 w.d. = £0.85/w.d.; see Table 5.2). In the stationary situation depicted in period t, the MELT is common to all components of commodities' value, an equality which ceases in period t+1.

The devaluation of the £ against gold induces a monetary crisis, because

symbol-money has not maintained its capacity to store value. A contradiction between symbol-money and reserve-money now arises. Since the labour-saving innovation has 'destroyed the trust' in the £ as an instrument suitable for storing value, capitalists can start increasingly to express their assets either in terms of reserve-money or in another symbol-money. This implies that the £ rapidly loses its diverse monetary functions. *What was money in period t becomes non-money in period t+1.* The monetary authority must avoid this situation and, primarily, 're-establish the trust' in the £. Because, in this abstract exercise, the only power of the monetary authority is to issue symbol-money, it is forced to carry out a monetary reform. The 'new pound' (£*) is therefore created; its sanctioned parity against the reserve-money is, again, £* = 1 ounce of gold, replacing 'new pounds' for 'old pounds' in the proportion £*1 = £2.83. 'Old pounds' are no longer legal money.[19] Thus, at the end of t+1 capitalists must forcibly deflate (by 1/2.83) their £2448 profit, which becomes £*864 (= 864 ounces of gold). Having advanced £1392 (= 1392 ounces of gold), their reserve-money rate of profit is 62 per cent.

Discussion of the complexities of reserve-money,[20] and of the dynamic of the profit rate when the credit system, state debt, stock markets, etc. are taken into account, clearly lies beyond the purpose of this chapter. Certainly, the rate of profit falls through a concrete process more complex than that suggested by the exercise presented above. Its main purpose is, rather, to stress the meaning of Marx's assumption regarding the constancy of the 'value of money' when the law of the tendential fall in the rate of profit is analysed.[21] This assumption implies that the dynamics of the rate of profit in the presence of labour-saving innovations should be analysed using a money having a constant or 'stable' capacity to represent labour-time. The endogenous inflationary effect on symbol-money arising from the labour-saving innovation must therefore be eliminated in order to calculate the rate of profit, a methodological point that the Okishian tradition misses.

5.5 COUNTERACTING AND ENHANCING FACTORS

A systematic analysis of the counteracting and enhancing factors of the tendency to fall of the rate of profit is also beyond the scope of this chapter. To consider the cheapening of constant and variable capital, economy in means of production, technological depreciation, and other factors affecting the dynamic of profit rate, would require that a succession of periods be taken into account (see, e.g., Freeman 1996b, Kliman 1996). Notwithstanding this, the rise in the rate of exploitation (as a counteracting factor) and the presence of fixed capital (as an enhancing factor) can be considered in the simple framework presented above.

Increasing Rate of Exploitation

I assumed above that variable capital is *advanced* at the beginning of the period. On the basis of this assumption, the rate of exploitation did not change from period t to period t+1.

However, workers are paid in symbol-money, which, at the end of period t+1, represents less labour-time (see Ernst 1982:88). It is clear that if the MELT changes during period t+1, then the same symbol-money wage will represent a different amount of labour-time if workers receive their wages at the end of the period than if they received them at the start. This means that variable capital should be converted into labour-time units by means of $MELT_{t+1}$, not $MELT_t$. Using the data of Table 5.2, variable capital represents £432/0.5106 = 846 w.d. of necessary labour and, thus, the surplus-labour amounts to 4320 – 846 = 3474 w.d. The rate of exploitation rises to 411 per cent, but this compensates only partially for the fall in labour-time rate of profit. Since the cost-price in labour-time terms is $3200_c + 846_v = 4046$ w.d., the rate of profit is $\pi^{**}_{t+1} = 3474/4046 = 86\%$. Thus, despite the rise in the rate of exploitation, π^{**}_{t+1} is less than $\pi_t = 100\%$.[22]

Marx considers this type of effect in a letter to Engels of April 22, 1868:

> If, with a falling value of money, the price of labour does not rise by the same proportion, then it *falls*; the rate of surplus-value would then rise and so, all other things being equal, does the rate of profit. The increase in the latter... is due to a simple lowering of wages, and the decrease is due to the situation where the change in wages only slowly accommodates the change in the value of money. [Marx and Engels 1983:131]

Marx's 'falling value of money' is, in the framework of this chapter, a 'rising MELT', which provokes a fall in the labour-time represented by symbol-money. It is important to note that, in Marx's letter, changes in the MELT (corresponding to symbol-money) are not distinguished clearly from those of the parity labour-time/gold (corresponding to reserve-money). In any case, in an analysis of the falling rate of profit taking into account more periods than t and t+1, Marx's assumption of constant rate of surplus-value implies that, eventually, wages rise, annulling the increase in the MELT and preserving the fraction of the working day for which workers receive an equivalent (see Marx 1971c:52).

However, even assuming that this factor permanently counteracts the falling rate of profit, it is, at the same time, offset by the falling in the relative importance of living labour in total advanced capital. This is shown by an algebraic specification of π^{**}_{t+1}:

$$\pi^{**}_{t+1} = \frac{1+\sigma_{t+1}-\beta_{t+1}}{\beta_{t+1}+\alpha_{t+1}K_{t+1}} \tag{5.14}$$

where $\beta_{t+1} = MELT^{L}_{t+1}/MELT_{t+1} = 1.3056$; other ratios were defined in equation (5.11). Equation (5.14) is analogous to equation (5.11), which also shows that a continuous increase in the MELT (reflected by ratios α_{t+1} and β_{t+1}) provokes a continuous reduction in π^{**}_{t+1}. In the limit, as living labour is reduced to zero, the MELT, as well as α_{t+1} and β_{t+1}, become infinite. Hence 'the compensation for the reduced number of workers provided by a rise in the level of exploitation of labour has certain limits that cannot be overstepped; this can certainly check the fall in the profit rate, but it cannot cancel it out' (Marx 1981:356).

Fixed Capital [23]

The presence of fixed capital enhances the tendency of the profit rate to fall. Assuming fixed capital, the nominal rate of profit can be defined as:

$$\pi_{t+1} = \frac{P^{£}_{t+1}X_{t+1} - P^{£}_{t}M_{t+1}X_{t+1}}{P^{£}_{t}M_{t+1}X_{t+1} + P^{£}_{0}F_{t+1}X_{t+1}} \tag{5.15}$$

where F_{t+1} is the matrix of fixed capital. Let us assume that fixed capital was bought in period 0 and that it does not depreciate. If labour-saving innovations occur during the next t+1 periods, the MELT continuously grows, so that:

$$MELT_{t+1} > MELT_{t} > .. > MELT_{0} \tag{5.16}$$

If the MELT grows at a constant rate δ, then:

$$MELT_{t} = MELT_{0}(1+\delta)^{t} \tag{5.17}$$

In order to obtain the corresponding labour-time rate of profit in period t+1 (π^{*}_{t+1}), each element of equation (5.15) has to be converted into a labour-time magnitude by its respective MELT, defined according to equation (5.17). This gives:

$$\pi^{*}_{t+1} = \frac{P^{£}_{t+1}X_{t+1} - (1+\delta)P^{£}_{t}M_{t+1}X_{t+1}}{(1+\delta)P^{£}_{t}M_{t+1}X_{t+1} + (1+\delta)^{t+1}P^{£}_{0}F_{t+1}X_{t+1}} \tag{5.18}$$

It is evident that fixed capital enhances the fall in the rate of profit. Both an increase in δ and longer time until the fixed capital fully depreciates will cause

a greater fall in π^*_{t+1}. Equation (5.18), however, only illustrates this tendency in a qualitative manner, because it does not take into account the structure and the rate of depreciation of fixed capital. In particular, a rapid depreciation of fixed capital slows the fall in the rate of profit.

5.6 CONCLUSION

The Okishio Theorem is an erroneous formalisation of Marx's law of the tendential fall in the rate of profit because it reduces capitalist wealth to its material aspect, neglecting the dynamic of value. The Okishian rate of profit can be interpreted as a stationary, nominal rate measured in symbol-money, which differs from the dynamic, real rate of profit measured in labour-time. The relation between the two rates is given by the change in the monetary expression of labour-time (MELT), i.e. the quantitative relation between the two poles of value, its substance (labour-time) and its form (money).

This chapter has illustrated the calculation of both the nominal and the real rates of profit, analysing the consequences of a one-time labour-saving innovation in a two-department economy without fixed capital, assuming prices = values and a constant real wage. The resulting rise in the productivity of labour raises the nominal rate of profit, but also the MELT. Since the latter effect counteracts the former, it is clear that the labour-saving innovation provokes a reduction in the labour-time rate of profit. The Okishio Theorem takes into account only the nominal rate of profit.

The falling real rate of profit appears externally only through monetary relations. To show this, a monetary system has been considered in which two types of money have been rigorously distinguished: symbol-money and reserve-money that serves as a store of value. As labour-saving innovation raises the MELT, symbol-money represents less labour-time, an endogenous inflationary effect that eventually provokes its devaluation against reserve-money. The falling real rate of profit is expressed in the resulting crisis of monetary system. In this simple framework, the rise in the rate of exploitation and the inclusion of a non-depreciating fixed capital have also been considered as factors that respectively counteract and enhance the falling rate of profit.

NOTES

1. This chapter was presented at the fourth miniconference of the International Working Group in Value Theory at the Eastern Economic Association Convention, Washington D.C., April 5, 1997. I am grateful to the following people, who helped me to clarify obscure intuitions: Guglielmo Carchedi, Paresh Chattopadhyay, Massimo De Angelis, Suzanne de Brunhoff, Werner de Haan, John Ernst, Alan Freeman, Duncan Foley, Jacques Gouverneur, Dave Kristjanson, Ted McGlone, Bruce Roberts, Adolfo Rodríguez and Alejandro Valle Baeza. For help during the last stage of the research, I am strongly indebted to Andrew Kliman and Alfredo Saad-Filho. None of these people are responsible for the opinions I present in this work. This chapter is dedicated to Graciela.
2. Okishio (1961), Tugan-Baranowsky (1905), Bortkiewicz (1984), Moszkowska (1979), Shibata (1934). Croce (1914) could also be considered a precursor of this interpretation. According to Van Parijs (1980), Tugan-Baranowsky (1901:212–15) first formulated the argument, in the special case of a one-good economy. Uncritical histories of the Okishio Theorem can be found in Groll and Orzech (1989) and Howard and King (1989, 1992).
3. Ernst (1982), Kliman (1988, 1996), Carchedi (1991), Freeman (1995, 1996b).
4. Aglietta (1979), Foley (1982), Saad-Filho (1993), Rodríguez (1994a, 1994b) and Ramos (1995a, 1995b, 1996) have studied the monetary expression of labour-time (MELT) in stationary terms. Aglietta (1979) implicitly proposes this designation. As will be shown below, this relation is *not* the same as that usually called 'value of money'. To call this relation 'monetary expression of *value*' is imprecise because it reduces value to its substance, labour. Marx always relates magnitudes measured in *money* with magnitudes measured in *labour-time*, not in 'value'.
5. The conceptual foundation of the Okishio Theorem is the claim that the determination of value by labour-time is not valid in *dynamic* situations. This view has been explicitly formulated by Kühne (1979, Vol. I, p. 69), who argues that 'labour suffers from a basic defect: its productivity changes, and it is therefore a variable measure'. Therefore, labour-time expended in different periods should be 'corrected' for changes in productivity. This proposal, however, does not distinguish between the material (use-value) and social (value) aspects of the commodity. As Marx (1976a:136–7) says in a well-known passage, a rise in labour productivity provokes a 'contradictory movement' arising out 'of the twofold character of labour': the increase in the amount of 'material wealth' (use-value) 'may correspond to a simultaneous fall in the magnitude of its value'.
6. Marx (1976a:227–44). See also de Brunhoff (1976).
7. I here assume for simplicity, as *Capital* does, that the reserve-money is a commodity. However, a non-commodity can also act as reserve money, as the US dollar does in some Latin American countries. What is decisive for the peripheral country's monetary system is that reserve-money *represents* (not *contains*) a given amount of labour-time in a 'stable' form. Cf. Mandel (1984), who maintains that reserve-money must be gold.
8. It is usually maintained that Marx has a 'metallist' theory of money. Perelman (1987) criticises this point of view and explores the complexity of Marx's monetary theory. See also Kühne (1979, Vol. I, p.334).
9. Cf. de Brunhoff (1976:36, 132). The only function that symbol-money cannot perform is that of 'world money', because the £ has a national determination.
10. I am grateful to Alan Freeman for drawing my attention to this important passage. Certainly, γ can change over time and Marx considers the effect of its variations, for instance in Marx (1970:182–3). However, the analysis of this variation is beyond the scope of this chapter. See footnote 21.
11. Since the particular monetary system considered by Marx in *Capital* I is the *gold standard*, he does not distinguish clearly between the MELT and γ_t, the parity labour-time/gold. Consequently, commentators usually but wrongly reduce the process of representation of labour-time by money to *one* relation, called 'value of money' or 'monetary expression of *value*' (see footnote 4).

12. The competitive process that induces some capitalists to develop this surplus-profit-generating process, and others forcibly to adopt the new labour-saving techniques, will not be considered here.
13. '[I]t is theoretically possible to imagine a case in which all products are produced exclusively by work of machines ... and nevertheless an industrial profit may occur ... the origin of industrial profit does not stand in any 'special' relationship to the human labour used in production' (Dmitriev 1974:63-64).
14. This is the 'value of the capital advanced' at the beginning of the cycle (Marx 1976a:297). Note that, given technical change, this magnitude can differ from the value of the means of production prevailing at the end of the cycle. If the value of the means of production has fallen, the difference between these magnitudes is the 'moral depreciation' (Marx 1976a:318).
15. If variable capital were computed using the new MELT rather than the initial MELT, the rate of exploitation would rise but, as I show below, this would only partially counteract the fall in the profit rate.
16. This is the correct insight of the 'sequential' or 'temporal single system' approach developed by some authors: Ernst (1982), Carchedi (1984), Kliman and McGlone (1988), Giussani (1991), Maldonado-Filho (1994), Carchedi and de Haan (1996), Freeman (1996b), McGlone and Kliman (1996). A precursor of this approach is Perez (1980).
17. On this equation, see Carchedi (1991:139–41, 161–9) and McGlone and Kliman (1996:43–4).
18. 'Money as a measure of value is the necessary form of appearance of the measure of value which is immanent in commodities, namely labour-time' (Marx 1976a:188).
19. In most Latin American countries, processes similar to this 'reform' are carried out daily by means of the exchange rate of the local currency with the US dollar. However, this does not align prices with labour-time because, presumably, the US dollar becomes inflated over time in relation to labour-time.
20. Two obvious directions of research are the analysis of the change in reserve-money's ability to represent labour-time and the analysis of the *nature* of reserve-money. In this respect, it is clear that, although gold has been legally suppressed as reserve-money since 1971, this does not mean that the function of value-storing has been (or may be) eliminated, but only that, nowadays, the nature of reserve-money is more complex than that considered by Marx.
21. See footnote 10. It is important to note that Marx (1981:317) assumes a definite relation between money and labour-time at the beginning of *Capital* III, Chapter 13: 'Say that £100 provides the wages of 100 workers for one week. If these 100 workers perform as much surplus labour as necessary labour ... their total value product would then be £200, the surplus-value they produce amounting to £100'. That is, the MELT is explicitly assumed to be £2/person-week.
22. It is important to note that, insofar as the existence of symbol-money is considered, this effect is independent of the time at which workers are paid.
23. I thank Andrew Kliman, who helped me to express rigorously the intuition behind this subsection.

6 The Other Side of the Class Relation: Women, Money and Commodities in Capitalism

Ann Davis

6.1 INTRODUCTION

Some recent feminist scholarship has rejected Marxian methodology (Folbre 1994; Barrett 1992). The argument here is that Marx has many insights to contribute to the analysis of women, even though it was clearly not his primary concern. Using his analysis of the capitalist system, I will argue that the role of women in capitalism can be elaborated within his framework to illuminate issues of contemporary concern and to develop further the critique of relations of domination.

Marx's methodology uses both the abstract and the concrete. His notion of 'abstract' is similar to that of common usage in logic, which implies generalising from a series of specific cases. It is also a concept that is particular to capitalism, a particular type of generalising. Abstract quantities in capitalism refer to a set of social relations in which aspects of people and products are counted as part of a generalised social labour, 'the expenditure of human labour in general', whereas concrete useful labour is 'independent of all forms of society' (Marx 1967a:44, 42).

The example of his method suggests that abstract analysis of economic forces is necessarily coupled with an examination of concrete historical conditions. For example, as part of the analysis of the value of the commodity 'labour power' in the abstract, he included a focus on the concrete historical institutions of the labour process. Further, while analysing the role of money, the abstract symbol of value, he paid attention to its concrete characteristics such as metal, paper, and credit. Understanding the commodity as having both abstract exchange value as well as concrete use value enabled him to unravel some sources of the contradictions and crises within the system, such as valorisation and realisation (see, for example, Marx (1967a:113–14).

In the discussion which follows, I will begin with a review and discussion of the recent feminist critique of Marx. Next I will elaborate the use of abstract and

concrete concepts in Marx, and then apply this analysis to women and the family. Finally I will propose a framework for the analysis of women in capitalism.

6.2 THE FEMINIST CRITIQUE OF MARX

Contributions

Contemporary feminist scholars have made vital contributions to the analysis of economic and social institutions, and profound critiques of existing methodology, both Marxist and neoclassical. For example, Folbre (1982:319, 320) observes that Marx has paid 'virtually no attention...to the social organisation of human reproduction' and 'that Marxian theory offers no ready-made tools with which to analyse the reproduction of labour power'. In neoclassical economics, population dynamics have been overlooked, as well as the 'private transfers' that take place among family members, which 'far exceed public transfers' (Folbre 1994:117). As Folbre (1994:97) points out, '"housewife" is probably the largest single occupational category in the world'.

The feminist political scientist Christine Di Stefano (1991) points out that Marx's philosophical premises are grounded in the 'masculinist' foundations of western political thought; they do not sufficiently specify women's labour; and they assume a 'domination of nature'. Folbre (1993) correctly points out that Marx's leadership in organising liberatory movements led to priority being given to class-based issues and organisations instead of to gender.

While there is undeniable validity to these observations, the discussion which follows will offer suggestions as to how Marxian methodology can be extended, by elaborating Marx's concrete historical method, in arguably useful ways. Di Stefano (1991:152) herself suggests that Marx's materialist dialectic holds the promise of overcoming the 'dichotomies which Cartesian-inspired epistemologies promote.... The materialist aspect of Marx's method also bears some apparent affinity with feminist critiques of idealist or rationalist presumptions' of mind–body dualism, for example. If Marx himself was insufficiently 'reflexive... [regarding his] own material and ideological roots' (Di Stefano 1991:158–59), there is nothing to prevent a feminist critique of Marx from accomplishing that more critical perspective.

6.3 MISGIVINGS

Historical Specificity

While the feminist critique has been trenchant, there are also aspects of these

arguments which are flawed. For example, Folbre (1994:266, 95–96) asserts that Marx overlooks the importance of women because in his system household labour produces no 'value', and is 'unproductive'. What Folbre misses, however, is an understanding of how Marx uses the terms 'value' and 'surplus value' to refer specifically to capitalism, a historical organisation of the economy limited to certain times and places. The production of 'value' and profit is by no means the universal standard of socially useful human activity, but only *appears* to be, seen through the ideological lenses of this particular mode of production. To argue that value and surplus value production are necessary for women's activities to be considered meritorious is to fall prey to 'commodity fetishism' (Marx 1967a), the notion that people have no 'value' without being able to produce commodities and money. The social and ethical use of the term 'value' has been supplanted by the economic connotation, the production of profit for the expansion of capital.

This lack of historical specificity, or 'value' essentialism, is also evident in Folbre's (1994:36, 50–60) discarding of the term 'capitalism' as being no longer useful 'today'. The fact that most countries are now capitalist does not reduce the usefulness of this term in contrasting present-day social and economic organisation with that of the past, nor in providing a critique of these particular relations of domination. Typically, Folbre's (1994:59) discussion of her own paradigm, 'multiple structures of constraints', is not differentiated by historical periods, and the lists of six constraints (gender, age, sexual preference, nation, race, and class) is discussed with no sense of their historically varying relevance and meanings over time.

'Rational Individuals'

A feminist critique of 'rational economic man' (REM) is discussed and developed in Folbre's (1994:18–29) work, yet her own method may be subject to some of the same problems. In her 1982 article, she develops a method of measuring exploitation within the family, a method 'directly analogous to the Marxian rate of exploitation' (Folbre 1982:322–3). Using this approach, it is possible not only for husbands to exploit wives, but also for children to exploit parents, by receiving more of a share of family use values and commodities than they contribute. In this fashion, male workers may be 'compensated' by their exploitation in the labour market by receiving more than their share at home, and changes in material distribution of goods among family members may 'modify family size decisions' (Folbre 1982:324).

This analysis of the 'cost of children' is expanded in her 1994 book *Who Pays for the Kids?*, and used to explain the fertility decline that has accompanied economic development, as well as the origin of the welfare state (Folbre 1994:106–7, 116–25). In spite of her disclaimers that her analysis is broader

than simply a comparison of 'changing relative prices' (Folbre 1994:107) and includes 'changing social relations of production' as well (Folbre 1982:325–6), the essential thrust of her work is the 'costs' framework (Folbre 1994:104–16). For example: 'when women gain the freedom to act more like men, pursuing their rational self-interest, the price of caring labor goes up. More of it must be purchased in the market, provided by the state, or shared by men' (Folbre 1994:119). And, 'The claim that individuals consider the cost of children...does not imply that they are selfish or economistic. It simply implies a certain purposeful concern...As the costs of children go up, people generally make greater efforts to restrict family size (Folbre 1994:104).

Folbre's approach highlights the 'individual' decision-maker in a fashion analogous to the neoclassical approach (England 1993), underemphasising the role of ideological norms in a given period (Folbre 1994:99–100).[1]

The greater autonomy and critical self-awareness which comes with availability of education for women is mentioned only briefly (Folbre 1994:107), and the role of the women's movement is not mentioned at all in the theoretical chapters of Part I, in spite of the fact that a central focus of Folbre's book is to explain the collective pursuit of 'gender interests' (Folbre 1994:38). That is, the 'cost of children' framework treats individual actors much like REM, in a mechanical optimising calculus, without sufficient attention to institutional norms, ideological constructs, and the self-awareness of critical social agents. A historically based analysis of emerging self-determination for women does not need to be cast in the neoclassical mould of the 'rational self-interested individual' (Seccombe 1992).

In summary, a historically-specific understanding of value theory would belie some of the feminist critique of the invisibility of women's work in value categories. Marx did not defend exchange value in capitalism, nor did he merely describe it – he provided a critique of it that is still relevant. Second, a precursor of the feminist critique of REM can be found in Marx (1967a:176) as well, in his critique of 'vulgar political economy':

> This sphere that we are deserting, within whose boundaries the sale and purchase of labour-power goes on, is in fact a very Eden of the innate rights of man. There alone rule Freedom, Equality, Property and Bentham....On leaving this sphere of simple circulation of exchange of commodities, which furnishes the 'free trader Vulgaris' with his views and ideas...the money-owner now strides in front as capitalist; the...one who is bringing his own hide to market...has nothing to expect but – a hiding.

That is, Marx observes wryly that equality in the public sphere of circulation masks domination in the two private spheres of 'consumption', the firm and household. However, he paid attention mostly to only one of those spheres, the

capitalist workplace, and largely neglected the other, the family.

6.4 AN ALTERNATE MODEL

The position argued here is that there is no need to reject or alter Marx's definition of value in order to incorporate the household into Marx's framework. Marx's value concepts build on a duality between the abstract and the concrete. This same duality can be used to integrate the household and the role of women in an understanding of the capitalist economy, while also providing a tool to analyse the contradictions of that system. The discussion begins, however, with the abstract treatment of 'commodities', 'value', and 'circuits' in Volume I of *Capital*, before turning to the concrete unique operations of the household.

6.5 VALUE

Marx begins Volume I of *Capital* with a discussion of commodities and their value. Like most measures which include both quantity and quality, the commodity has an incommensurable aspect (its utility or use-value) and a quantitative aspect (its exchange value). While seeing commodities as necessarily possessing utility and made up of a material substrate provided from nature, the ratio in which commodities exchange with one another is determined by the quantities of 'abstract human labour' which they incorporate. When commodity exchange is well established, the exchange value of the commodity is anticipated in production decisions, and commodities are items produced with the express intention of sale.

As early as Chapter 1 of *Capital*, Volume I, Marx discusses the role of money, a concrete commodity whose use value is solely to express the exchange value of all other commodities. The presence of this expression makes obscure the nature of exchange value, which appears to be a characteristic of money itself, rather than a representation of commodities as the product of social labour.

6.6 THE COMMODITY 'LABOUR POWER'

When commodity production is well established, wage labour is also institutionalised. That is, workers are 'free in a double sense' (Marx 1976a:169), free from feudal obligations, but also without other means of support, such as ownership of means of subsistence independent of selling their own labour. The wage labourer is the owner of his own labour power (Marx 1976a:168), and

sells himself as a commodity on the labour market for its exchange value, the wage. The contradiction of the commodity labour power is that the person, while a full human being with emotional needs and creative potential, is also a commodity, a 'thing' for sale, an object rented by the capitalist employer and 'consumed' in the process of production. This unique commodity labour power is also the origin of surplus value, and the power of capital to expand.

6.7 EXPANSION OF MONEY INTO CAPITAL

Prior to the introduction of the commodity labour power, Marx introduces the notion of the 'contradiction of the formula of capital' (Chapter 5). That is, mutual gains in utility by the exchange of equal values cannot result in the expansion of value, unless one buyer can always buy low and sell high, which contradicts the requirement of the exchange of equal values. The unique commodity with that characteristic is labour power, which produces more value than it costs. That is, the exchange value of labour power is the value of wage goods necessary for its (re)production, while the value that it produces in the production process is greater (Chapter VII). The capitalist can always buy labour low and sell the value of its products high, so to speak, and so accumulate ever-increasing value.

For example, Marx's money circuit of capital is as follows:

$$M - C < \begin{matrix} L \\ MP \end{matrix} \ldots P \ldots C' - M' \qquad (6.1)$$

The interaction between purchase and sale of commodities of equal value results in the expansion of value due to the presence of the special commodity labour power available in the market for a wage. The consumption of this special commodity produces more value in its products, C′, than is required for its purchase, C. This expanded value in the process of production, C′, is then realised when the commodity is sold for units of the money commodity, M′.

As early as Chapter 1 of Volume I, Marx develops the notion of 'commodity fetishism', in which the commodities express the 'social' relation of having value, and the relations among people resemble objects. While it is widely agreed that the commodity which serves as money must be 'socially recognised' (Marx 1976a:66), it is not well understood that 'the relations connecting the labour of one individual with that of the rest appear, not as direct social relations between individuals at work, but as what they really are, material relations between persons and social relations between things' (Marx 1976a:66, 73).

Because workers are viewed more as commodities for sale, only the products of their labour have 'value', a 'social hieroglyphic', according to Marx (1976a:74). Because of the obscure role of money, its power to expand, M — M′, seems to be a mysterious quality of money itself, by virtue of its merely being wisely invested (by men, no doubt), or merely placed in a bank.

6.8 REAL COMMODITY EXCHANGE

Interlinked with this circuit of the expansion of money as capital is another one, in which workers purchase commodities for their own means of subsistence and/or reproduction. They sell their own labour power as a commodity, at its value, and use the money proceeds to purchase wage goods of equal value. Although workers participate in commodity exchange, there is no expansion of value in their circuit, because they do not have the opportunity to purchase the commodity labour power.

$$C_{lp} - M - C_{wg} \qquad (6.2)$$

They sell their labour power as a commodity, C_{lp}, in exchange for money, M, and purchase wage goods of equal value in the market, C_{wg}. Since the component parts of this circuit are the same and are likewise exchanges of equal value, it is not possible to distinguish easily this workers' circuit from the expansion of capital in (6.1). The appearance that money can expand value is mystified by the intermingling of different types of circuits in the market exchange of equal value, and appears to be characteristic of money itself, while production of value is hidden in the 'private' firm. That is, a highly mystified, abstract commodity, money, appears to reproduce itself in the sphere of circulation on an ever-increasing scale.

6.9 THE HOUSEHOLD AND THE REALISATION PROCESS

There is another circuit that is consistent with Marx's development, and can be added with no modification of the other two. The household provides labour power as a commodity, C_{lp}, to the commodity sector, which, after its consumption as labour, returns to the household with diminished energies, C_{lp}', where $C_{lp}' < C_{lp}$. This sale of labour power results in the money wage, M, usable to purchase commodities, C_{wg}, of greater real use value than use values produced in the home for the same labour time, C_h, or $C_{wg} > C_h$. Together with household labour[2] and use values including commodities, the diminished labour power,

C_{lp}', is reinvigorated to reappear in the wage sector the next day (or next generation), C_{lp}, restored to its original value

$$C_{lp} < \frac{C_{lp}'}{M} - C_{wg\,\&}\, C_h - C_{lp} \tag{6.3}$$

One reason, then, for the dependency of the household on the commodity sector is the greater productivity in the commodity sector, $C_{wg} > C_h$, which results from the monopoly of the means of production.

The labour power circuit can simply reproduce itself at the same level:

$$C_{lp} - C_{lp}' - C_{lp} \tag{6.4}$$

and still achieve an ever-expanding living standard, C_{wg}, as long as the capitalist sphere becomes increasingly productive. As long as a given amount of labour, C_{lp}, can exchange for an increasing amount of real use values, C_{wg}, then mere repetition of the circuit in (6.4) can increase the real living standard of the workers, C_{wg}, such as

$$C_{lp} - M - C_{wg}' \tag{6.2'}$$

where C_{wg}' is greater than real commodities purchased with a previous wage, C_{wg}.

That is, a given remuneration of labour power, M, can purchase increasing real use values, C_{wg}, as the enhancement of productivity through competition and technical change reduces the value of a given set of real commodities. Further, the household must be convinced to purchase this ever-expanding amount of commodities, in order to realise the expansion of money as value, M — M′, the first circuit in (6.1).

All three circuits, although appearing autonomous, are interlinked. Because of the labour market, labour power can be sold at its value for money. Because of the commodity market, workers can find wage goods available for sale. Because of typical productivity growth in the capitalist commodity sector (and the associated alteration of preferences), the commodities purchased with a wage, C_{wg}, are often of greater use value, both in quantity and quality, than the use values which can be produced in the home for the same time, C_h. And because of the productivity differential and the need to restore the diminished commodity labour power, C_{lp}', to C_{lp}, commodities can be sold to households.

As a result of the three interlinked circuits, capitalists can realise expanded value, M — M′, and the workers can raise their standard of living, $C_{wg} > C_h$. Partly for this reason, productivity growth is the elixir and *sine qua non* of the capitalist system (Lazonick 1990), through increasing relative surplus value and improved living standards.

6.10 IMPLICATIONS

The addition of the third circuit, (6.3) above, highlights several issues. First, money would not be able to expand as value, M — M′, without the realisation process, most of which requires selling wage goods to workers. Second, capitalist development can and often does bring some real gains in living standards to workers, even in the context of exploitation and alienation at the workplace. Third, the capitalist commodity sector must typically penetrate the household sector in search of markets. To participate in the process of obtaining more and improved commodities, the household requires M, and so is linked inextricably with the cash nexus, securing its dependence on selling labour power to obtain M. The irony is that while the household is dependent on the commodity sphere for means of subsistence, the commodity sphere is dependent on the household for the availability of labour power and the realisation of expanded value, a dual form of dependency that is often overlooked, because of the relative devaluation of the household in the capitalist system.

6.11 WOMEN AND MONEY

These interlinked circuits have implications for the role of women as well. First, Marx (1976a:171–2) presumes that the reproduction of the labour force is not problematic: 'The continuous conversion of money into capital assumes this, [that] the seller of labour-power must perpetuate himself, "in the way that every living individual perpetuates himself, by procreation"'.

Second, the importance of obtaining money, M, by selling labour power diminishes the social value of household labour, as it is not exchangeable for anything or valued by money. Third, due to the sexual contract (Pateman 1988), the household is typically inhabited by women, and reproduction of families takes place in 'privacy', under the control of the male household head, a system of norms that pre-dates capitalism. Female sexuality is hidden and controlled in this private sphere of the household, the private property of the (male) worker (literally in the first half of the 19th century in England (Staves 1990, Shanley 1989), and normatively afterward). Nonetheless, female sexuality is the underlying presence behind the ability of labour power to reproduce (on both a daily and intergenerational basis) and also behind the power of money to expand, although masked by the interlinking circuits and the social invisibility of the two private spheres of the household and the firm.

Marx's circuits as developed in *Capital* can be interpreted as having 'denied and then re-appropriated the labour of the mother in his historical and labour-based account of self-created man', as Di Stefano (1991:156) observes. Yet this is also an accurate portrayal of the circuits of 'capital' as they are traced

with interlinking flows of money and goods. If Marx is guilty of 'male appropriation of female reproductive powers' (Di Stefano 1991:162; a similar concept is found in Lerner 1986), then so also is the capitalist system. Capitalism, as it operates, and as it is perceived by its participants, sees money as self-expanding value, with no awareness of the contributions of either male workers or female child-bearers and child-rearers. This mystique surrounding money is an essential component of the reproduction of the system, co-ordinating the behaviour of participants to place the importance of the acquisition of money above social relationships. A revised 'critique of political economy' is necessary to expose these invisible relationships.

6.12 ABSTRACT AND CONCRETE

All three circuits are in abstract value terms. Nonetheless, these circuits are embedded in concrete social and historical institutions (Granovetter 1985) without which they could not be reproduced. For example, in *Capital* Marx describes the historical conditions by which labour is available as a commodity, in which money is accepted as a universal equivalent form of value, and by which the capacity for labour must be restored on both a daily and generational basis. He does not try to explore, however, the historical development by which household labour is female, by which domestic production is replaced by commodity production in the development of a mass market, or the determinants of the growth of the population and labour force as a whole. Yet these are appropriate issues for concrete historical analysis, perfectly consistent with Marx's work, and which might draw productively on the work of recent women's scholars.

6.13 CONTROL OF SEXUALITY

Although control of women's sexuality did not originate with capitalism, it may be an underlying factor necessary for any sustainable economic system in a context of resource scarcity, and is a co-requisite for the control of labour. The particular institutional forms of the exchange of women vary greatly over time and across economic systems, but may represent a common factor of organised societies (Levi-Strauss 1969, G. Rubin 1975, Lerner 1986). The failure to include this aspect of human and social reproduction more explicitly in Marx's model (Engels 1942), and the concrete dynamics of its social forms, is regrettable (and was also hampered by the limited understanding of women's history and anthropology at that time). This relative neglect can be rectified, nonetheless, while still retaining and enriching the fundamental understanding of the capitalist system which Marx advanced.

6.14 WOMEN AND THE FAMILY IN *CAPITAL*

It is important to recognise that there are discussions in Marx's writings of the role of women and the family in capitalism, in both abstract and concrete terms, on which to build such an endeavour. For example, in *Capital*, Marx (1976a:490, 76–80) mentions the concrete, historically varying forms of the family, as well as other forms of social labour. For example, the 'distribution of work and the regulation of labour time' in the patriarchal peasant family is seen as based clearly on differences in age and sex, not disguised as 'social relations between the products of labour', as in capitalism (Marx 1976a:78, 77). The 'Teutonic-Christian form' of the family is mentioned, as are ancient Roman, ancient Greek, and Eastern forms, which 'taken together form a series in historical development', no one of which is absolute and final.

In the historical chapters in *Capital*, Marx does discuss the concrete characteristics of male and female labour, and the effect of capitalism on the household and reproduction of labour power. He quotes factory inspectors, doctors, members of the House of Lords, members of the Children's Employment Commission, and male workers expressing opposition to the employment of women (although some employers prefer married women for their docility and low cost (Marx 1976a:402)). In the discussion of the Factory Acts in Volume I of *Capital*, he points to the use of female labour to break the resistance of male workers, to concern with the morality of female workers, to the impact of female labour force participation on lowering male wages, and to the general neglect of the morals and health of the children of the working class, as well as infanticide and the dosing of children with opiates, particularly among working mothers (Chapter 15). In quite modern-sounding language, he mentioned that working wives reduce their 'free labour at home...for the support of the family', increasing the cost of the family as more wage goods must be purchased (Marx 1976a:395).

6.15 GENDER IN *CAPITAL*

The abstract categories of exchange value can refer to any type of human labour, as Marx discusses. In fact, in periods of history in which women do paid work in large numbers, their wage labour is treated as any other, although lower priced, in most cases. In fact, this quality of 'abstract' labour has opened up the possibility that women workers are treated 'equally', like any other type of human labour.

In Chapter 1 of *Capital*, in order to unravel the 'commodity', Marx had to discuss both the abstract and the concrete aspects of commodities, both use value and exchange value. The first three sections address the abstract nature

of exchange value, and the last, in order to contrast with the fetishism of commodities, discusses concrete forms of social historical labour. In the last section of Chapter 1, which is devoted to the fetishism of commodities, Marx discusses concrete social forms of production, rather than abstract value; it is only in this section that producers are 'men', whereas value represents 'abstract human labour' in earlier sections. And in this last section, the free association of producers is described as 'freely associated men [among whom production] is consciously regulated in accordance with a settled plan' (Marx 1976a:80).

Finally, when the capitalist assumes the form of a concrete person, the '*dramatis personae*' who knows 'the secret of profit making' is 'Mr. Moneybags', who has a masculine swagger (although the 'timid' worker is also male) (Marx 1967a:176).

6.16 CONTRADICTION BETWEEN ABSTRACT AND CONCRETE ROLES FOR WOMEN IN CAPITALISM

In the long run, women's wage employment has dramatically expanded under capitalism. Nonetheless, institutional responses are usually forthcoming, as the traditional methods of control of female sexuality are then threatened. As Marx (1976a:480) noted in Chapter 15 of *Capital*, the 'factory legislation, that first conscious and methodical reaction of society, [was] just as much the necessary product of modern industry as cotton yarn, self actors, and the electric telegraph'. Marx understood that abstract and concrete forms were inextricably tied. In this case, 'modern industry ... had also unloosened all traditional family ties...by sweeping away the economic basis of parental authority ...' (Marx 1976a:489). As a result, concrete, historical institutional changes were 'necessary', in shifting coalitions of capital, labour, reformers, and others, to maintain the control of sexuality, a consideration that he does not explicitly articulate. He does understand, however, that the expansion of industry challenges '*patria potestas*, parental authority', and that 'independent' women employed in travelling agricultural gangs left their children 'pining' at home (Marx 1976a:489, 399).

Marx assumed a system of control of women that was well in place at the time of his writing, but he perhaps underestimated the ways in which capitalist development would require different, and contradictory, institutional arrangements. Women and children in the labour force at the time of the Industrial Revolution did threaten the ability of labour power to reproduce itself, until reformers and male unionists instituted 'protective legislation' (Hartmann 1981).

That is, Marx observed, but did not fully articulate, the contradictory role of women in the capitalist system. Just as in the case of commodities and of labour power, there is a contradiction between the abstract and concrete roles of women.

On the one hand, there are pressures for women to enter the labour force, as equal, 'abstract' labour, capable of producing value and surplus value, only more cheaply. This labour force participation also helps women to achieve a certain equality with men and more financial independence, and to contribute to the support of the family. On the other hand, this participation also undermines women's 'concrete' role in the household, where relations of domination there help to reproduce the labour force, provide a motive and reward for the sale of labour power, and realise surplus value. Marx saw the institutional response as 'necessary' to restore that household authority, but did not further analyse the conflicting social movements which took up the separate aspects of this contradictory role of women, including the women's movement itself.

Marx might even have been aware of the work of Mary Wollstonecraft, for example, who wrote in England in 1790 in the 'vulgar political economy' tradition, arguing for the 'equal rights of woman' as well as 'man'. At the same time Hannah More was developing and disseminating the norms of the 'domestic ideal', which described how the aspiring middle-class homemaker would play the role of 'the angel in the house' (Kowaleski-Wallace 1991, Crow 1971). This split in the women's movement, which persists even today, is now referred to as the 'equality/difference' debate (Sawicki 1991), resonating with the abstract/concrete poles of the commodity labour-power.

6.17 THE OTHER SIDE OF THE CLASS RELATION: WORK AND 'HOME'

Given the pull of women into the labour force to produce value and surplus value as 'abstract' labour, it is difficult to understand the stubbornness of the 'concrete' domestic arrangements that tie women to the home. An examination of the Marxian concept of the commodity 'labour power' can help to answer this question, where the role of women can be seen as vital to managing its contradictions.

The extreme polarities involved the 'domestic ideal', which developed along with the wage labour force in England (Clark and Cott 1977), reflect the contradictions in the commodity 'labour power', which both is and is not a 'commodity'. The normative concrete role of women in the household reflects the polar opposite of concrete relations among men in the workplace. As the male worker is an 'object' that mechanically obeys rational rules at work, the female in the household embodies humanity, emotion, morality. This duality is integrated over time in the circuit (equation (6.3) above) of the working day, which includes both work and recreation at home. This unity of disparate roles is maintained with difficulty, and is supported by ideological norms that change over time, in response to conflicts and challenges from people who resist the

direction of their lives in accordance with the abstract principles of the expansion of capital.

This understanding of the role of women in capitalism goes beyond enumerating the concrete types of work actually performed in, or related to, the household. It examines the images which are widely 'known' to describe women's labour (Barrett 1980), and the methods by which these norms are spread, accepted, internalised, and enforced. This particular form of the control of women and their sexuality is posited as an integral part of the 'class relation' of the commodity 'labour power'. Consequently, the norms and ideologies by which their behaviour is circumscribed are just as fundamental to understanding the economy in a given period as is a detailed analysis of the labour process, that method of control of labour in the workplace, which occupies a prominent place in *Capital*. Just as an entire body of work has examined the concrete institutional detail of managing the labour process in the face of alienated working conditions (Edwards 1979, Gordon *et al.* 1982, Burawoy 1979, Shaiken 1984), so there is also developing a body of work that analyses the norms and practices of women in the household and in the labour force in relation to the developments of the capitalist economy (Clark and Cott 1977, Rose 1991, Ryan 1981, Valenze 1995, Taylor 1983).

Feminists have struggled to characterise women's labour and its contribution to the capitalist system by cataloguing its specific attributes. Undeniably, essential concrete use values are created and shared in the household, including sexual services, bearing and raising children, housework, shopping, family and community relationships. Yet additional dimensions include its historical specificity, varying forms of control, ideological underpinnings, and symbolic meanings, all of which change across historical periods with economic transformations.

Expanding on Folbre (1982), this approach suggests that, in addition to the hours of labour worked in the household, also important are the socially constructed, qualitative meanings attached to this work. For example, although working-class women historically had very demanding physical labour in cooking, cleaning, and child rearing, the housewife is just as 'essential' in upper-class homes with servants, or in modern economies in which much of her work has now been commodified. The 'objectified', symbolic value of the CEO's wife is just as important in his home and in social settings as in sex-segregated jobs, such as the CEO's secretary in his office. The control of women by internalised institutional norms in capitalist economies assumes a distinct, particular form, warping and restricting opportunities for personal development (Gilman 1966), just as palpable as the female genital mutilation practised in parts of Africa, although less overt and physically debilitating.

6.18 HISTORICAL EXAMPLES

This argument, that women are part of the class relation of the commodity 'labour power', even if not at the site of production, can be illustrated by historical examples of the identity of participants, the content, and the timing of ideological discussions regarding the proper role of women. That is, historical examples will show that representatives of the capitalist class participate in public discussions of women's place, they tend to favour roles that keep women subordinate, and these discussions most often occur when the economy is undergoing significant structural transitions.

The domestic sphere was isolated and 'protected' from the male labour force in the early stages of the Industrial Revolution, to resolve the crisis of reproduction to which Marx (*Capital* Chapter 15) referred. This determination of the labour force as 'male' solved one problem, but created another, in the form of household denigration and contradictory roles for women, who, in the lower classes (in fact, the most vulnerable) continued to work. The normative assignments of distinct roles for each gender, financial provision for the household to men and caring for human needs to women, may have forestalled a critique of the system that requires such bifurcation, inherent in the contradictory nature of the commodity 'labour power'. That is, men as workers offer themselves as objects for sale, while women retain human concerns for relationships and caring, which has no part of the system of commodity exchange, production, and money.

As the capitalist economy developed, domestic production was replaced with commodity production, and land held by peasants and tools of artisans were replaced by ownership only of one's own labour power. Ideologically the loss of a domestic economy was compensated with the gain of the individual family house with yard (Jackson 1985; Hayden 1981, 1984), in which the virtuous, frugal, nurturing, and sexy housewife provided safe retreat from the rigours of market competition (Lasch 1977, Foucault 1978, Quick 1992, Fraad *et al.* 1994). Ownership of the means of production was replaced by ownership of consumer durables (Vogel 1983). The demands of 'object'-like behaviour at work are compensated by the release of sexuality in the home (with heavily image-laden consumer goods). Individual mobility in the market is anchored by family ties in the home. The creation of the ideology of motherhood helped legitimate the removal of both women and children from the labour market (Fine 1992; Katz 1986, 1995).

The elaboration of the 'cult of true womanhood' and a separate sphere of domestic economy, a moral sanctuary outside of the crass competition of the market place, occurred at the time of the ascendance of the bourgeoisie (Fox-Genovese 1983, Sklar 1973, Benenson 1984), in the first half of the 19th century in England, France and the United States. The cost of this resolution is a set of highly differentiated gender roles, at work and at leisure, an additional

source of alienation (Matthaei 1995).

The separation and isolation of the household sphere, and its denigration relative to the system of commodity production and value expansion, helped produce the alienation of women that is one potential challenge to the system. In fact there was a near-simultaneous rise of a woman's movement with the development of the capitalist labour market and the separation of the household (Folbre 1994:147–8), the history of which is instructive for understanding the contradictions and institutional developments of the system. Early movements for women's control of property (Staves 1990, Shanley 1989) and women's leadership roles in evangelical 'awakenings' were followed by women's participation in abolition and temperance movements (Sklar and Dublin 1991, Smith-Rosenberg 1985), women's suffrage (DuBois 1978) and the Equal Rights Amendment.

There are many instances in which women's roles and struggles helped shape the institutional context of class struggle and the dynamics of capitalism. For instance, the primary identification of middle-class women as 'mothers' in the early 20th century US, as well as the relative weakness of the labour movement, channelled their political participation into support of 'welfare' for women with children, who were the only 'deserving' poor (at least until recently), unlike working-class men (Skocpol 1992; Koven and Michel 1993; L. Gordon 1994; Katz 1986, 1995). This bifurcation of treatment of men and women resulted in the neglect and denigration of the needs of working men, which were presumably resolved by labour force participation, that is, their sale as objects in the market. Any claim for the needs of working men, who were the normative providers, became 'unmanly' and unworthy. The differential treatment of working-class men and women has become institutionalised and has also weakened the class alliances which may have otherwise been able to win a stronger welfare state and bargaining power for labour in the US.

There have been a variety of ideologies in different periods that circumscribe women's behaviour, norms, and identities, from the Cult of the True Woman in the late 19th century (Clark and Cott 1977, Welter 1966), to motherhood in the early 1900s (Fine 1992, Aries 1962, Katz 1986), to the consumer in the 1950s (Cowan 1983, Ewen 1976), and sexuality in the late 20th century (Goffman 1976, Foucault 1978). Enforcement institutions have included the medical establishment (Showalter 1985), women's magazines and other media (Skocpol 1992), educational institutions, legal mandates (Goldin 1990). Although women participate in and shape these norms (Smith-Rosenberg 1985), their voices are joined by others, often with superior institutional resources, which shape their responses and constrain their feasible strategies. At times, ambitious women seize the leadership in defining and articulating these norms, as a way of gaining power in their own lives, even by contributions that constrain the lives of other women (Sklar 1973).

In fact, there seems to be a coincidence between major shifts in the social construction of gender and substantive economic dislocations. For example, in the 1890s, the formation of the industrial male labour force was reinforced by the 'cult of the true woman' in the home. In the post-World War I era, with radical movements in the US and Europe and the Russian Revolution, the 'flappers' and newly educated women leaders in the settlement house movement were 'red-baited' in their efforts at social reform and international peace movements (Lemons 1973, Sklar 1995). The construction of the abnormal category of 'lesbian' also served to constrain the easy familiarity of independent educated women (Smith-Rosenberg 1985, Simmons 1991). Mothers' pensions were preferred to poor houses because of the newly discovered need to keep women home to raise their own children (Katz 1986) in the early 20th century.

The post-World War II period, with its macroeconomic concerns with underconsumption and defence conversion, was also characterised by McCarthyism, marriage bars (Goldin 1990), consumerism (Ewen 1976, Cowan 1983), and sex, as in the transformation of Norma Jean Baker from 'Rosie the Riveter' to glamorous screen idol, Marilyn Monroe (Baty 1995). Certainly, the auto/oil/housing/consumer finance/advertising complex associated with suburbanisation has propelled the post-war economy into the present period.

Often women's political activism has been shaped by reactions to these ideologies. For example, the 'maternalism' of women's social welfare reformism in the early 20th century was shaped by their identities as 'mothers' (Koven and Michel 1993). The bourgeois feminism of Betty Friedan's *The Feminine Mystique* was a reaction to the consumerism of post-war suburbs. The reproductive choice movement of the later 20th century can be seen as a reaction to the ideology of (hetero-)sexual liberation of the late 20th century (Smith-Rosenberg 1985). While women have been active in opposing the definitions of themselves imposed from male-oriented perspectives, each of these reaction movements has itself been partial, and divided from the others.

6.19 CONTEMPORARY IDEOLOGICAL FORMULATIONS

As in the 1890s, 1920s and 1950s, the capitalist economy in the 1990s can also be understood to be in the midst of a major structural transformation. During the most recent period of capitalist development since the mid-1970s, productivity growth in advanced countries has been stagnating, newly industrialising countries have become more competitive, and hyper-mobile capital has intensified international competition. The advanced capitalist countries have begun to reduce the provisions of their welfare states, seen as too costly and hampering 'flexibility' in this new climate, as well as to attack unionisation

and erode institutional provisions of job security. As in the earlier periods, a resurgence of *laissez-faire* economic ideology is coupled with a reinforcement of norms of the traditional male control of women in the household. This coupling of free-market ideology and 'family values' is not accidental, but related to the ideological male/female poles of the class relations of the commodity 'labour power', as argued above (see section 6.17).

As an example of the use of gender and class ideology to legitimate economic policy, consider the Republican 'Contract for America', continuing themes from the 'Reagan revolution' of the 1980s. In the 1994 election campaign, 'welfare' called to mind promiscuous, inner-city, black women who sponged off tax-paying middle class white men and their moral, church-going wives. This characterisation helped de-legitimate any role of government in the economy, and drew attention away from tax cuts for the rich and growing inequality and job insecurity for everyone else (Krugman 1990, Bluestone and Harrison 1988, E. Wolff 1995). The appeal to 'family values' is a thinly veiled critique of middle-class women who work, and a bid to reinstate the man as the sole household head, at the same time that poor women are considered lazy if they do not work. Working-class men are encouraged to aspire to become rich capitalist entrepreneurs, the true 'creators of wealth', whose taxes and burdens they will happily remove, in order to buy an identification with the ultimate symbols of manhood, control of money, other men, and women. 'The social power [of money] becomes the private power of private persons ... the social wealth of its owner (Marx 1967a:132–3).

Unlike the Women's Christian Temperance Union in the 19th century, the leaders of the Christian moralists in the 1990s are all men with media and/or political ambitions (Pat Robertson, Rush Limbaugh, and Ralph Reed of the Christian Coalition). Feminists have been re-characterised as 'feminazis' by Rush Limbaugh.

By blaming women's uncontrolled sexuality, and by hampering any independence from marriage (with reductions in welfare as well as restriction on abortions and roll-backs in affirmative action), (male) voters are more likely to acquiesce to dismantling federal economic security programmes, the only remaining supports in an increasingly insecure international economy. The symbolic nature of the welfare issue is highlighted by the fact that a programme comprising only 1 per cent of the federal budget continues to be a major issue in presidential campaigns (Cushman 1995). The focus is on reducing illegitimacy by punitive measures, when there is evidence that the rise in illegitimacy is in fact caused by a decline in marriage rate due to economic insecurity rather than an increase in the birth rate to unwed mothers (Wilson and Neckerman 1986).

The focus on wealthy (white) males as progenitors of the system is as completely inverted as the impression that 'money can reproduce' as self-expanding value. Completely masked in the circuits of money and commodities is the

role of women and workers' effort and creativity in the expansion of value, and the role of the state in stabilising and undergirding the capitalist economy. With some variation along a common theme, the ascendancy of the right wing in other advanced capitalist countries provides an indication of how capitalist class interests can be advanced by exploiting gender, race, and class divisions and identifications, in this case in the interests of reducing the tax burden on profits, lowering the floor under wages, re-enforcing the discipline of the market on (male) labour, re-enforcing male control of female sexuality, harnessing sexuality to reproduction of workers and consumers (as in 'sex sells'; Goffman 1976).

Ironically women today are more often employed, educated, owners of property, custodians of their own children, and enfranchised than in any other period, yet there is little overt reaction. The abstract equality which women may have achieved in the workplace is now offset by reassertion of the ideological power of concrete institutional norms with respect to their subordinate role in the home. The coupling of these two strategies in the contemporary period again suggests that the presence of women in the home helps to manage, at least ideologically, the contradictory effects of the market hegemony. This ideological elaboration of gender norms is a necessary accompaniment to 'economic' policies, in order to manage the contradictory roles of men and women in the capitalist system.

6.20 CONCLUSION

Rather than seeing all human relationships in terms of prices and costs, even the 'cost of children' (Folbre 1994), a Marxist-feminist analysis can uncover the alienating and distorting lens of commodity fetishism, and provide a vision of human relationships in a coherent social whole.

The position argued here is that incorporation of the household need not require a redefinition of Marx's concept of value. More useful, rather, is the addition of a circuit of household reproduction of labour power, and acquisition of use values. Retaining and expanding Marx's circuits of money and capital highlights the mystification of the power of money to expand, and reveals the role of both women and men in that process. The addition of a concrete circuit for the reproduction of labour power

$$C_{lp} - C_{lp}' - C_{lp} \qquad (6.4)$$

helps elucidate the contradictions of the abstract circuit for the self-expansion of value and capital

$$M - C - M' \qquad (6.1)$$

The fetishism of money and commodities is important 'knowledge' that coordinates the behaviour of its participants and assures its continuation. Unmasking its dual and contradictory nature requires concrete historical specification, including the analysis of the organisation of sexuality and gender ideologies, as well as a deconstruction of abstract symbols such as money.

As 'abstract' labour, women have been increasingly drawn into the labour force to produce value and surplus value. This contradicts their 'concrete' role in the household, reproducing and motivating labour and 'realising' the expanded value of money through their consumer purchases. In ideological terms, women serve as the 'dual' of the commodity 'labour power', representing the emotional connections and human caring that are repressed in male workers who sell themselves as 'objects' to capitalist employers.

Each pole has had representatives in the women's movement since its inception in the 18th century, one pushing for 'equal' rights as 'abstract' labour, the other for protection, as guardians of the home and children.

Women are part of the class relation of the commodity 'labour power', even if not at the site of production. This can be illustrated by historical examples of the identity of participants, the content, and the timing of ideological discussions regarding the proper role of women, even as quoted in *Capital*. That is, both historical and contemporary examples will show that representatives of the capitalist class participate in public discussion of women's place, they tend to favour roles which keep women subordinate in the family, and these discussions most often occur when the economy is undergoing significant structural transitions.

The contradiction between women's abstract role as labour in the capitalist workplace and women's concrete domestic role in the home is related to the contradiction between abstract and concrete characteristics of commodities and the commodity 'labour power'. The alienation and mystification of labour control by the money commodity inhibits the clear and coherent direction of labour by the self-conscious producers. At such a time of self-regulation by workers, abstract rules for work discipline and income distribution will not be experienced as alien forces from some external source, but will rather be from the explicit considerations by the concrete workers themselves. This direction toward a solution was offered by Marx. The concrete institutional arrangements by which differentiated workers might manage a self-directed labour process was not resolved by Marx, however, and here feminists have much to offer, such as an explicit inclusion of the issues of sexuality, child care, and the coalescence of community.

NOTES

1. In discussing the higher 'cost' of children in developed economies, Folbre mentions the rising opportunity cost of women's labour, the reduced earning power of children in capitalist economies relative to agrarian ones, the greater reluctance of children to support their aging parents, and the greater cost of education, all of which increase the 'cost of children'. She does not examine, however, the effects of the shifting burden of education between family and the state, the decline in maternal mortality, availability of child care options, and the faster increase in the standard of living than in the cost of children, all of which would tend to increase the birth rate, using the same logic. The cost-of-children framework also does not account well for the faster decline in fertility in higher income households (Folbre 1994:144, 152, 174, 185; Smith 1991:70).

   Marx also noted in Chapter 15 of *Capital* that, in the early stages of the capitalist labour market, parents would send young children to work to offset the poverty and dislocation of the family. This was one cause of compulsory education and protective legislation for women and children. Once this transition is made, however, this 'increased cost of children' cannot explain the continuing fertility decline, but only a one-time reduction in birth rates. Further, after child labour laws were implemented, higher 'family' wage norms and greater productivity helped to offset the decline in family earning power due to the compulsory schooling of children. Katz (1995) also argues that children's wages were important sources of family income for the poor into the 1950s in the US.
2. In the household circuit, (6.3) below, concrete household labour is not actually represented. C_h refers only to the real use values produced with household labour, compared with the commodities produced in the workplace, C_{wg}, with the same number of hours of labour. Further, C_{wg} will be larger than C_h only under certain conditions: first, that productivity growth is greater than increases in the rate of exploitation; second, that there is some minimum level of productivity in the capitalist firm which is greater than in the household. C_h is not actually in value terms, since it is not a product of the capitalist workplace. Comparisons can be made with C_{wg} only by three criteria: use value, the number of hours of total household labour, or common units of a standard commodity.

7 Value, Abstract Labour and Exchange Equivalence

Bruce Roberts

In his initial discussions of the classical economists, Marx makes several different criticisms, in the process elucidating his own approach. I want to distinguish two thematic critiques, two broad strands of criticism that I think are crucial and related. Their relation is perhaps under-appreciated.

First, Marx repeatedly criticises the classicals, Ricardo in particular, for failing to distinguish between value and price of production. He says, for example:

> the establishment of the general rate of profit requires that the [prices of production] which are determined and regulated by that general rate of profit [are] very different from the values of the commodities. And this most important aspect of the question does not exist for Ricardo at all. [Marx 1968:386][1]

And, with reference to Smith, Ricardo and the physiocrats, 'none of these people explained the difference between price of production and value' (Marx 1981:300). The point was of major significance to Marx, who transforms values into production prices in a formal quantitative treatment of the difference between the two categories. I will refer to this first critique of classical economics, and the stance Marx adopts in making it, as 'the double structure thesis': there are two numbers 'attached' to every capitalist commodity, its value and its price of production; they differ, in general, and a Marxian analysis is interested in both (the difference between them represents a transfer or redistribution of surplus value across industry boundaries).

Second, Marx in several different works offers a cluster of related critiques focused on the concept of abstract labour. The classical school, he says, 'nowhere distinguishes explicitly between labour as it appears in the value of a product, and the same labour as it appears in the product's use-value'; they make 'a purely quantitative distinction' between kinds of labour without realising that the 'reduction to abstract human labour' is presupposed (Marx 1976a:173). In his concern with 'the magnitude of value', Ricardo fails to see that 'the labour embodied in [commodities] must be represented as social la-

bour' and overlooks the point that '[t]his transformation of the labour of private individuals contained in the commodities into *uniform social labour*... this *qualitative* aspect of the matter ... is contained in the representation of exchange-value as money' (Marx 1971b:131). Ricardo does not understand 'the specific form in which labour is an element of value'; thus, 'in his work the transformation of commodities into money appears to be something merely formal', and as a result he 'confuses the labour which is represented in use-value and that which is represented in exchange-value' (Marx 1971b:137, 138, 139). These various omissions and confusions stand in contrast to Marx's own formulations of the issue, as in the fetishism section of *Capital* I:

> the specific social character of [producers'] private labours appears *only within* ... exchange. In other words, the labour of the private individual manifests itself as an element of the total labour of society *only through* the relations which the act of exchange establishes between the products, and, through their mediation, between the producers ... It is *only* by being exchanged that the products of labour acquire a socially uniform objectivity as values ... Men do not therefore bring the produce of their labour into relation with each other as values because they see these objects merely as the material integuments of homogeneous human labour. The reverse is true: by equating their different products to each other *in exchange* as values, they equate their different kinds of labour as human labour. [Marx 1976a:165–6, emphasis added]

Clearly a number of sub-themes are woven together here. I would summarise the contents of these related points as follows. Ricardo and the classicals treat 'labour' quantitatively, without fully confronting the prior qualitative issue of commensurating private, individual, concrete labours as social, general, abstract labour, as a result, despite the many virtues of Ricardo's analysis of production (explicitly praised by Marx), his 'merely formal' approach to *exchange* leads him to misunderstand and misspecify 'labour' and thus the very concept of value and its forms. For Marx, in contrast, private labours are commensurated as abstract labour (the substance of value) *in and through* the relations of equivalence established in exchange, relations between each commodity and money and, by means of money, between commodities themselves. Abstract labour as a relation between concrete labours (and therefore any magnitude measured in terms of abstract labour) is 'induced' by the relations of exchange equivalence between commodities.[2] I will refer to this second thematic critique as 'the equivalence thesis': the specific form which 'labour' assumes as the substance of value is inseparable from, and thus explicable only with reference to, the specific form of equivalence between commodities in exchange.

The rest of this chapter will explore the implications of taking seriously

both of these theses simultaneously. Marx never completed the task; he gives a formal analysis of value–price transformation, but he never went beyond the verbal critiques summarised above to elaborate a formal approach to abstract labour in the context of a general analysis of equivalent exchange. Much of the subsequent literature has developed in response to this, either as a critique of the supposedly distinct 'problems' represented by transformation or abstract labour, or as a defence of the consistency of Marx's separate discussions of each issue. Indeed, some Marxists would simply reject the equivalence thesis as I have presented it, arguing instead for an interpretation of Marx in which exchange at most *expresses* quantitative relations defined exclusively within the production sphere, that is, in which the labour of workers in capitalist production is *immediately* abstract as well as concrete (see McGlone and Kliman, this volume). Such an approach has, perhaps, its own textual justifications, but its denial of any constitutive role for the exchange process simply begs the questions I choose to focus on here, questions raised by Marx in numerous passages expressing the equivalence thesis. For example, in reference to the equivalence relations Marx later called 'the general form of value', he writes:

> ... the different kinds of individual labour represented in these particular use-values, in fact, become labour in general, and in this way social labour, *only* by actually being exchanged for one another in quantities which are proportional to the labour-time contained in them ... The point of departure is *not* the labour of individuals considered as social labour, but on the contrary the particular kinds of labour of private individuals, i.e., labour which proves that it is universal social labour *only* by the supersession of its original character in the *exchange process*. Universal social labour is consequently not a ready-made prerequisite but an emerging result ... on the one hand, commodities must enter the exchange process as materialised universal labour-time, on the other hand, the labour-time of individuals *becomes* materialised universal labour-time *only as the result of the exchange process*. [Marx 1970:45, emphasis added]

Or again:

> It is *only the expression of equivalence* between different sorts of commodities which brings to view the specific character of value-creating labour, by *actually reducing* the different kinds of labour embedded in the different kinds of commodity to their common quality of being human labour in general. [Marx 1976a:142, emphasis added]

Taken alone, the first part of this sentence might be read to say that exchange merely 'brings to view' abstract labour magnitudes determined prior to it in

production, but the second part, posing equivalent exchange as 'actually reducing' the different labours present in production, reiterates the heart of the equivalence thesis: concrete labours become abstract labour only as a result of the exchange process.

In what follows, the 'point of departure' is precisely the different particular kinds of labour, concrete and observable, measured by the clock in hours, which are not immediately the social labour constitutive of value.[3] Those concrete labours must be reduced to or commensurated as abstract labour before any of Marx's value categories can be quantified, and it is my premise that the commensuration of use-values that occurs in an equivalent exchange ('one coat' has an exchange-value equal to that of '20 yards of linen') *is itself* the commensuration of the concrete and therefore heterogeneous labours contained in those commodities. But, in capitalism, commodities that exchange as equivalents (have equal exchange-values) do not in general have equal values, so it is as *exchange*-values rather than directly or immediately as values that commodities come to express particular amounts of social or abstract labour. This does not in any way make the concept of value any less important for Marx – the point is simply that values are not directly visible in the equivalences established by capitalist competition. Indeed, by respecting both of Marx's theses, the formal system developed below gives a new and specific meaning to Marx's (1976a:176) statement that 'exchange-value is a definite social manner of expressing the amount of labour bestowed on a thing'.

7.1 TWO RECENT APPROACHES

There is, of course, an enormous literature on values, prices, and transformation, and another almost as large on abstract labour and related topics such as labour heterogeneity and skills. Rather than attempt a review, I will focus on two recent efforts to confront both issues (transformation and abstract labour) simultaneously: Krause (1982) and Steedman (1980, 1985). Both are serious attempts to present formal treatments; they have much in common (Steedman cites Krause's earlier work) and yet, curiously, with regard to Marx's two theses they have precisely opposite strengths and weaknesses.

Krause has the distinction of being the first to present a systematic formal treatment of abstract labour as an 'induced relation': if two commodities are market equivalents when taken in certain physical quantities, this equivalence relation 'results in the "equating" of certain quantities of the various concrete labours expended in [the] production' of those physical quantities (Krause 1982:94–5). 'Concrete labour viewed in terms of this equivalence relation is designated abstract labour' (Krause 1982:10). More specifically, suppose the

social norm is that one unit of commodity j exchanges for z_{jk} units of commodity k. z_{jk} then expresses the relative price of commodity j in terms of k – it is the ratio of the prices of each expressed in terms of the money commodity. (In Marx's terms, z_{jk} units of commodity k is the 'equivalent form of value' of commodity j.) Given this equivalence between the commodities, Krause deduces a parallel equivalence between the abstract labour expressions for the concrete labours embodied in these physical quantities: if λ_j stands for the abstract labour expression for commodity j, then

$$\lambda_j = (z_{jk})\,\lambda_k \tag{7.1}$$

Assuming single-product industries using only circulating capital, let A be the familiar matrix of physical inputs per unit output and L the parallel matrix of (heterogeneous) concrete labours per unit output.[4] Then, Krause reasons,

$$\lambda = \lambda A + \alpha L = \alpha L[I - A]^{-1} \tag{7.2}$$

where α is the vector of abstract labour per unit concrete labour of each type (what Krause refers to as 'reduction coefficients').[5] $L[I - A]^{-1}$ is the familiar expression for concrete labours 'embodied'; summation via α expresses them as a scalar magnitude of abstract labour associated with each commodity. It is important to stress that, for Krause, λ is the expression for commodity value, and thus the induced relation as he presents it has the implication that relative *values* (relative quantities of abstract labour embodied) equal relative *prices*: from (7.1)

$$\lambda_j/\lambda_k = z_{jk}$$

an equality he refers to as 'the fundamental relation' (Krause 1982:90).

Krause completes his system with what he calls the 'standard reduction of labour' as a way of determining α; α is a 'standard reduction' if αL is an eigenvector corresponding to the maximal eigenvalue of matrix A. The general rate of profit is taken as exogenous – it is money wages for each type of labour-power which are endogenously determined. The system as a whole then displays some interesting and ingenious (but utterly 'un-Marx-like') properties. In effect, Krause's system solves as follows: the standard reduction, plus an arbitrary normalisation condition, determines α; α then fixes values (λ) in terms of abstract labour via the definition in (7.2) above; the 'fundamental relation' determines relative prices as identical to relative values, and absolute money prices follow once the money commodity is designated; finally, a set of standard price equations determines the wage rates consistent with the given rate of profit and the already determined money prices (this is possible only

because Krause assumes a number of distinct labour-powers identical to the number of commodities). Moreover, if workers of each type are assumed to use their money wages to purchase bundles of consumption goods given by the columns of matrix B, where B is endogenous (consumption bundles must be consistent with already determined wages and prices), then the system also displays a uniform rate of surplus value equal to $[(\alpha LX - \lambda BLX)/\lambda BLX]$, where X is the vector of gross outputs.

In the context of Marx's two theses, the virtue of Krause's system is its explicit recognition of the equivalence thesis: the relation between any two commodities as equivalents in exchange is mirrored by a parallel relation between the commodities considered as abstract labour. But the formulation responsible for that virtue is itself the source of a problem: the double structure thesis is violated because in Krause's system the 'fundamental relation' dictates that relative values are *identical* to relative production prices. Values need not be transformed into production prices differing from them because the standard reduction 'counts' concrete labours as abstract labour in precisely the way necessary to impose a uniform 'organic composition of capital' within each industry. To Krause this is its strength – he has disposed of the transformation problem by counting concrete labours as abstract labour in a carefully constructed fashion. For anyone more interested than Krause is in maintaining the logic and consistency of a Marxian approach, that strength is likely to be viewed as coming at too high a price – Krause is able to dispense with value/price differences only because he inverts Marx's question and derives wages from an exogenous rate of profit rather than the rate of profit from a pregiven wage bargain.

Steedman's various treatments of the issues have a different flavour since, unlike Krause, his conscious intent is to undermine the legitimacy of the concept of abstract labour ('just a pair of words'; Steedman 1980:31). Despite that intent, he presents a formal system with strong similarities to, but also differences from, Krause's approach. The chief difference concerns the form of the data: in line with his choice to examine 'classical' approaches to heterogeneous labour, Steedman takes as data the real wages of workers and seeks to derive the rate of profit. B is then an $n \times m$ matrix with columns expressing the real wage bundles that workers of each type must be able to purchase with their money wages.[6] With B given, Krause's standard reduction does not yield a uniform rate of exploitation (e), so Steedman proceeds differently.[7] His proposed definition of the aggregate e (Steedman 1980:8) is uniformly realised only on the basis of an α defined to be proportional to the *value* of the real wage bundles. More specifically, Steedman, like Krause, defines commodity values in terms of abstract labour as

$$\lambda = \lambda A + \alpha L = \alpha L[I - A]^{-1} \qquad (7.2)$$

the abstract labour expression for the concrete labours directly and indirectly 'embodied' in commodities (Steedman 1985:16). The uniform rate of exploitation e emerges from

$$\alpha = (1 + e)\lambda B \tag{7.3}$$

which, using (7.2), can be written as

$$\alpha(1 + e)^{-1} = \alpha\{L[I - A]^{-1}B\} \tag{7.4}$$

Equation (7.4) yields a solution in which $(1 + e)^{-1}$ is the maximum eigenvalue of $L[I - A]^{-1}B$ and α is the corresponding eigenvector. e is then positive if and only if that eigenvalue is less than 1, a condition which is also necessary and sufficient to guarantee a positive rate of profit.[8] One could as easily reach the same solution by combining (7.2) and (7.3) to yield

$$\lambda(1 + e)^{-1} = \lambda\{BL[I - A]^{-1}\}$$

in which it is λ which emerges as an eigenvector solution. Either way, λ and α are determined up to a scale factor and the aggregate rate of exploitation is uniformly realised in each industry (so that $[\alpha_j - (\lambda B)_j]/(\lambda B)_j = e$).

With regard to Marx's two theses, here the double structure thesis is respected. Values determined in this fashion will in general clearly differ both absolutely and relatively from any vector of production prices (a result which, from Steedman's perspective, leaves intact all the problems of transformation on which he has elsewhere written so extensively). It is instead the equivalence thesis which evaporates: the determination of α and this the commensurating of concrete labours as abstract labour here proceeds entirely without reference to the relations of equivalence between commodities in exchange. With real wages (B) taken as data, the definition of value employed in (7.2) leaves effectively 'no room' for commodity equivalence to play any role in the specification of abstract labour.

Krause and Steedman do at least take as their 'point of departure' the matrix L expressing 'the particular kinds of labour of private individuals', but each ends up fulfilling one but not the other of Marx's two theses. It is worth examining why this occurs as a preliminary to the attempt to satisfy both. The problem, I argue, is the one definitional relationship they have fully in common: equation (7.2), in which a commodity's value in terms of abstract labour-time is expressed as the sum (via α) of a particular complex of concrete labours given by the appropriate column of $L[I - A]^{-1}$. This matrix of so-called 'embodied' labours is defined immediately by *production* data alone – it refers only to *use*-values, concrete labours and means of production, as they appear in the production process. It is employed by both Krause and Steedman as the means

to solve for what Marx refers to as 'the specific form in which labour is an element of value', yet it directly expresses something quite different, (concrete) 'labour, as it appears in the *use*-value of [the] product'. Indeed, despite the fact that the commodity form means that inputs are acquired through exchange, by means of money payments, there is no way to know simply from this expression that one is considering a commodity economy at all. The act of exchange, implicit in the background of the entire exercise, is, as it was in Marx's view of the classicals, present only in a sense that is 'merely formal'. Yet to Marx exchange is bound up with the 'transformation of the labour of private individuals contained in the commodities into uniform social labour' as much more than a 'formal' consideration; recognising this is what allows him to avoid 'confus[ing] the labour which is represented in use-value and that which is represented in exchange-value' (Marx 1971b:131, 138–9).

Now Krause, despite accepting equation (7.2), does manage to reincorporate exchange and reassert the equivalence thesis by means of his unusual 'standard reduction'; this is achieved, however, only by collapsing the concept of value into qualitative and quantitative identity with that of production price. Steedman, on the other hand, is perfectly content to dispense with any reference to exchange equivalence, because the formalisation of abstract labour and value (λ) he presents ultimately furthers his project of undermining Marx and ridiculing value analysis of any sort. There is, however, an alternative to both, which I develop below; it involves dropping the assumption they share, that $L[I - A]^{-1}$ is 'the' matrix representing commodities in terms of the concrete labours they contain. Instead, a solution entirely different from those of both Krause and Steedman can be developed if we recognise that, first, the concrete labours contained in a commodity's value are in general *not* identical to those contained in its (numerically different) exchange-value, and, second, *neither* of these can be specified purely in terms of production data, without reference to the form of exchange equivalence. In the system developed below, the labour a commodity represents (abstract *or* concrete) must be *endogenously* determined, as socially average labour, 'through the relations which the act of exchange establishes between the products, and, through their mediation, between the producers' (Marx 1976a:165).

7.2 AN ALTERNATIVE APPROACH

How can both of Marx's theses be simultaneously fulfilled? Consider the nature of an equivalent exchange: commodity j finds its equivalent in z_{jk} units of commodity k ('one coat' exchanges equally with 'twenty yards of linen'). If τ denotes the relation of exchange equivalence (read τ as: 'exchanges equally for') and c_j a unit of commodity j, this can be written as

$$c_j \tau(z_{jk}) c_k \tag{7.5}$$

In a monetary commodity economy, the equivalent exchange rate z_{jk} is itself a relation, the ratio of the rates of equivalent exchange between the two commodities and money. In other words, if commodity g is the money commodity, relation (7.5) between the two non-money commodities is simply a summary of two explicit relations of money equivalence: $c_j \tau(z_{jg}) c_g$ and $c_k \tau(z_{kg}) c_g$. Thus Marx's generic schema for commodity exchange by means of money, $C_1 - M - C_2$, can be written as

$$c_j \tau(z_{jg}) c_g \tau(z_{jg}/z_{kg}) c_k$$

in which (z_{jg}) is the money equivalent for commodity j (its money price according to the social norm of equivalence) and $(z_{jg}/z_{kg}) = z_{jk}$. The equivalent exchange rate (z_{jk}) is not itself an expression in money terms – it is a ratio of physical quantities, a *relative* price – yet it is constructed from, and is an expression of, relations of money equivalence. The intimate connection between the relation of money equivalence $((z_{jg})c_g)$ and the relation of commodity equivalence $((z_{jg}/z_{kg})c_k)$ is important: in a monetary commodity economy, each implies the other. Thus Marx (1971b:131, 1976a:166) is quite consistent when, on the one hand, he states that the 'transformation' from private labours to uniform social labour 'is contained in the representation of exchange-value as *money*' (that is, in z_{jg}) and when, on the other, he refers to the same social measure of labour as approachable 'only through the relations which this act of exchange establishes between the *products*' (that is, z_{jk}). Each is simply an alternate expression of the *exchange*-value of commodity j, the 'form of value' in an equivalent exchange (with money, or with another non-monetary commodity).

Relation (7.5) then says that in these physical quantities $(1{:}z_{jk})$ the two commodities are equal as exchange-values, as forms of value, and the equivalence thesis amounts to a restatement of this physical equality of exchange-values as an equality in terms of abstract (social) labour. Let λ^* be a $1{\times}n$ vector expressing the *form* of value in this sense in terms of abstract labour-time: relation (7.5) can then be written as an equation in the form

$$\lambda^*_j = (z_{jk})\, \lambda^*_k \tag{7.6}$$

λ^* expresses commodities as 'materialised forms of the same labour', the 'labour ... represented in exchange-value', because 'the exchange-value of the commodity ... manifests itself with regard to other commodities, only in the quantitative relationship in which they exchange' (Marx 1971b:130, 139). And since Marx (1971b:131) refers to these abstract labour magnitudes (λ^*) as

the product of a 'transformation of the labour of private individuals contained in the commodity into uniform social labour', λ^* takes the form

$$\lambda^* = \alpha\Lambda \tag{7.7}$$

where α, as defined above, has the dimension abstract labour per unit of concrete labour, and Λ is an $m \times n$ matrix of the concrete labours 'contained in' the commodity, the concrete labours which are 'represented in exchange-value'. Λ, as yet unknown, remains open to endogenous determination. This λ^*, which expresses each commodity as a magnitude of abstract labour, is understood both to conform to the exchange equivalence equality in (7.6) and to be the 'transformation' of private, individual, concrete labour into uniform, social, abstract labour as in (7.7); indeed the equivalence thesis as repeatedly stated by Marx says that (7.7) is established 'only as the result of' (7.6) – the commensuration of concrete labours as abstract labour occurs via the commensuration of commodities in the market as exchange equivalents.

It is crucial to stress that λ^*, the expression of each commodity in terms of abstract labour, is an expression of the commodity's *exchange*-value, the *form* of value in equivalent exchange; unlike Krause's version of the induced relation (7.1) above, λ^* is not a direct expression of commodity *value* itself, and cannot be without violating the double structure thesis. Despite the tactical assumption in Volume I of *Capital* that commodities 'exchange at their values', Marx was insistent that capitalist competition establishes relations of exchange equivalent between commodities that do not directly reflect or express values – the whole point of the transformation in Volume III is to formalise the distinction between the *capitalist* exchange-values of commodities (dubbed prices of production, the 'form of commodity value ... that appears in competition' (Marx 1981:300)) and their values. Thus, if v is the vector of commodity values, in the general case

$$(\lambda^*_j/\lambda^*_k) = (z_{jk}) \neq (v_j/v_k)$$

Capitalist exchange equivalence, exchange at prices of production, does not conform to relative values; value takes a form quantitatively different from itself in exchange, and the double structure thesis recognises this difference.

What, then, is value, the 'substance' which takes on this different form in exchange? Value is, in the first instance in *Capital* and thereafter, a magnitude denominated in units of abstract labour,[9] but it is, as a magnitude, the amount of abstract labour that is 'socially necessary' to produce (or better reproduce) the commodity. Production conditions, invoked directly by this definition, are given by matrices A and L expressing the socially average quantities of means of production and concrete labours required per unit of output.[10] The value of

the commodity output is then derived from these 'socially necessary' input quantities, but to achieve the proper dimensionality these inputs must be 'counted' as abstract labour. How should this 'counting' of socially necessary inputs take place? By means of the measure of abstract labour already examined: λ^*, for commodity inputs as constituents of output, and α, for concrete labours as constituents of output. Indeed, this is the *only* possible way: 'it is only by being exchanged that the products of labour acquire a socially uniform objectivity as values' (Marx 1976a:166); it is only by means of the exchange-included commensuration of concrete labours (7.7) that the socially necessary quantities of physical inputs can be expressed as a particular magnitude of abstract labour.

Value v, in terms of abstract labour, is then written as

$$v = \lambda^* A + \alpha L = \alpha[\Lambda A + L] \tag{7.8}$$

where the columns of matrix $[\Lambda A + L]$ express the concrete labours socially necessary to produce each output (i.e. the concrete labours contained in its *value*).[11] Equation (7.8) still expresses value as the abstract labour 'embodied' within the production process, since A and L specify the inputs by means of which this embodiment occurs. Yet unlike Steedman's formulation of value in (7.2) and many traditional treatments, the measure of the 'congealed' labour transferred by the means of production is not v itself but the general abstract labour vector λ^*. Thus, the measure of abstract labour ($\lambda^* = \alpha A$) respects the equivalence thesis, and the magnitude of value expressed in terms of that measure (7.8) respects the double structure thesis, since $v \neq \lambda^*$ in general. And, as Marx (1971b:129) argues, the *concept* of 'value' indeed 'presupposes "exchanges" of the products', because it is denominated in abstract labour units that exist only as a consequence of relations of exchange equivalence.

None of the basic terms in (7.7) and (7.8) are as yet determinate, but this foundation of conceptual meanings and relations can be further developed to yield a solution. Three steps are required: defining some accounting conventions, introducing the rate of exploitation, and specifying the particular form of exchange equivalence.

In accounting terms, it is clear that for Marx the total product considered as a sum of values (vX) is identical to the total product considered as a sum of exchange-values in abstract labour terms ($\lambda^* X$). Since by definition $X \equiv AX + Y$, where Y is the social net product, this aggregate identity implies, via (7.7) and (7.8), that $\lambda^* AX + \lambda^* Y \equiv \lambda^* AX + \alpha LX$, and thus

$$\lambda^* Y \equiv \alpha LX \tag{7.9}$$

This states, quite reasonably, that social net income in terms of abstract labour

(λ^*Y) equals, because it derives from, the value created by newly performed concrete labours (αLX).

Beyond this, some sort of convention must be adopted to define the absolute scale of aggregate value generation in relation to concrete labours – the notion of an 'abstract labour hour' must have some precise meaning in terms of measured hours of one or more concrete labours. Marx's writings on this score leave open several possible approaches, but given the importance to Marx of average conditions in many different contexts, I find it most compelling to adopt as a convention the idea that an hour of abstract labour is equal to an *average* hour of the concrete labours actually performed. Marx invites the identification of abstract, social labour with 'average labour' in many places; he says, for example:

> The total labour-power of society, which is manifested in the values of the world of commodities counts ... as one homogeneous mass ... although composed of innumerable individual units of labour-power. Each of these units is the same as any other, to the extent that it has the character of a socially average unit of labour-power, and acts as such. [Marx 1976a:129]

Now a 'socially average' hour of work is literally a composite hour incorporating all the various concrete labours in the proportions in which each type enters into the social aggregate (i.e. $LX(1/uLX)$, where u is a unit summation vector), and if the value created by such an average composite hour is set equal to 1 (one abstract labour hour), then

$$\alpha\{[LX](1/uLX)\} = 1 \tag{7.10}$$

Here, despite the fact that different concrete labours create distinctly different amounts of value in the same time period, the *average* hour of work is itself the definition of an abstract labour hour. Of course, (7.10) can be expressed more simply as

$$\alpha LX = uLX \tag{7.11}$$

which formalises Marx's point above: in terms of the *total* value created, the living labour performed by society's total labour-power 'counts ... as one homogeneous mass' (uLX), despite the differences between its particular components. This convention has two great virtues: first, an hour of abstract labour is thus, as Marx (1971b:138–9) says, 'not any particular labour, with particular qualities' (it incorporates *all* particular labours in their average proportions) and, second, such an average hour is then 'social' in an immediate and obvious sense (it mirrors the composition of the social aggregate, 'the total labour-

power of society' (LX)).

A useful link between v and λ^* can now be developed by means of these conventions. From (7.9) and (7.11) it follows that $(\lambda^*Y/uLX) = 1$.

Substituting into (7.8) yields

$$v = \lambda^*A + (\lambda^*Y/uLX)\alpha L$$
$$v = \lambda^*[A + Y\alpha L(1/uLX)] \qquad (7.12)$$

For convenience, designate the commodity matrix in brackets in (7.12) as T; we can then write

$$v = \lambda^*T \qquad (7.13)$$

which directly links v and λ^*. The value of each commodity is the abstract labour represented by a particular bundle of commodities given by the relevant column of T. Given that $\alpha > 0$, T is semi-positive, so $v > 0$ for all $\lambda^* > 0$. Matrix T is perhaps not an intuitively obvious construct, but it has a definite conceptual meaning. In effect, the value added as abstract labour by the concrete labours performed (αL) has been replaced by an equivalent amount of abstract labour in the form of a bundle of commodities [$Y\alpha L(1/uLX)$]. To clarify this bundle, note that vector [$Y(1/uLX)$] represents the maximum uniform real wage that could be paid per hour of work under the circumstances – if such a wage were actually paid, it would exhaust the social net product and leave no surplus product at all. $Y\alpha L(1/uLX)$ is then, in commodity terms, an equivalent for the value added by *all* the living labour performed per unit of output – it is the real wage payment that would leave no portion of labour performed as 'unpaid labour' in any industry. In intuitive terms then, (7.12) says that value is the abstract labour represented, not by the means of production plus the actual real wages paid to workers, but by an input set that incorporates 'full' payment for all the work done in creating the commodity. Value is, in other words, what exchange-value would be if there were no unpaid surplus labour.

If T is non-singular, then from (7.13):

$$\lambda^* = vT^{-1} \qquad (7.14)$$

which inverts the relation to express each λ^*_j as the value of a particular bundle of commodities. For purposes of exposition, I will assume that T is non-singular. (However, should T be singular, it is always possible to modify T by substituting appropriate physical quantities of other commodities for certain elements so that the resulting modified T is non-singular and able to satisfy both (7.13) and (7.14).[12]) The relationship between v and λ^*, expressed in different forms in (7.13) and (7.14), proves very useful in developing and interpreting

the results derived below, since each is, in effect, the other 'transformed' by the appropriate commodity matrix (T or T^{-1}).

The value created by any particular concrete labour (α_j) will clearly affect the rate of exploitation for workers of that type, so the specification of α has implications for the theory of surplus value and exploitation in general. Marx, of course, exhaustively examined the sources of 'absolute' surplus value (prolongation of the working day, and so on) and the potentially different rates of exploitation which capitalist pursuit of absolute surplus value may generate. Typically, though, when considering other, more general issues, he abstracts from circumstances yielding absolute surplus value and assumes instead a uniform workday and a uniform rate of exploitation, uniform both across industries and across types of labour-power. He does so explicitly, for example, when setting up the general discussion of production prices different from values, citing Smith as part of an argument that the immanent tendency of capitalism is to create wages, hours, and working conditions such that 'variations in the exploitation of labour between different spheres of production ... are only apparent and evanescent' (Marx 1981:241). Similarly he argues, differences in the wages paid to different types of labour-power (the 'goldsmith' as distinct from the 'day labourer') do not affect the rate of exploitation because the goldsmith, who is 'paid at a higher rate', also 'produces a correspondingly greater surplus-value' (Marx 1981:241).[13] Here, for simplicity and because of space constraints, I will follow Marx in abstracting from the sources of absolute surplus value and assuming a uniform rate of exploitation in all industries and for all labour-powers.[14]

The most general expression for the rate of exploitation (e) is the ratio of 'unpaid labour' to 'paid labour', where the former is simply the residual difference between the value generated by labour and the portion of it which is 'paid labour'. What, then, is 'paid labour'? If $(LP)_j$ designates a unit of the jth labour-power and B_j the real wage bundle that $(LP)_j$ must be able to purchase with money wages, the wage contract can be expressed as a specific equivalence: $(LP)_j \tau B_j$, where B_j is a commodity equivalent for $(LP)_j$. 'Paid labour' for this worker is then simply the expression, in terms of abstract labour, for this commodity equivalent or real wage paid: $\lambda^* B_j$. For the rate of exploitation to be uniform across all types of labour-power, α must be proportional to $\lambda^* B$ so that the difference between them (unpaid surplus labour) is similarly proportional:

$$\alpha = \lambda^* B(1 + e) \qquad (7.15)$$

where the factor of proportionality $(1 + e)$ is uniform. Note that in contrast to Steedman's formulation in (7.3), B is expressed as abstract labour by means of λ^* and not commodity *values*. The reason again is that, given the double structure thesis, it is the form of value λ^* and not value itself that expresses the

equality of the commodities on either side of an equivalent exchange. Employing (7.14), (7.15) can be expressed in terms of values as

$$\alpha = vT^{-1}B(1 + e) \tag{7.16}$$

Several equivalent expressions for $(1 + e)$ as an aggregate ratio follow from multiplying both sides of (7.15) and (7.16) by LX and employing (7.11):

$$(1 + e) = \frac{\alpha LX}{\lambda^{*}BLX} = \frac{uLX}{\lambda^{*}BLX} = \frac{uLX}{vT^{-1}BLX} \tag{7.17}$$

We can thus eliminate explicit reference to e by substituting from (7.17) back into (7.15) and (7.16):

$$\alpha = \lambda^{*}B\left(\frac{uLX}{\lambda^{*}BLX}\right) = vT^{-1}B\left(\frac{uLX}{vT^{-1}BLX}\right) \tag{7.18}$$

The final step that allows a solution for all the variables discussed is the specification of the particular form of exchange equivalence, a 'rule' defining what it means to say that an exchange is or is not equivalent. Marx invariably views equivalent exchange as the norm or 'centre of gravity' for exchanges in any commoditised society, but the precise meaning of equivalence will vary depending on the particular form of social relations present. In Volume I of *Capital*, Marx assumes the equivalence rule to be $\lambda^{*} = v$, value-equivalent exchange: by assumption, commodities exchange as equivalents in ratios which do equal the relative values of the goods.[15] Of course, this violates the double structure thesis, which is why Marx goes on in Volume III to replace this provisional and tactically-motivated assumption with a more general analysis of equivalent exchange under competitive capitalist conditions. He concludes that capitalist competition enforces exchange rates such that each industry is equally profitable as a whole. Capitalist exchange equivalence thus requires each commodity to exchange in a uniform proportion to its costs of production. Formally, if $K = A + BL$ is the matrix of commodity capital required (the per-unit sum of the means of production plus the real wage bundle representing an equivalent for the concrete labour-powers purchased), the rule of equivalence in capitalist competition is

$$c_j \tau K_j(m) \tag{7.19}$$

where $m = (1 + r)$ is a uniform factor of proportionality. Given competitive capitalism, the worth of each commodity in an equivalent exchange (its exchange-value) is uniformly proportional to the worth of the commodity capital

required to produce it; of course, only if $m = (1 + r) > 1$ is there a positive uniform profit rate r for each industry and the economy as a whole. It is relation (7.19) that specifies the competitive capitalist form of the general equivalence relation posed above as equation (7.6).

The specific form of capitalist exchange equivalence set out in relation (7.19) is the final piece of information that, in combination with the other relations developed above, allows a formal solution for abstract labour and all the magnitudes expressed in terms of abstract labour. Recall Marx's (1976a:142) insistence that

> It is only the expression of equivalence between different sorts of commodities which brings to view the specific character of value-creating labour, by actually reducing the different kinds of labour embedded in the different kinds of commodity to their common quality of being human labour in general.

Thus, until a particular equivalence relation is stated, *none* of the categories of Marx's value theory is fully determinate.

The information contained in relation (7.19) is in itself sufficient to determine m; if λ_K^m denotes the maximum eigenvalue of K, then $m = (1 + r) = (1/\lambda_K^m)$ follows from the solution of the characteristic equation of K:

$$\det[K - \lambda_K^m I] = 0 \tag{7.20}$$

completely without reference to any valuation of individual commodities or commodity aggregates. The rate of profit (positive, so long as $\lambda_K^m < 1$) is implicit in the relation of capitalist equivalent exchange, and there is no need to attach numbers to particular commodities simply to derive the necessary proportion between the equivalents on both sides of relation (7.19).

But, since the commodities on each side of (7.19) are exchange equivalents, they can be equated when summed in some exchange-appropriate unit. At this point there are two distinct but equivalent 'solution sequences' available, distinguishable by whether one initially equates the commodity equivalents in (7.18) in terms of λ^* or in terms of v. In the more familiar former case, one can guarantee satisfaction of the equivalence thesis by solving for λ^* as an eigenvector corresponding to λ_K^m:

$$\lambda^*[K - \lambda_K^m I] = 0 \tag{7.21}$$

with λ^* normalised by

$$\lambda^* Y = uLX$$

Then substituting the solution for λ^* into (7.18) yields α and, with λ^* and α known, v emerges from (7.8) or (7.13). v will of course differ from λ^* in all but a few well-known special cases, so the double structure thesis is satisfied as well. Solved for in this fashion, values v follow from the prior derivation of the form of value λ^*.

Equally though, one can reverse the priority and derive v (and α) prior to λ^*, by making use of (7.14) to express the same basic exchange relation in terms of v:

$$vT^{-1}[K - \lambda_K^m I] = 0 \qquad (7.22)$$

Here v appears as part of a linear homogeneous system. By itself, (7.22) is not solvable, since α is an unknown appearing within T^{-1}, but in combination with the following relations

$$vT^{-1}Y = uLX$$

$$\alpha = vT^{-1}B\left(\frac{uLX}{vT^{-1}BLX}\right)$$

solutions for v and α emerge simultaneously, without reference to or prior solution for production prices. The form of value λ^* then follows from v and α via (7.14). Whichever solution sequence is followed, both of Marx's theses are respected and λ^* and v will both be strictly positive in every case in which *r* and the prices of production are strictly positive.

7.3 CHARACTERISTICS OF THE SOLUTION

The equivalence thesis says that the concrete labours contained in each commodity are expressed as abstract labour (by λ^*) only as a result of the commensuration of commodities in the market as exchange equivalents (the 'general form of value'). The system above fulfils this by deriving λ^*, either directly or indirectly via v and α, as an eigenvector corresponding to the maximum eigenvalue λ_K^m of K, and then normalising in terms of labour-time with $\lambda^*Y = uLX$. The resulting λ^* is then itself an expression of exchange-value or price – an eigenvector so derived will be proportional to the production prices (in money or any other chosen unit) which must hold for relation (7.18) to be valid and therefore for a uniform rate of profit to exist. But if λ^* can be derived simply as an expression of capitalist prices, its labour-time 'content' would seem to rest entirely on the chosen normalisation that maps the aggregate λ^*Y onto the given aggregate of living labour performed (uLX). The question then arises: in what sense does λ^* really represent *labour-time* at all, let alone 'social'

or 'average' labour? Does λ^* derived in this way really represent a commensuration of *concrete* labours in a common (abstract) unit measure? Or, even more directly: what do prices of production have to do with *abstract* labour?

The answer is, I believe, quite a lot. Price formation makes physically disparate use-values commensurable and allows each to be quantified as a particular fraction of social production as a whole. Similarly, as abstract labour, qualitatively distinct concrete labours are homogenised and quantified on a common scale as creators of value, each as a particular fraction of 'human labour in general'. These are, I argue, simply different aspects of the same process.

In order to see this, consider the following series of manipulations involving only the definition of value ($v = \lambda^*A + \alpha L$) given in (7.8) above, and the expression (7.14) derived from it ($\lambda^* = vT^{-1}$), relating value and exchange-value. Multiply both sides of (7.8) by X:

$$vX = \lambda^*AX + \alpha LX$$

Combine this expression with (7.14):

$$(vX)\lambda^* = (\lambda^*AX + \alpha LX)vT^{-1}$$

Divide both sides by vX:

$$\lambda^* = \lambda^*AXvT^{-1}(1/vX) + \alpha LXvT^{-1}(1/vX)$$

Define $\Omega = XvT^{-1}(1/vX)$ and substitute:

$$\lambda^* = \lambda^*A\Omega + \alpha L\Omega$$

Solve[16] for λ^*:

$$\lambda^* = \alpha L\Omega[I - A\Omega]^{-1} \qquad (7.23)$$

The form of the expression $L\Omega[I - A\Omega]^{-1}$ resembles the calculation of concrete labours embodied in commodities that is imposed by Krause and Steedman, but with a difference: here the calculation proceeds not from the actual technological coefficients (A, L) but from a 'transformed' set of input coefficients ($A\Omega$, $L\Omega$). What are we to make of this hypothetical 'technology' given by $A\Omega$, $L\Omega$?

Matrix Ω is a function of v and α (contained in T^{-1}), which are in turn derived above simply from the physical data and λ_K^m (itself directly implied by the form of capitalist exchange equivalence). Since Ω is formed from the product of two vectors, it is of rank 1; that means that $A\Omega$ and $L\Omega$ are similarly of

rank 1 – the columns (and rows) within each are directly proportional. There is then in Marx's sense a uniform 'composition of capital' since the proportions between physical inputs are uniform across industries.[17] Each commodity is viewed as being 'produced' by means of the same proportional combination of means of production and concrete labours, so each is 'produced' under what effectively are *average* conditions, that is, conditions that mirror the aggregate input structure of the actual economy. Given the definition of Ω and the fact that $v\mathbf{T}^{-1}\mathbf{X} = \lambda^*\mathbf{X} = v\mathbf{X}$ (the latter equality was imposed above as an accounting convention), $\mathbf{A}\Omega\mathbf{X} = \mathbf{A}\mathbf{X}(v\mathbf{T}^{-1}\mathbf{X}/v\mathbf{X}) = \mathbf{A}\mathbf{X}$ and similarly $\mathbf{L}\Omega\mathbf{X} = \mathbf{L}\mathbf{X}$. Thus an economy operating with hypothetical technology $\mathbf{A}\Omega$, $\mathbf{L}\Omega$ would absorb precisely the same aggregate quantities of means of production and concrete labours as with the actual technology from which it is derived. The difference is simply in the microallocation of those inputs: hypothetical technology $\mathbf{A}\Omega$, $\mathbf{L}\Omega$ associates each good with its own *pro rata* share of the economy's total inputs, as if all were produced under the same *physically average* conditions. For example, postmultiplication of $\mathbf{A}$ by Ω sums the total means of production ($\mathbf{A}\mathbf{X}$) and then allocates them to each industry in proportion to the elements of vector $(1/v\mathbf{X})v\mathbf{T}^{-1}$, which defines the 'share' allotted to each commodity. This 'share' vector can be expressed in terms of λ^* as $(1/\lambda^*\mathbf{X})\lambda^*$. But note that since λ^* expresses production prices, and since each production price is by definition an equiproportional mark-up on the capital advanced, the elements of the 'share' vector amount to the share of each industry's per-unit *capital* in the total *capital* advanced.[18] Thus, the hypothetical technology given by $\mathbf{A}\Omega$, $\mathbf{L}\Omega$ represents the input structure of each industry in physical terms as the 'aliquot part of the total social capital [which] is invested in each particular sphere of production' (Marx 1981:262).

The image of each commodity or capital as an 'aliquot part' of the social whole is frequent in Marx's writings. He lays the general groundwork for the image as follows:

> The commodity as it emerges from capitalist production, is different from the commodity taken as the element, the starting point of capitalist production. We are no longer faced with the individual commodity, the individual product. The individual commodity, the individual product, manifests itself not only as a real product but also as a commodity, as a *part* both really and conceptually of production as a whole. Each individual commodity represents a definite portion of capital and of the surplus-value created by it. [Marx 1971b:112–13]

The image is then invoked in one form or another almost every time Marx considers the formation of production prices based on an average rate of profit.[19] For example, he writes:

> It is through the equalisation of the profits of the different capitals that they are connected with one another as aliquot parts of the aggregate social capital, and as such aliquot parts they draw dividends out of the common funds of surplus-value (surplus product), or surplus labour, or unpaid labour. [Marx 1971b:82]

And: 'the average profit which a capital ... yields in a certain trade it yields not as the capital employed in this particular way, not in the proportion, therefore, in which it itself produces surplus-value, but as an aliquot part of the aggregate capital of the capitalist class' (Marx, cited in Baumol 1974:55). The frequency of this image suggests that this is fundamental to the way Marx thinks about the effects of capitalist equivalent exchange; each industry, each capitalist, and even each commodity becomes effectively the representation of a fraction of the whole, distinguished only by the size of the share of the whole that each represents.

Equation (7.23) above is *precisely a formalisation of this repeated Marxian image*. The hypothetical technology $A\Omega$, $L\Omega$ presents each commodity as the product of an 'aliquot part' of the total capital, a physically homogeneous and therefore socially average share of the total social means of production and concrete labours employed. *As such*, each commodity embodies a particular complex of concrete labours given by the columns of $L\Omega[I - A\Omega]^{-1}$. The summation, by means of α, of these concrete labours embodied yields λ^*, the capitalist exchange-value or price of production of the commodity. And, as Marx suggests, the unpaid portion of the average labour associated with the commodity ($L\Omega$), the surplus value it contains when viewed as the product of an aliquot part of the total social capital, is precisely the average profit.[20] Equation (7.23) thus makes it explicit that production prices *are themselves* a particular sort of embodied labour magnitude – the abstract labour expression for the concrete labours embodied when each commodity is regarded as simply an average fraction of total social production. Exchange-value (λ^*) is indeed, as Marx (1976a:176) argues, 'a definite social manner of expressing the amount of labour bestowed on a thing'.

Because of this, the relation expressed in (7.23), $\lambda^* = \alpha L\Omega[I - A\Omega]^{-1}$, represents a new way to conceive the process of 'transforming values into prices of production': first, solve for values v as described above (which, when accomplished via the second solution sequence above, involves no explicit reference to or solution for production prices λ^*); then, use v to define Ω and 'transform' the technological conditions of production to identify each commodity with its 'aliquot part' of the total social inputs ($A\Omega$, $L\Omega$); finally, solve for production prices (λ^*) *as* the socially *average* quantities of labour embodied under these conditions.[21] The transformation of values into prices of production is thus equivalent to transforming the traditional expression (7.2) for values as

embodied labour, $\lambda = \alpha L[I - A]^{-1}$ (valid only under the Volume I assumption of value-equivalent exchange), into the price of production expression $\lambda^* = \alpha L\Omega[I - A\Omega]^{-1}$. Or, to put the same point differently, the transformation of values into prices of production is equivalent to a transformation of *actual* production conditions A, L (on the basis of which the social labour contained in the commodity is its *value*) into socially *average* or 'aliquot part' production conditions $A\Omega$, $L\Omega$ (on the basis of which the social labour contained in the commodity is its *production price*).[22]

But this is only half the story. λ^* does indeed represent production prices as the labour embodied under 'aliquot share' production conditions, but it does so precisely by 'averaging' the various concrete labours performed in a way that makes them directly comparable, indeed homogeneous, between commodities. Matrix $L\Omega[I - A\Omega]^{-1}$ associates each commodity with a complex of concrete labours; the columns of this (rank 1) matrix are all proportional – the elements of each column are, in fact, in the same proportions as the elements of LX, the aggregate of social concrete labours performed; the differences between columns are strictly differences of magnitude, since in terms of composition they are homogeneous expressions of concrete labours at the aggregate social level. Thus λ^*, expressing exchange-value (here, production price), is associated with a matrix of concrete labours 'in which [commodities] all present themselves as materialised forms of the *same* labour, as only quantitatively different expressions of the *same* substance' (Marx 1971b:130).

I interpret matrix $L\Omega[I - A\Omega]^{-1}$ as the concrete labour form of what Marx calls 'the labour ... which is represented in exchange-value' (1971b:139); and if we give it the symbol Λ defined above with that meaning (i.e. $\Lambda = L\Omega[I - A\Omega]^{-1}$), we can rewrite (7.23) as identical to (7.7), the initial specification of the commodity in terms of abstract labour:

$$\lambda^* = \alpha L\Omega[I - A\Omega]^{-1} = \alpha\Lambda$$

It was argued above that Λ, expressing the concrete labours contained in the commodity's exchange-value, must be endogenously derived rather than directly given by production and distribution data independent of exchange equivalence, and the specification $\Lambda = L\Omega[I - A\Omega]^{-1}$ fulfils that requirement. Moreover, since the columns of Λ are in the proportions of the aggregate concrete labours LX, each is in itself 'socially average' and thus (as in the aggregate equation (7.10)) the simple sum of column elements is identical to the summation by means of α. Thus

$$\lambda^* = \alpha\Lambda = u\Lambda = uL[\Omega\{I - A\Omega\}^{-1}] = u[LX][(vT^{-1}/vX)\{I - A\Omega\}^{-1}] \qquad (7.24)$$

The private, concrete labours of individuals (L) are thus 'transformed' by the

act of equivalent exchange, in which each commodity appears simply as an 'aliquot part' of social production, into socially average concrete labours (Λ), the simple sum of which expresses each commodity as abstract labour.

Indeed, while the relations in equation (7.24) have been presented as a formalisation of Marx's 'aliquot part' imagery concerning capitalist production prices, these same relations bear directly on another image he uses in an explicit consideration of 'the specific manner in which the social character of labour is established' (Marx 1970:30). The direct context involves a contrast between 'individual' and 'universal' labour time, but he is clearly continuing the discussion of the 'reduction' that commensurates concrete labours on a homogeneous scale as abstract labour, the ultimate objective being 'to express the exchange-value of commodities by the labour they contain' (Marx 1970:30). He says: 'The effect is the same as if the different individuals had amalgamated their labour-time and allocated different portions of the labour-time at their joint disposal to the various use-values' (Marx 1970:32). Consider this statement in detail: individuals, *as such*, have only *concrete* (private, particular, individual) labours to dispose of; if they were to 'amalgamate' those concrete labours, the result is the aggregate total of concrete labours available 'at their joint disposal'; if they were then to 'allocate different portions' of that aggregate to particular commodities, each such portion would be a quantitatively distinct but *qualitatively identical* 'share' of the total, a vector of labours 'of uniform quality, whose only difference, therefore, is quantity' (Marx 1970:30).

Equation (7.24) formalises this 'amalgamate and allocate' process for a competitive capitalist economy. Evaluating labours embodied under 'aliquot part' technological conditions effectively aggregates or 'amalgamates' concrete labours and then 'allocates' a specific portion to each commodity; the columns of the resulting matrix $L\Omega[I - A\Omega]^{-1}$ thus represent the socially average and therefore qualitatively *homogeneous* concrete labours that are directly and indirectly contained in its exchange value. And *because* these concrete labours are socially average in composition, they can be added up as they are – the 'effect is the same as if' these private, individual, and concrete labours were *immediately* social and universal-*abstract*-labour.

Of course, Marx's concerns in employing each of these images appear to be quite different. His 'aliquot part' imagery occurs in considering the formation of production prices different from values and the redistribution of surplus value that occurs within capitalist competition; abstract labour is never referred to explicitly in any of Marx's usages of the image. The 'amalgamate and allocate' image, on the other hand, refers to the formation of abstract labour as the expression of the social character of the (concrete) labours of private individuals; in this context, the particulars of capitalist pricing are far from Marx's mind. Yet despite the seeming unrelatedness of these images, equation (7.24) is implied by each: each of the images has exactly the *same formal implications*,

given only that exchange is characterised by the production prices that are the particular 'form of value' in competitive capitalism.

The reason for this formal congruence is Marx's approach to the individual capitalist commodity as simply a definite *fraction* of the total social output of commodities, 'a *part* both really and conceptually of production as a whole' (1971b:112–13). By its nature that fraction or 'aliquot part' expresses the consequences of exchange (the commensuration of different physical use-values on a homogeneous scale). But that fraction, made visible in exchange, simultaneously identifies each commodity with the same fraction of the total social inputs. Each commodity is not only the product of its own industry-specific production conditions (as such, it is a value), it is also, as a bearer of exchange-value, simply the product of a specific aliquot share of the aggregate means of production and concrete labours employed. And as such, as a product in this latter sense, it represents a particular magnitude of abstract labour, the simple sum of the concrete labours that it contains when viewed *not* as itself, but as a *part of the whole*, with the average characteristics of that whole. The expression of the commodity as an *exchange*-value – as commanding a particular money (or commodity) equivalent in exchange – is thus the means by which it is reduced to a quantum of homogeneous human (abstract) labour, and what makes these equivalent expressions is the fact that both in the end boil down to alternative expressions for the commodity as an 'aliquot part' of the whole.

7.4 CONCLUSION

In the discussion above, the repeated references to the significance of the exchange process may perhaps lead to certain misconceptions. Hence, I should state clearly that, as with Marx, it is living labour that produces commodities by transforming nature and produced materials and means of production, and it is therefore living labour that, in that process, produces value. Exchange, in itself, *produces* nothing. But, I argue, the *extent* to which any *particular* concrete act of labouring creates value in its particular sphere, the extent to which it 'counts' as social labour, is not a matter determined solely within production. 'Universal social labour is … not a ready-made prerequisite', i.e., not there to be seen directly within production and measured directly by the clock as a 'point of departure' for value-theoretic analysis.[23] The concrete labours visible in any particular production process (the elements of matrix L) do directly produce a particular *use*-value, but they cannot be directly counted as they are as creators of *value*. Instead, concrete labours must be 'transformed' into socially *average* concrete labours before they can be counted directly as constituents of value and exchange-value. This is where exchange comes in – not as itself the creator of anything but as the social mechanism through which this

'averaging' process occurs. The exchange process is not and should not be viewed as 'merely formal' – to do so, Marx (1971b:139) says, is to follow Ricardo, who 'confuses the labour which is represented in use-value and that which is represented in exchange-value'. Instead, exchange is an unavoidable part of the larger social process constitutive of the specific form in which 'labour' is an element of value.

As shown, the system above can be understood (via equation (7.24)) as one which 'transforms' concrete hours of direct labour (L, 'the labour which is represented in use-value') into socially average concrete hours ($L\Omega[I - A\Omega]^{-1}$), each of which can, because of its average nature, be counted directly as part of 'the labour ... which is represented in exchange-value'. I make no claim that Marx would recognise the system presented here as his own, but there is something very 'Marx-like' about the notion that both the capitalist distribution of surplus value and the abstract labour unit for conceiving value and surplus value can and should be approached as issues requiring a conception of the commodity as an 'aliquot part' of the social whole, a representation of the *average* conditions obtaining in the aggregate economy. Clearly Marx did not have both problems in mind in his repeated use of that image, and yet that conception is useful not merely for the purpose Marx intended – to comprehend the process whereby surplus labours are 'averaged' into the capitalist profit realised in prices of production – but also in comprehending the (only apparently) different process by which private, individual, concrete labours are amalgamated and allocated, and thus 'averaged' into the abstract labour which attaches to commodities in exchange. Given competitive capitalism, these two processes are really one and the same process – neither is prior to or essentially different from the other. Both involve the commensuration of initially heterogeneous things: prices of production accomplish the commensuration of heterogeneous use-values as equivalents in terms of their worth in capitalist exchange; abstract labour accomplishes the commensuration of the concrete labours associated with those use-values as equivalents in terms of the value created in capitalist production. If one is accomplished, so is the other.

NOTES

1. Marx uses the term 'cost-price' here for what he later called 'price of production'. Since the meaning is clear, I have substituted the latter term in brackets.
2. The concept of abstract labour as an 'induced relation' of this sort was first systematically developed by Krause (1982).
3. The $m \times n$ matrix L below expresses the average amount of concrete labour performed by m different types of labour-power in producing each unit of n different commodities. Multiple non-zero entries in a single column express the 'detail' division of labour within the industry, employment of different types of labour-power, typically of different degrees of 'complexity', in the production of a single use-value. Multiple non-zero

entries in a single row (which may or may not occur, depending on the nature of technology and the level of specificity of the analysis) represent the simultaneous use of some distinct type of labour-power (truck driver, carpenter, draftsperson) in the production of different use-values.

4. Krause assumes L is an $n \times n$ diagonal matrix, where n is the number of commodities, so that each commodity is assumed to require labour performed by a single unique and distinctive type of concrete labour-power. Except when referring explicitly to Krause, I will use L more generally to designate the $m \times n$ matrix described in note 3 above.
5. Again, for Krause α is a $1 \times n$ vector (see previous note). I will (again, except when referring to Krause) treat α as a $1 \times m$ vector, the abstract labour represented by an hour of concrete labour of each of the m types of labour-power.
6. It is worth stressing that B need not be taken to impose any assumption about the actual consumption patterns of workers. B simply expresses the historically contingent outcome of a 'wage bargain' – workers are to be paid so as to permit a certain standard of real consumption; their actual pattern of demands is an entirely separate question.
7. Curiously, Steedman seems not to recognise this difference. He uses what he refers to as 'Krause's standard reduction' (Steedman 1980:9), but in fact the presence of given real wage bundles forces him to determine α in a manner different from Krause; see below.
8. Steedman is explicitly concerned with the general case in which $L[I-A]^{-1}B$ and its counterpart $BL[I-A]^{-1}$ may be reducible, but for simplicity I will here ignore those issues and assume both to be irreducible.
9. 'How, then, is the magnitude of this value to be measured? By means of the quantity of the "value-forming substance", the labour, contained in the article' (Marx 1976a:129). This does not in the least contradict the notion dear to many that value can often usefully be expressed in terms of money, and that Marx frequently does just that. The point is simply that a money measure is an alternative to but not a substitute for a labour-time measure. Thus, just as Marx at different times conceives exchange-value in terms of physical commodities, or money, or labour-time, he measures value in similarly diverse units. However, the importance Marx attached to the concept of abstract labour, and to value measured in labour-time, can be grasped by noting that the quotation above appears in Volume I before any *mention* (let alone analysis) of money.
10. The technical conditions summarised in A and L represent 'the given average social conditions of production', 'the average of the total capital in [each] sphere' (Marx 1981:780, 243), so that, should there be differences among the firms in each industry in terms of technique or form of organisation, the columns of A and L express the sum of the per-unit input requirements of each firm weighted by the fraction of total industry output accounted for by that firm. Cf., among many possible citations, Marx (1976a:433–8, 1981:300–1, 779–82).
11. Equation (7.8) and all subsequent relations are based on the premise of simultaneous valuation (rather than a 'sequential' or 'temporal' approach). This is not a simplifying assumption, and it is definitely not in any sense a restriction requiring special-case circumstances (neither 'market-clearing' nor 'static' conditions are assumed); it is a choice made for what I take to be compelling Marxian *conceptual* reasons. In my view, Marx's theory of production prices different from values is designed to elaborate the structure of capitalist equivalent exchange at the current point in time, the (singular) set of exchange rates consistent with the production and (re)distribution of value and surplus value on a competitive capitalist basis. Production prices so derived can be viewed as 'centres of gravity' for market prices, but they are not intended to be actual ruling prices or to correspond to the historically contingent situation of capitals in any discrete time period. Those who employ a sequential or temporal approach make a different choice and have their own different reasons for doing so. I do not find those reasons compelling, so critiques of my approach that are based on the premises or logic of sequentialism are, to me, similarly uncompelling.

12. In Roberts (1997), Appendix 1 demonstrates this for the case of homogeneous labour by considering the various forms of T which might give rise to singularity. The necessary substitutions involve reference to the specific form of exchange equivalence; this means that in considering the 'Volume III world' of competitive capitalism, some of the physical quantities in the modified T will be functions of λ_K^m, the maximum eigenvalue of matrix K = A + BL. Since the purpose of the exercise is to allow the determination of v, and v (as will be argued) depends on λ_K^m in this case anyhow, this does not present any problems. With heterogeneous varieties of labour performed by distinct types of labour-power, the only difference is the presence of α within T, which complicates computation but is irrelevant to the theoretical existence of a modified non-singular T capable of inversion. Of course, some of the elements of T^{-1} will typically be negative, a fact which, while perhaps disconcerting, is not conceptually problematic. Negative elements 'can be interpreted, by analogy with the accounting concept, as liabilities or debts, while the positive components will be regarded as assets' (Sraffa 1960:48), so that the bundle as a whole, as a composite of assets and liabilities, is still a meaningful physical construct whose value expresses λ^*.
13. There are many places in Marx's writings in which he explicitly or implicitly asserts a uniform proportionality between the payment made to a particular labour-power and the value created by the (concrete) labour then performed. He reasons (Marx 1976a:305), for example, that labour-power of greater 'complexity', having 'cost more' to produce, has a greater value (which is then reflected in the wage paid as an equivalent for the value). He then argues that, 'being of higher value, it expresses itself in labour of a higher sort, and therefore becomes objectified, during an equal amount of time, in proportionally higher values' (Marx 1981:305). Here, the higher-paid labour-power creates value '*proportionally*' greater in relation to the payment made for its value (i.e., α_j is proportional to the 'paid labour' of this *j*th labour-power). Note that, while it is not the higher wage paid that *causes* α_j to be greater – it is the greater complexity of the labour-power that results in both the higher wage and the larger α_j – the α for this type of labour-power is nonetheless proportional to the value paid for it. Similar logic is employed elsewhere as well; see, for example, Marx (1963:91; 1968:27, 384; 1971b:165, 231).
14. The columns of B, taken here as data, define a uniform real wage for sellers of each particular type of labour-power. Thus, should any row of L contain more than one positive entry (truck drivers employed to deliver both vegetables and auto parts), it is assumed here that all sellers of this type of labour-power receive the same wage payment, irrespective of the industry in which they are employed, and that the labour they perform creates value of the same magnitude during equal amounts of worktime, again irrespective of the industry in which that labour is performed. None of these are necessary assumptions; all can, and, I would argue, should be relaxed (Marx does typically assume uniform exploitation, at least if workday differences are ignored, but personally I view that premise as overly restrictive). The general approach developed in this chapter can be extended to incorporate the differential rates of exploitation resulting from extraction of absolute surplus value, differential wages for any particular type of labour-power simultaneously employed in different industries, and so on. So the assumption here of a uniform social *e* is made for brevity and simplicity rather than of necessity, but it is still an assumption thoroughly consistent with Marx's common practice.
15. I will not pursue this assumption here, but it is interesting to note that if one imposes value-equivalent exchange as the norm, the result is that the solutions for λ^* and v both turn out to be $\alpha L[I - A]^{-1}$, and with a uniform *e* the rest of Steedman's solution described above holds as well. But this is a *consequence* of the assumption of value-equivalence rather than a general property of the concepts employed.
16. If we restrict attention to meaningful capitalist cases in which *r* and all prices are strictly positive, Ω is non-negative and of rank 1, and therefore so is $A\Omega$. This means that the only non-zero eigenvalue of $A\Omega$ is given by its trace (the sum of the elements on the main diagonal). Given the simple form of $A\Omega$, $tr(A\Omega) = vT^{-1}AX/vX < 1$, which guaran-

tees that $[I - A\Omega]^{-1}$ exists and is non-negative.

17. See Marx (1968:433): 'Each capital, therefore, in each particular branch, represents a portion of a total capital of the same organic composition'.
18. From (7.20), $\lambda^* = \lambda^*Km$, so $(1/\lambda^*X)\lambda^* = (1/\lambda^*KXm)\lambda^*Km = (1/\lambda^*KX)\lambda^*K$, which expresses the share of each industry's per unit capital in the total capital advanced.
19. In addition to the quotations following, a partial listing includes Marx (1968:433; 1971b:81–2, 87, 112–13; 1981:258, 262, 274, 280, 312).
20. Surplus value per unit of output in the actual economy is given by $s = [\alpha - \lambda^*B]L$, the excess of value created by concrete labours over the equivalent paid for the wage bundles of workers. Postmultiplication of s by Ω sums the total surplus value and allocates it to each commodity in proportion to capital advanced, so $s\Omega$ expresses profit per unit in abstract labour terms. Thus, when each commodity is viewed as the product of an aliquot share of the total concrete labours ($L\Omega$), the unpaid portion $[\alpha - \lambda^*B]$ of those (average) labours performed is itself identical to the profits each capital actually realises. For further discussion, see Roberts (1997).
21. See Roberts (1997) for a more extended discussion that interprets $A\Omega$, $L\Omega$ as a Marxian 'standard technology', an analytical tool with some parallels to but also major differences from the Sraffian 'standard commodity'.
22. I think these results may be of interest to 'non-dualists' of all varieties. Since its initial published appearance in Wolff *et al.* (1982), the general approach to value as constituted by the 'value paid' for the consumed means of production has been developed in a variety of different directions; some employ simultaneous valuation (Roberts 1987, Ramos 1991, Lee 1993, Rodriguez 1994b), and others sequential valuation (Carchedi 1984, Kliman and McGlone 1988, Freeman 1996c). All, however, have surely encountered the (misguided) objection that this approach to value results in a dimensionally 'mixed' expression or a 'transformation of production prices into values'. The fact that values v here can be derived without reference to or solution for production prices, and that production prices themselves express socially average labour embodied, should help to forestall such criticisms.
23. Marx (1970:45); he elaborates on this point later in his critique of the 'labour money' scheme advanced by Gray, who, Marx says, 'presupposes that the labour-time contained in commodities is *immediately social* labour-time' (Marx 1970:85). The particular misconceptions that led the bourgeois reformer Gray to assert this view clearly are not shared by those contemporary Marxists who similarly assert that the labour of workers in capitalist production is immediately abstract as well as concrete, but Marx's (1970:85–6) response to Gray is still appropriate: 'The dogma ... that the particular labour of a private individual contained in [a commodity] is immediately social labour ... does not of course become true because a bank believes in it', and neither does such an assertion become true because it is made for what, in another context, might be eminently Marxist reasons. It is certainly true that every hour of productive labour in capitalism has a dual character, both concrete (resulting in use-value) and abstract (resulting in exchange-value). But this does not make the *measure* of the former *identical* to the measure of the latter; a measured hour of some particular labour will never, except by fluke, count as precisely an hour of abstract labour. A particular individual labour is *never* 'immediately social labour'; on the contrary, it 'becomes materialised universal labour-time only as the result of the exchange process' (Marx 1970:45).

8 The Duality of Labour[1]

Ted McGlone and Andrew Kliman

> [A]s long as the determination of value by labour time is itself left 'undetermined', as it is with Ricardo, it does not make people shaky. But as soon as it is brought exactly into connection with the working day and its variations, a very unpleasant new light dawns upon them.
>
> [Marx 1987b:514]

8.1 INTRODUCTION

Marx inherited his usage of *concrete* (complex unity of diverse elements) and *abstract* (separated from this complex unity) from prior philosophers, Hegel especially. During the past generation, however, discussions of Marx's concepts of concrete and abstract labour have often discarded these meanings. All too often, 'concrete labour' now seems to be construed as 'work that workers actually do', so that 'abstract labour' becomes ineffable, something other than what workers do, but still somehow a kind of labour. This and other changes of usage have greatly exacerbated the confusion surrounding Marx's concepts.

The changes in usage themselves, however, do not merely stem from confusions. Clever terminology has been used to evade, rather than rigorously disprove, allegations that the quantitative dimension of Marx's value theory is internally inconsistent. The determination of value by labour-time becomes immune from critique but also devoid of significance – once the abstract labour that determines value is itself determined in the market, not on the factory floor where 'concrete' labour is pumped out of workers. Terminological innovation has also been motivated by attempts to bring Marx's concepts into conformity with bourgeois, Stalinist, and social-democratic thinking, according to which capitalism's *differentia specifica* is the market, not its historically specific production relations. As the source of value is shifted, from the work that workers actually perform to the market where labour is supposedly made abstract, relations between things displace human activity from the central role it has in Marx's work.

This chapter argues to the contrary that Marx held that workers' labour in the capitalistic production process is made abstract by, and is abstract within,

this process. Their actual activity is therefore simultaneously abstract, value-creating, labour as well as concrete labour. Although market processes also enforce the abstraction of labour, it is not exchange of its products that makes labour abstract. Workers' labour is abstract *before* the products they produce are sold; consequently, commodities' values are determined in production, before their sale.[2]

Bruce Roberts' chapter likewise holds that value is created in production, but tries to reconcile this with the notion that labour becomes abstract in the market. We argue in section 8.2 that this attempted synthesis is untenable. In order to explain how all the work of workers is abstract within capitalist production, even though complex and simple labour create different amounts of value, section 8.3 argues that complex and simple labour are both abstract labour. The reduction of complex labour to a multiple of simple labour depends on the *separate and prior* reduction of concrete labour to abstract labour. Section 8.4 discusses how Marx quantifies the magnitude of abstract labour independently of the exchange of its products. Finally, in section 8.5, we discuss why, although abstract labour is what Marx (1976a:992) calls *'real work'*, it is nonetheless a specifically capitalistic phenomenon: capitalism's historically specific mode of *production* is what makes labour abstract.

8.2 ROBERTS' CONTRIBUTION

We would have little disagreement with Roberts' chapter had it simply argued that, due to varying complexities of labour and other factors, the actual duration of a worker's abstract labour can differ from the socially necessary duration that counts as value-creating, and had it clearly stated that the latter depends on production norms rather than relative wages. Our objection therefore pertains less to what seems to be its substantive argument than to its perpetuation of the confusion that surrounds the meaning of such key concepts of Marx's as abstract and concrete labour, simple and complex labour, and socially necessary labour-time.

Like much other recent work, Roberts attributes to Marx what he calls 'the equivalence thesis: concrete labours become abstract labour only as the result of the exchange process'. The exchange of the products of labour is what makes the otherwise concrete labours that produced them homogeneous and abstract.

Yet Roberts' interpretation is distinctive; in attempting to reconcile the equivalence thesis with Marx's theory, he refrains from the doubletalk often used to blur the concept of value creation. Acutely aware that his interpretation cannot be considered authentic if it implies that value arises in the market instead of in production, Roberts states forthrightly that, in Marx's theory, '[n]ew value is ... created only in production, by living labour performed'.

Now, if *abstract* labour is what creates value, this statement and the equivalence thesis are contradictory. If value is created in production, then labour must already be abstract there, before its product is exchanged. If, however, the exchange of its product is what makes an act of labour abstract, then value is 'created' with that exchange.

Aside from linguistic subterfuge, the only way to escape this dilemma is to deny that abstract labour creates value. *It is therefore no accident that Roberts claims that 'value [is] created by newly performed* ***concrete*** *labours'* (emphasis added). *He advances this claim precisely because no other escape from the dilemma exists.* So crucial is it to his attempted reconciliation of the equivalence thesis with Marx's value theory that Roberts invokes it no fewer than 11 different times. Indeed, once the claim is accepted, the dilemma is immediately resolved: value is first created in production, by concrete labour, and the labour subsequently becomes abstract through the exchange of its product.

Yet the claim contradicts Marx's theory. Marx held that, just as qualitatively different labours produce qualitatively different use-values, homogeneous, abstract human labour produces the homogeneous, abstract, social substance, value. Many passages could be cited to demonstrate this; we have space only for a few:

> ... all labour is an expenditure of human labour-power, in the physiological sense, and it is in this quality of being equal, or abstract, human labour that it forms the value of commodities. ... it is in [its] quality of being concrete useful labour that it produces use-values (Marx 1976a:137).

> ... the tailoring which makes the coat is concrete labour of a different sort from the weaving which makes the linen. But ... weaving too, in so far as it weaves value, has nothing to distinguish it from tailoring, and, consequently, is abstract human labour (Marx 1976a:142).

> ... the addition of new value takes place not by virtue of [the worker's] labour being spinning in particular, or joinery in particular, but because it is labour in general, abstract social labour ... (Marx 1976a:308).

Roberts suggests that we are 'beg[ging] the questions' by not accepting the equivalence thesis as Marx's own. Yet isn't the authenticity of this interpretation precisely the question at hand? Although there surely do exist passages that Roberts construes as confirming his interpretation, the real test of authenticity is whether evidence and/or reasoning can *disconfirm* it. Since we have shown that the equivalence thesis is incompatible with the proposition that abstract labour creates value, and that Marx affirmed the latter, we submit that the claim that the equivalence thesis is Marx's has been disconfirmed.[3]

8.3 CONCRETE AND ABSTRACT LABOUR VERSUS COMPLEX AND SIMPLE LABOUR

Separability and Priority

In this section, we will show that complex and simple labour are *both* abstract labour, and that the reduction of complex to simple labour thus presupposes the independent and prior reduction of concrete to abstract labour.

Imagine two kinds of weaving-labour, simple and complex, and assume one can somehow determine that each hour of the complex counts as equal to 2 hours of the simple. Suppose that 10 hours of simple weaving-labour are extracted, and 3 hours of the complex. Then, by reduction, the amount of simple weaving-labour = $1 \times 10 + 2 \times 3 = 16$.

Similarly, assume that one can somehow determine that each hour of complex tailoring-labour counts as equal to 4 hours of simple tailoring-labour, and that 12 hours of the simple and 5 hours of the complex are extracted. Then, by reduction, the amount of simple tailoring-labour = $1 \times 12 + 4 \times 5 = 32$.

Now, how much total *labour* is done? We can't add 16 simple weaving-hours to 32 simple tailoring-hours – they are concretely different.[4] We can't say that twice as much simple tailoring-labour is done as simple weaving-labour – again, we'd be comparing apples and oranges. Nor can we say that the complex tailoring-labour is twice as complex as the complex weaving-labour, or even that an hour of the simple weavers is equal to an hour of the simple tailors.

The *only* way to make any quantitative comparison across industries is if we are already talking about abstract labour. If it is the case, for instance, that 1 hour of simple weaving-labour and 1 hour of simple tailoring-labour each equal 1 hour of simple abstract labour, then the weavers do 16 hours of abstract labour, half as much as the 32 hours extracted from the tailors, the total labour extracted is 48 hours, and so on.

This example shows clearly that the concrete/abstract question is separate from the complex/simple question. Even after one knows the amounts of simple weaving-labour and simple tailoring-labour extracted, one doesn't have a clue as to the amounts of simple *general* labour, 'labour-as-such', extracted – unless the weaving and tailoring have both been already reduced from concrete to abstract.

The example also shows that concrete/abstract is 'prior to' complex/simple in the sense that one needs the former reduction to say anything about the latter across different kinds of concrete labour, but the converse is not true. When we refer to simple and complex labour, we do not refer to simple weaving-labour or complex tailoring-labour, and so on, but to simple and complex labour-as-such. The commensuration of labours that produce different use-values is al-

ready *presupposed*. When we computed the amounts of abstract labour extracted, however, although we needed to presume a knowledge of skill differences within each industry, we did not first have to reduce complex *labour-as-such* to simple *labour-as-such*.

Complex labour can be compared to, and thus reduced to a multiple of, simple labour, *only* because they lack any qualitative difference, i.e., only because both are abstract labour. As Marx (1976a:140–41) noted, 'the magnitudes of different things only become comparable in quantitative terms when they have been reduced to the same unit'.

Yet although the labours of, say, a doctor and a janitor clearly differ, can't we nonetheless compare them – for instance, by noting that the former is more skilled? Let us see. Certainly their labours are different insofar as the concrete purposes and nature of their activities differ. Certainly the doctor differs from the janitor, in part because the doctor's labour-*power* is more skilled, if skill were to be measured in terms of necessary training-time. When, however, we consider doctoring-*labour* and janitoring-*labour* as labours of different kinds, it is meaningless to ask whether one is more skilled or complex than the other. Like can only be compared with like.

To compare the relative complexity of these two labours, their qualitative differences must thus be set aside. Social relations must also be such that it is meaningful to reduce the two labours to something which is neither the one nor the other, but a 'third thing' that is common to both of them, labour in the abstract. (This argument, of course, is virtually identical in structure to Marx's (1976a:126–8) derivation of value as the 'third thing' or 'common element' to all commodities. Immediately following it, he indicates that abstract labour is derived in the same way, as the element common to all particular types of labour.)

Did Marx Need to Reduce Complex to Simple Labour?

The above discussion has made no pretence of having provided a quantitative rule for the reduction of complex to simple labour. It has, however, provided a conceptual basis for specifying such a rule, by clarifying that both complex and simple labour are abstract labour and that the reduction of complex to simple labour presupposes the separate and prior reduction of concrete to abstract labour.

By disentangling it from the concrete/abstract issue, the above discussion has also helped put the complex/simple issue in proper perspective. Marx did not provide a rule to solve the latter reduction. Much of the literature suggests that many of the conclusions of *Capital* are called into question until and unless such a rule is found. Because real-world labouring activities are carried out by workers of different degrees of skill, while the value categories of *Capital* are particularisations of the category of abstract labour, Marx's value analy-

sis of capitalism is said to lack a real-world foundation in the absence of a determinate complex-to-simple labour reduction. Were that the case, we agree that it would indeed be possible to accept Marx's abstract labour reasoning only after such a reduction rule were found.

Once the two reductions are understood as being distinct, however, it is no longer necessary to specify a rule for the reduction of complex to simple labour before one can accept the real-world existence of abstract labour. The complex/simple issue loses the character of a theoretical problem and becomes a measurement problem, specifically an index number problem. For an analogy, note that government statisticians attempt to quantify how many cars of some base year are equivalent to one 2001 car of presumably higher quality. Guesswork and arbitrary assumptions are involved, but the measurement difficulties cause no one to believe that this calls into question the idea that 'cars' exist, as do 'autoworkers' who produce them,[5] or the idea that the number of cars increases if more are produced than are consumed. Similarly, the measurement difficulties involved in attempting to quantify the relationship between complex and simple labour should cause no one to believe that this calls into question the idea that 'value' exists, as does 'abstract labour' which produces it, or the idea that value self-expands if more is extracted from workers than they receive.

Thus, none of *Capital*'s theoretical results depend on the specification of a rule for the reduction of complex to simple labour. Just as it would be trivial and unnecessary for an analysis of the essential relations and historical development of auto production to solve the car-quality index number problem, for Marx to have carried out the quantitative reduction of complex to simple labour in his analysis of capitalist production would indeed have been a 'superfluous operation' (Marx 1976a:306).

8.4 QUANTIFYING ABSTRACT LABOUR

The Dual Character of an Hour of '*Real Work*'

It was theoretically imperative, on the other hand, that Marx specified the amounts of abstract labour extracted during each clock-hour from workers who produce different use-values. He did so right at the beginning of *Capital*, via the concept of socially necessary labour-time (SNLT). Each hour of work of a simple labour-power, working at average intensity and under average technological conditions in the industry, is one hour of abstract, socially necessary labour (Marx 1976a:129). Assuming, for instance, that weaving and tailoring are both performed by simple labour-powers, then, at the industry level, the amount of abstract labour extracted during each clock-hour equals 1 hour in both cases. Only if the abstract labour of those engaged in weaving is, on

average, more or less complex than the abstract labour of those engaged in tailoring can the amounts of abstract labour extracted differ across industries.[6]

Thus, given that an hour of concrete labour is exactly the average, socially necessary amount, this hour *is likewise* an hour of abstract, value-producing labour. The labour of workers in capitalist production is *immediately* abstract as well as concrete. This is because the worker's activity has a 'dual character' (Marx 1976a:131); s/he does abstract and concrete labour in the same act. As Marx (1976a:991–2) wrote in the *Resultate*:

> the labour process is single and indivisible. The work is not done twice over, once to produce a suitable product, a use-value, to *transform* the means of production into products, and a second time to generate *value* and *surplus-value*, to *valorize value*. ... All that is contributed is the labour of spinning, and so on, and through this contribution more yarn is continually produced. This *real* work creates value only if it is performed at a normally defined rate of intensity (or in other words it only *pays* as long as it achieves this) and if this *real work* of given intensity and of given quantity as measured in terms of time actually materializes as a product. ... Therefore, the labour process becomes a valorization process by virtue of the fact that the concrete labour invested in it is a quantity of *socially necessary* labour (thanks to its intensity), = a certain quantity of average social labour, and by virtue of the further fact that this quantity represents an *excess* over the amount contained in wages. It is the *quantitative* calculation of the particular concrete amount of labour as *average, necessary social labour*. What corresponds to this calculation, however, is the real element, firstly, of the normal intensity of work (i.e. that to produce a product in a certain quantity only the socially necessary labour-time is consumed) and [secondly] of the extension of the labour process beyond the *time* necessary to replenish the value of the variable capital invested.

This exceedingly clear passage indicates that Marx conceived abstract, value-creating labour as '*real work*', the exact same real work as the concrete labour that produces use-values, and that each hour of the one is likewise an hour of the other, given only that the work is socially necessary. Moreover, socially necessary labour is clearly defined here, just as it was in the beginning of *Capital*, in terms of physical production norms, and measured in terms of clock time.

The dual character of the worker's real work should also be clear from Marx's analysis of the labour and valorisation processes in Chapter 7 of *Capital* I. Marx (1976a:302, emphasis added) writes that if we 'compare the process of creating value with the labour process, we find that the latter consists in the useful labour which produces use-values. ... But if it is viewed as a value-creating process *the same labour process* appears only quantitatively'.

'*Real Work*' Extracted in Production Determines Value

We have shown that Marx considers the '*real work*' extracted in production to be both concrete and abstract. We will now show that he considers this real work, and the dead labour transferred from constant capital, to be the exclusive determinants of commodities' values. Thus, *no* reference to exchange of the products is needed in order to determine either the abstract labour extracted from workers or the products' values (= prices in the aggregate).

On the same page in which he writes that value is created by the same labour that creates use-values, Marx (1976a:302, emphasis added) states in no uncertain terms that

> the transformation of money into capital ... takes place through the mediation of circulation because it is conditioned by the purchase and sale of labour-power in the market; it does not take place in circulation because what happens there is only an introduction to the valorization process, which is *entirely confined to the sphere of production.*

Consonant with this view, the above passage from the *Resultate* also stated that abstract labour is extracted, value and surplus-value are produced, given only that the real work 'actually materializes as a product'. That is, value and surplus-value are produced before the product is sold, and independently of the price for which it is subsequently sold. In *Capital* III, Marx (1981:352, emphases added) likewise wrote that

> As soon as the amount of surplus labour it has proved possible to extort has been *objectified in commodities*, the surplus-value has been *produced.* ... Now comes the second act in the process. The total mass of commodities, the total product, must be *sold.*

To be a value, it is true, the product must also be a use-value. If it loses its use-value after it is produced, then it also *loses* the value it had. This simply does not imply that it lacked use-value, and therefore value, when it was produced. That other products of the same sort were sold when this product was produced indicates that it, too, was a use-value *then*. Hence, the production of this product was a production of value, and the magnitude of its value was determined by the amount of abstract labour materialised in it.

It must also be stressed that Marx did not think that an act of exchange between juridically distinct owners was necessary for a product to be a value (and the labour which produced it to be abstract). As he made clear in the *Resultate* (and elsewhere), when the products of, say, a capitalist farmer are re-employed by him/her as means of production, even though 'they are not

changed into actual money, they are converted into accounting money ... and the element of value they add to the product in one way or another is precisely calculated'. The firm 'treats each item as a commodity (regardless of whether it buys it from another or from itself, i.e. from *production*)'. When the farmer 'returns them to production in nature [*in natura*, i.e., without passing through the market] he therefore includes them in his calculations as things sold him qua *producer*' (Marx 1976a:952–3).

Thus, although many commentators conflate the product's conversion into money and its sale, for Marx they are distinct. He held not only that a product has a determinate value and thus contains a determinate amount of abstract labour before it enters the market, but also that '[t]he value of a commodity is expressed in its price before it enters into circulation, and it is therefore a precondition of circulation, not its result' (Marx 1976a:260). Indeed, Marx (1976a:220) argued that the quantity theory of money had its roots in what he called an 'absurd hypothesis', namely that 'commodities enter into the process of circulation without a price, and money enters without a value'.

8.5 HOW LABOUR BECOMES ABSTRACT

Physiological Labour as Alienated Labour

To say that labour is abstract in the production process itself, that abstract labour is 'real work', does *not* imply in the least that the existence of abstract labour is transhistorical and asocial. Although the passage in which he refers to 'real work' as value-creating is not well known, much controversy has surrounded the similar one in which Marx (1976a:137) called abstract labour 'an expenditure of human labour-power in the physiological sense'. Whether endorsing or rejecting this view, commentators have generally presumed that the 'physiological' character of abstract labour implies its existence independently of society and history (see, e.g., Postone 1993:144ff).

What goes unrecognised in this view is that the *specific social character* of the capitalist process of production *separates* the workers' physiological activity from their thinking, desires, and intentions: 'human labour-power [is] expended without regard to the form of its expenditure' (Marx 1976a:128). What goes unrecognised, in other words, is that abstract labour is labour that has the character of being *merely* physiological, mere exertion, labour alienated from the workers' personality and human being as a whole. The workers' real work, in other words, has a dual, self-divided, character. It remains useful and concrete, but this aspect becomes the form in which its character as exertion, physiological expenditure as such, appears. As Marx (1973b:297) put it:

> [T]he character which capitalist and worker have as the extremes of a single relation of production ... develops more purely and adequately in proportion as labour loses all the characteristics of art; as its particular skill becomes something more and more abstract and irrelevant, and as it becomes more and more a *purely abstract activity*, a purely mechanical activity, hence indifferent to its particular form; a merely *formal* activity, or, what is the same, a merely *material* activity, activity pure and simple, regardless of the form.

The contrary view, that the workers' actual physiological activity is solely concrete, fails to recognise its dual, self-divided character and thus makes the abstraction of labour *external* to the workers' actual experience in the process of production. Hence, this view theoretically negates the revolutionary potential of working people that arises from within capital, from within their self-divided experience. As Hegel (1989:439, emphasis added) noted, 'contradiction is the root of all movement and vitality; it is only in so far as something has a contradiction *within it* that it moves, has an urge and activity'.

Three Dimensions of the Process of Abstraction

To understand that abstract labour is both historically specific and physiological, one must understand that the defining characteristic of capitalism, for Marx, is not a particular property form, competition, money, and so on, but rather its peculiar mode of *production*. Three dimensions of this mode of production that make labour abstract are (1) its purpose, (2) SNLT as an *active* norm that regulates production, and (3) the overthrow of the subjectivity of labour as the governing principle of production. We will take up each of these in turn.

The purpose of production

First, the purpose of production is such that both the capitalist and the worker are indifferent to the concrete nature of the work that workers do. The purpose of production thus serves to make the work abstract. As personifications of capital, capitalists do not aim, as in prior modes of production, to extort concrete surplus products from the workers. Rather their aim is to expand the value of their capital by generating new value. It is true that value must be 'borne' by some use-value, but the particular use-value is irrelevant to the capitalist, as capital mobility proves. Hence, the particular use-value-producing character of the labour is also a matter of indifference to the capitalist.

But the workers are also indifferent to the concrete nature of their work. This is partly because they have no claim to the product of their labour, but also because they are incorporated into an already existing, functioning, produc-

tion process as an alien element. The process does not serve their needs because it is not designed to do so. They participate in it only because the alternative is to starve. They do not want to do the specific work; they want 'a job', in the abstract, so they can get paid.[7] An autoworker we know is so alienated from the concrete character of his work that he will not make the effort to walk 150 yards down the assembly line to see the kind of car he has helped make.

We need not belabour the point. De Angelis (this volume) has already carefully developed this dimension of labour abstraction in his chapter; we concur with his perspective on this issue.

Socially necessary labour time as active norm

Second, labour becomes abstract by being subjected to the exigencies of SNLT. In his discussion of the fetishism of the commodity in Chapter 1 of *Capital*, Marx (1976a:166, emphasis added) identifies the precise historical moment when labour becomes abstract:

> This division of the product of labour into a useful thing and a thing possessing value appears in practice only when exchange has already acquired a sufficient extension and importance to allow useful things to be produced for the purpose of being exchanged, so that *their character as values has already to be taken into consideration during production. From this moment on, the labour of the individual producer acquires a twofold social character.*

Marx thus contends that labour becomes abstract when products no longer first acquire the commodity form at time of sale, but are 'produced for the purpose of being exchanged', *produced as values* as well as use-values. Each product only has value to the extent that the labour-time expended on it does not exceed the social average. Competition ensures that those capitals which do not meet this standard perish; those that remain must indeed meet (or surpass) it. SNLT is now seen to be an *active* norm that regulates their production.[8]

Under threat of extinction, capitals must therefore reorganise the labour process in accordance with SNLT. Work now becomes only incidentally a method of producing useful things; its extraction is first and foremost the method of producing value. *Time is money.* 'Moments are the elements of profit'.[9] Although all the work of unskilful or slow workers, or those working under inferior technological conditions, is certainly labour in a *concrete* sense, some of it does not 'count' as labour as measured by the impersonal, *abstract*, norm of SNLT. It is a waste of time. On eastern Long Island, New York not long ago, five seconds were cut from the SNLT required to produce a McDonald's hamburger by eliminating the application of mustard. The purpose of doing so was not, of course, to lighten the labour of the work team, but to shift the mustard-

pumpers to other functions. '[I]t has indeed become immaterial what the skill of man is so long as each produces a given quantity of products in a given time' (Dunayevskaya 1988:105). What every firm requires, must require, from its workers is the maximum exertion per unit of time.

Furthermore, the technological innovations that could conceivably lessen the burden of work in fact make work norms more onerous. Innovations raise labour productivity which, however, is mathematically the inverse of SNLT. As productivity rises, SNLT falls, and the workers must subordinate themselves to an even tighter standard.

> If what took an hour to produce yesterday takes only one-half hour to produce today, that is what the factory clock is now set at. Specific skills do not count. All must subordinate themselves to the newly-set socially necessary time to be expended on commodities (Dunayevskaya 1988:105).

In sum, although SNLT is, like every average, an abstraction, it possesses real power over capitalists as well as workers. The production process, and the activity of workers, are continually structured and restructured according to this abstraction, and thus made abstract themselves.

Inversion of subject and object

Third, as the foregoing already suggests, the abstraction of labour has a historical dimension. It develops with the capitalist mode of production. After noting that labour 'becomes more and more a *purely abstract activity*, a purely mechanical activity, ... a merely *material* activity, activity pure and simple, regardless of the form', Marx (1973b:297) concluded that 'the particular specificity of the relation [capital and labour] becomes real only with the development of a particular *material mode of production* and of a particular stage in the development of the industrial *productive forces*'.

Capital at first met tremendous obstacles to its drive to reorganise production fully according to the principle of SNLT. It faced continuous resistance from the workers, with whom it had to compromise, because production depended upon the skills of the craftspeople. This remained true until the Industrial Revolution. Although the skills of each individual worker had already become meagre and one-sided, production depended heavily on the combined skill of the work team as a whole.

> Since handicraft skill is the foundation of manufacture, and since the mechanism of manufacture as a whole possesses no objective framework which would be independent of the workers themselves, capital is constantly compelled to wrestle with the insubordination of the workers. ... Hence the complaint that the workers lack discipline runs throughout the whole period of

manufacture (Marx 1976a:489–90).

To comprehend Marx's analysis of capitalist production, it is imperative to focus upon the *discontinuity* in the relation between capitalist and wage-worker that the Industrial Revolution brought about. The key to understanding this discontinuity is his concept of the 'inversion of subject and object which ... occurs in the course of the process of production itself' (Marx 1981:136; cf. Marx 1976a:990). With this perhaps mystical-sounding phrase, Marx captures the inhuman way in which capitalism has transformed production so that 'the process of production has mastery over man instead of the opposite' (Marx 1976a:175). Under the detail division of labour characteristic of manufacture, the production 'process had to be ... adapted to the worker. This *subjective principle* of the division of labour no longer exists in production by machinery. Here the total process is examined *objectively, viewed in and for itself*, and analysed into its constitutive phases' (Marx 1976a:501, emphases added).

By wresting from them the various tools with which they controlled production and incorporating the tools within machines, the Industrial Revolution overcame the resistance of the manufacturing workforce. This gave capital what it had previously lacked, 'an *entirely objective organization* of production, which confronts the worker as a pre-existing material condition of production' (Marx 1976a:508, emphasis added). As the tools become parts of the machine, the know-how which the workers had heretofore possessed likewise becomes incorporated into the design of the machine, and 'the capabilities of the tool are emancipated from the restraints inseparable from human labour-power. ... [Hence] there appears, in the automatic factory, a tendency to equalize and *reduce to an identical level* every kind of work' (Marx 1976a:545, emphasis added).

Marx (1976a:548, emphasis added) thus summarises the human impact of the Industrial Revolution by noting that, although it has always been the case under capitalism that 'it is not the worker who employs the conditions of his work, but rather the reverse ... it is only with the coming of machinery that this *inversion first acquires a technical and palpable reality*'. Elsewhere he characterises this as the replacement of the formal subsumption of labour under capital by the real subsumption of labour under capital (Marx 1976a:645).

It is thus only with the coming of machinery, in Marx's view, that capital acquires a material mode of production the sole purpose and organising principle of which is to produce value and surplus-value. With machinery, it is no longer just competition in the market, the threat of unemployment, and the watchful eye of the foreman that force workers to produce according to SNLT; rather, the production process is designed such that the workers' activity must keep pace with the unyielding pace of the machine. This mode of production all but eliminates capital's dependence upon the concrete skills and capabili-

ties the workers had heretofore exercised, and degrades the role of labour in production to that of an abstract 'input'. This process, and it *alone*, is what Marx (1976a:645) meant by the 'specifically capitalist mode of production'.

8.6 CONCLUSION

Marx declined to take credit for concepts that he felt had been implicit in others' work. It is no trifling matter, then, when he writes that 'I was the first to point out and critically examine this twofold nature of the labour contained in commodities' (Marx 1976a:132). As we have tried to indicate, the unprecedented split he makes between abstract and concrete labour is of crucial significance for his work. It extends far beyond the need to have a homogeneous measure of work in order to conduct economic analysis. Implicated in the concept of abstract labour is the entire purpose and specific character of capitalist society. By examining the duality of labour in his work, we have seen that Marx's *Capital* was no mere critique of private property, unfair distribution, the anarchy of the market, and so on. It was a critique of the capitalist mode of production, i.e., of capital's degradation and dehumanisation of human beings in their work relations, and thus a critique of the entirety of the corresponding relations in capitalist society as a whole.

Yet Marx did not limit himself to an 'immanent' critique. By showing that production according to SNLT is not a technical necessity for 'rational' production, but a specific consequence of the value-producing character of labour under capitalism, Marx also disclosed the absolute opposite to abstract labour. Drawing conclusions from *Capital* in his critique of the Gotha Program, Marx (1972:17) articulated this as a society in which

> the enslaving subordination of the individual to the division of labour, and with it also the antithesis between mental and physical labour has vanished; [in which] labour has become not only a means of life but life's prime want; [in which] the productive forces have also increased with the all-round development of the individual.

He did not write these words as empty oratory. They constitute a *concrete* statement upon the basis of which he opposed the Gotha Program. Three paragraphs later, Marx (1972:18) concluded his critique of this section of the Program by writing that

> Vulgar socialism (and from it in turn a section of the democracy) has taken over from the bourgeois economists the consideration and treatment of distribution as independent of the mode of production and hence the presenta-

tion of socialism as turning principally on distribution. After the real relation has long been made clear, why retrogress again?

NOTES

1. We wish to thank Alan Freeman and Ed Chilcote for their helpful comments.
2. The importance of this temporal sequence cannot be stressed enough. Without it, the determination of value by labour-time becomes a meaningless phrase. It is thus mostly by means of its rigorous conceptualisation of purchase–production–sale as a temporal succession that the temporal single-system interpretation of Marx's value theory has refuted all the allegations of internal inconsistency in its quantitative dimension. See, e.g., Freeman and Carchedi (1996), Kliman and McGlone (1999).
3. This disconfirmation is provisional. Were it to be demonstrated that the passages Roberts cites permit *no contrary interpretation*, we would then – but only then – have to conclude that Marx's theory is self-contradictory.
4. Roberts argues that concrete labours can be added together because they are all measured in clock-hours. One can certainly add clock-hours together, as the US Department of Labor does every month in providing employment and hour figures. Yet the measurement of different labours in terms of the same clock-hours presupposes that they share a *common* element. *Clock-hours thus measure abstract labour.* (As Marx (1976a:129) noted, 'the quantity of the "value-forming substance" [abstract labour] is measured by its duration'.) Thus, rather than being a mere analytical construct, abstract labour is so integral to capitalist society that the state itself continually needs to measure the amount of it extracted. Note also that it uses only production statistics (the number of hours worked) to do so, without regard to the sphere of exchange.
5. '[T]he basis of value is the fact that human beings relate to each other's labour as equal .... This is an abstraction, like all human thought, and social relations only exist among human beings to the extent that they think, and possess this power of abstraction from sensuous individuality and contingency. The kind of political economist who attacks the determination of value by labour-time on the ground that the work performed by 2 individuals during the same time is not absolutely equal (although in the same trade), doesn't even yet know what distinguishes human social relations from relations between animals. He is a beast. As beasts, the same fellows then also have no difficulty in overlooking the fact that *no 2 use values are absolutely identical* (no 2 leaves, Leibniz) and even less difficulty in judging use values, which have no common measure whatever, as exchange values according to the degree of utility' (Marx 1988:232, emphases altered). We thank Alan Freeman for calling this passage to our attention.

   This passage flatly contradicts the widespread view that Marx accorded ontological primacy to material relations and considered ideas as derived from, rather than creative of, social reality. Marx (1964:206) called his philosophy a 'consistent naturalism or humanism [that] is distinguished from both idealism and materialism, and at the same time constitutes their unifying truth'. Dunayevskaya (1989) rediscovers and further develops this philosophy under the rubric 'Marxist-Humanism'.
6. This statement does not compare *weaving-labour* and *tailoring-labour* in terms of complexity. As noted above, it would be invalid and meaningless to do so.
7. '[T]he worker himself is absolutely indifferent to the specificity of his labour; it has no interest for him as such, but only in as much as it is in fact *labour* and, as such, a use value for capital' (Marx 1973b:296–7).
8. Although Roberts claims that our interpretation of Marx's theory denies 'any constitutive role of the exchange process', we certainly recognise that competition in some form is needed to enforce the abstraction of labour. Yet the specific form this competition takes – whether between private owners for greater profit, between managements of rival corporations for greater control of the market, or between state-capitalist superpowers

for military-technological domination – is irrelevant, as long as it enforces SNLT as a norm to which production is subjected.

9. Marx (1976a:352) quotes this from a factory inspectors' report of 30 April, 1860.

9 On the Abstraction of Labour as a Social Determination

Mario L. Robles-Baez

The type of abstraction that abstract labour represents, for Marx, has been one of the most controversial issues in Marxist political economy. This abstraction has usually been understood by Marxist and non-Marxist political economists to be achieved through a reduction of the specificity of all kinds of labour in the market. This chapter argues that, although this reduction is necessary for the abstraction of labour, what remains is not abstract labour itself, but its immediate determination, the expenditure of all individual labours in the physiological sense, regardless of their particular forms of expenditure. Considering that such expenditure of labour is a fact, what has to be explained is thus how the generality that all individual labours in the physiological sense represent is transformed into the universality of abstract labour in capitalism. This transformation is what is called here 'the abstraction of labour as a social determination'.

The chapter is divided into three sections and a brief conclusion. The first section shows that the generality that all labour represents as a physiological one is only socially *posited* as the universality of abstract labour in capitalism by means of its negation (or sublation). The meaning and consequences of this negation are analysed. In the second section, the analysis of the actual positing of this abstraction in Part 1 of *Capital* I shows that the abstraction of labour can only be understood as being achieved through the money-form of commodities. In the final section, the *qualitative*, i.e., uniform simple labour, and the *quantitative*, i.e., socially necessary labour-time, determinations of abstract labour are treated. There it is shown that the abstraction of labour implies a simultaneously qualitative and quantitative reduction through the money prices of the commodities. However, the analysis of the abstraction of labour developed here is a partial one because, as is indicated throughout the presentation, the positing of the abstraction of labour as abstract labour can only be understood as being completely grounded when value acquires the form of capital.

9.1 THE *POSITING* OF THE GENERALITY OF LABOUR IN THE PHYSIOLOGICAL SENSE AS THE UNIVERSALITY OF LABOUR AS ABSTRACT LABOUR

Two questions have to be answered in order to explain the relation between labour in the physiological sense and abstract labour: first, *how is human labour in the physiological sense posited as abstract labour*? Or, what is the relation between the social objectivity of the abstraction and the physiological reality of labour?[1] Second, *what is the relation between the notion of real abstraction and the notion of generality* implied in the notion of labour-in-general?

First of all, one must move away from linear logic because the response to the relations posed by these questions in terms of such logic would bring us to a formal contradiction with no solution. Rather one must be situated within Marx's dialectical logic, which, by its very nature, is a contradictory one allowing a solution. Indeed, Marx uses dialectical logic to explain these contradictory relations. It is my contention that Marx's explanation of them can be found in his notion of *positedness*. As far as I understand it this notion means that the *positedness* of something, such as value and abstract labour, represents its *social-historical determined existence*, or that it has been *socially grounded*. This notion implies that if the (natural or anthropological or the like) presupposed or immediate essential determinations of the something under consideration, which are embedded within it, are not objectively posited, or socially grounded, the something does not exist as a social fact, or is socially non-existent.

In these circumstances I may gratefully accept Fausto's (1983:91–2; my emphasis and translation) suggestion that, in relation to the determination of abstract labour, Marx's notion of *positedness* allows us to be assured that '[i]t is not the biological reality of the universality of labour the reality that constitutes abstract labour, but rather the *positing* of this reality, and, in this sense, the *positing* is not biological any more. The generality in the physiological sense ... does not constitute abstract labour: it is only the natural reality *presupposed* to the *positing* of abstract labour. The social reality makes valid that which is only a natural reality'. This social reality is of course the capitalist social reality, where, as Marx says in the *Grundrisse* (1973b:108), all individual labours become indifferent toward the specific activity they realise, and therefore each one of them 'has ceased to be organically linked with particular individuals in specific forms'. This implies that, since the generality that constitutes labour in the physiological sense is a socially indeterminate generality, it cannot be directly identified with the universality of abstract labour within the capitalist social formation. All this means that *the determination of the form of labour as abstract labour is not physiological, but social.*

This positedness of the physiological reality of labour as socially determinate abstraction implies the following further important considerations.

First, it implies that the relation between the immediate physiological determination of abstract labour and its *positedness* as a social nature can only be understood as a relation of *sublation* (or determinate negation) and consequently of *inversion*. On the one hand, if the immediate physiological nature of labour constitutes the presupposition of the social reality of abstract labour, this labour as labour-in-general may thus be understood in a dialectical sense as being sublated (or negated) by labour as abstract labour in capitalist society. Since there are not two types of labour but two levels of determination of labour, this sublation means that the latter preserves the former as its sublated presupposition or immediacy and hence as a moment of itself. And, on the other hand, with the inversion that it represents, any individual labour in the physiological sense remains active but now acting in the form of abstract labour and, therefore, by remaining active it acts in contradiction within itself. Or put in other terms, all individual labour is unfolded into individual labour and universal labour, where the former becomes submerged in the latter. This means that, with this inversion, labour in the physiological sense is only completely realised and negated through its realisation as social abstract labour. This contradiction is thus the living contradiction that any individual labour has to face once it achieves the character of universal social abstract labour in capitalist society: all individual labour is completely realised as social labour at the price of its negation.

It must be emphasised that the explanation of the contradictory relation between the abstract character and the concrete character of labour is implied in the above as far as its concrete character belongs to each individual labour.

Second, it also implies that the *unity*, which constitutes the generality of all labours as identical labours in the physiological sense, can only be understood as a *socially posited universality* within capitalism. It is precisely through the positedness of this 'generality' that it is transformed into a *singular* (concrete) *universal*, that is, the unity of all individual labours becomes an abstract universality corresponding to the indifference of all individual labours as abstract labour in capitalism. Let us take a passage from Chapter 1 of the first edition of *Capital* in order to explain further the meaning of a singular universal that, for Marx (1976c:27), abstract labour represents.

> It is as if alongside and external to lions, tigers, rabbits, and all other actual animals, which form when grouped together the various kinds, species, subspecies, families, etc. of the animal kingdom, there existed also in addition *the animal*, the individual incarnation of the entire animal kingdom. Such a particular which contains within itself all really present species of the same entity is a *universal* (like *animal*, *god*, etc.).

We can take this metaphor for the case of abstract labour as indicating that it has to be considered a universal and at the same time a singular. If abstract labour is said to be a singular universal entity, it must be considered as an abstract unity in itself of all existing different individual labours. Moreover, once it is socially posited, it must be considered as having an independent existence for itself and, at the same time, being the incarnation of all individual labours of a capitalist society: 'The total labour-power of society', Marx (1976a:129) says, 'counts here as one homogeneous mass of human labour-power, although composed of innumerable individual units of labour-power'. As such posited homogeneous unity, abstract labour thus constitutes an abstract essence belonging to all of them that may become an independent force by itself. This implies that the actual existence of abstract labour as a singular universal can only be posited with the money-form as the universal materialisation of the abstraction of human labour. In other words, the abstraction of labour in the physiological sense cannot be understood as being transformed into the universality that represents abstract labour if it lacks the moment of *singularity*.

Third, and responding to objections made about the impossibility of understanding Marx's (1976a:138) statement that 'Not an atom of matter enters into the objectivity of commodities as values' if one considers abstract labour to have both a social nature and a physiological nature, we are able to say the following. As a substance that sublates (or negates) all its natural or physiological presuppositions once it has achieved its full validity within capitalism, labour, as abstract labour, is a socially determinate substance that has been objectified in commodities. As such objectification, the abstraction of labour corresponds to the abstraction of value: commodities as values are objectified labour. Value is thus not being but the objectification of the abstraction of labour in commodities: 'as crystals of this social substance', says Marx (1976a:128), 'which is common to them all, they are values'. This is why Marx says that not an atom of matter enters in the objectivity of commodities as values.

Fourth, it is precisely because abstract labour becomes such a unity in itself that it is possible to understand in what sense Marx (1970:30) maintains that such unity takes away the condition of being subjects from its individual agents: 'Labour, thus measured by time, does not seem, indeed, to be the labour of different persons, but on the contrary the different working individuals seem to be mere organs of this labour'.

It is this inversion of the character of agents which also permits us to understand in what sense abstract labour is 'social' and concrete labour is 'individual', a distinction which could not otherwise be made because the labour as concrete labour is also embedded within the social. Moreover, the inversion between individual labour and universal labour, together with the inversion of the character of agents, permits the understanding of the character of abstract labour as the alienated labour of individuals: 'It is the labour-time of an indi-

vidual, *his* labour-time, but only as labour-time common to all; consequently it is quite immaterial *whose* individual labour-time this is' (Marx 1970:32).

Although all that has been argued up to here is the most important aspect of the explanation of the determination of abstract labour as a socially formed one, it is only a part. It is equally important to explain how this social abstraction of labour is actually achieved.

9.2 THE ACTUAL *POSITING* OF THE SOCIAL DETERMINATION OF ABSTRACT LABOUR IN *CAPITAL* I

The *positing* of the abstraction of labour as a universality presupposes the capitalist social formation as a totality. In Part 1 of *Capital* I, where Marx presents the determination of labour as abstract labour, this is supposed as a society whose division of labour is assumed to be constituted by separated individual producers performing privately and independently distinct labour activities. The results of these activities are different kinds of products, or use-values, which spring forth as the results of the objectification of the producers' own labours. As such they are a producer's own property, and therefore the producers recognise each other as owners of private property. Because of this particular form of social division of labour, the products necessarily have to enter into relation with each other in order that the society as a whole can be reproduced. This social necessity is accomplished through the mediation of the exchange relations of the products. The products of each individual producer thus constitute both use-values for others or social use-values, and, for their own producer, serve as means by which the products of other producers are acquired. The latter quality represents a product's own exchange-value, that is, the power of exchangeability that it has. By the products being the result of the objectification of the labour of the producers, the content of the form of the process of exchange is the appropriation of the labour of others by means of one's own labour. Labour itself thus constitutes a social mediation in three senses, all of which are realised through the exchange of the products it produces. It constitutes the specific social relation of the producers as a labour relation. It is the way through which all individual labour and its products are transformed into social forms.[2] And it allows the reproduction of the system as a whole, encompassing both the whole of production and the whole of consumption. It is in this sense that the society is one of private (property) production-for-exchange, and the products are commodities, i.e., use-values and exchange-values.[3]

The necessity for the commodities to be exchangeable in certain proportions imposed by this system of private (property) production-for-exchange is accomplished through their exchange as equivalents. The exchange of equivalents fur-

ther requires that the expenditure or objectification of labour of all individual producers be reduced to that which Marx (1970:28) calls 'a common denominator'. Marx gave this common denominator the name *value*. As such a common substance, labour cannot be the modes or forms of its expenditure because, as such forms, it only produces different kinds of use-value. Therefore it can only be its expenditure as such, independent of the mode in which it has been expended. In this sense, it is an expenditure of labour in the physiological sense. But value, as such objectification of labour, can only have a unitary form if all individual labours in the physiological sense are reduced to social and equal labour.

The system so far specified has within itself the solution of this reduction. The above-mentioned quality of one's own labour to appropriate the labour of others, which expresses itself in that its products are exchange-values and therefore commodities, implies that any commodity in itself can be considered as an equivalent for the expression of the labour objectified in the other commodities. In this sense, any commodity contains in itself the germ of money. Moreover, because the being of commodities as values is given by the objectification of labour in the physiological sense, which is an abstraction by itself, value constitutes an essence that, like any other essence, does not directly appear, but remains an abstraction, a 'phantom-like objectivity', which calls for something other than itself to appear. This something other through which value necessarily has to appear, and through which this reduction can be actually accomplished, is the money-commodity as a general equivalent. As Marx (1971b:136) says,

> the *labour of individuals* has to be directly represented as its opposite, *social* labour; this transformed labour is, as its immediate opposite, *abstract, general labour*, which is therefore represented in a general equivalent. Only by its alienated form does individual labour manifest itself as its opposite. The commodity, however, must have this general expression before it is alienated. This necessity to express individual labour as general labour is equivalent to the necessity of expressing a commodity as money. The commodity receives this expression insofar as the money serves as a measure and expresses the value of the commodity in its *price*.

It is thus through the money commodity that all individual labours objectified in commodities are reduced to social and equal labour and therefore the generality of them as physiological objectified labour is transformed into social *abstract, universal labour*.[4] Since value is objectified labour, it only becomes socially grounded through its money-form. As such objectification, the abstraction of labour thus corresponds to the abstraction of value and its money-form becomes the being-there or the immediate form of existence of the objectification of this abstraction.

However, as far as Part 1 of *Capital* I is concerned, value and, with it, its own

substance, and consequently the commodities in which it has been objectified, and the commodity-money in which it is expressed, are not completely grounded. There the exchange relations of commodities only appear as an aggregate of exchanges, which all together are revealed as a process of simple commodity circulation, that is, commodities which are sold and bought by the mediation of their money-form at equivalent values. This process of simple commodity exchange can only be considered an abstract sphere of capitalist production, which *appears* as that which is *immediately* present on the surface of bourgeois society. As Marx (1987a:482, emphases added) says:

> The simple circulation is ... an abstract sphere of the bourgeois process of production as whole, which through its own determinations shows itself to be a moment, a mere *form of appearance* of some deeper process lying behind it, even resulting from it and producing it – *industrial capital.*

Therefore the abstract categories that ground it are derived and developed as corresponding exclusively to this appearance. It is only when value becomes self-expanding value and therefore acquires the form of *capital* as the subject of capitalist society that they are completely grounded. Abstract labour can only be the imposition of the capital-form of value, which brings about an inversion such that all individual labour counts as social abstract labour. Capital being the subject, abstract labour can only be negatively posited as a sublated foundation, which as such (re)produces capital.[5] Because of space, I cannot elaborate further here the passage to capital, and all its dialectical consequences, from the categories developed in Part 1 of *Capital* I.[6] Let me say only the following. The transformation to the capital-form of value presupposes that the living capacity for labour or labour-power of all workers has been socially transformed into a commodity, which, as such, is not a produced commodity. As commodities, they are all exchanged, as *potential* labours, by the money advanced by the capitalists to buy them at value-equivalent exchanges. This money thus represents its money-form of value and that, as such advanced money, becomes a form of capital: variable capital. It is by means of this act of exchange that all labour-power is thus transformed into 'labour as capital', i.e., as capital's potential (re)productive force, and consequently, subsumed under capital.

There remains the treatment of the other qualitative determination of abstract labour, that is, simple labour, and its quantitative determination, that is, socially necessary labour.

9.3 THE QUALITATIVE AND QUANTITATIVE DETERMINATIONS OF ABSTRACT LABOUR

The Qualitative Determination of Abstract Labour as Simple Labour

Marx submits, in the first place,[7] the necessity to reduce all individual labours embodied in commodities produced in a given society to the qualitative determination of abstract labour as uniform simple (homogeneous) labour.[8]

In relation to this quality, Marx (1970:32, 31, emphases in original) says

> Uniform simple labour implies first of all that the labour of different individuals is *equal* and that their labour is treated as equal by being in fact reduced to homogeneous labour. ... This abstraction, human labour in general, *exists* in the form of average labour which, in a given society, the average person can perform, productive expenditure of a certain amount of human muscles, nerves, brain, etc.

As a social fact, Marx understands uniform simple labour as the social average labour in the physiological sense that a normal individual can perform. Uniform simple labour thus represents the *unit of measurement*[9] of abstract labour, which varies according to the particular historical circumstances of a given capitalist society. As such average labour, any individual labour may represent differences in *complexity*. Because of this, Marx (1970:31) then immediately submits the necessity to reduce all individual labour to uniform simple labour:

> This kind of labour resolves itself into simple labour; it is simple labour raised to a higher power, so that for example one day of skilled labour may equal three days of simple labour. ... It is ... clear that the reduction is made, for, as exchange-value, the product of highly skilled labour is equivalent, in definitive proportions, to the product of simple average labour; thus being equated to a certain amount of this simple labour.

This reduction thus represents a relation between two qualitatively different terms, which allows establishment of a *quantitative* relation between them: complex labour is uniform simple labour raised to a higher power, representing a specific quantity of simple labour. Although the reduction from concrete to abstract labour is implied in this reduction, it does constitute in a strict sense the reduction from complex to simple physiological labour. As unit of measurement, this reduction must occur not only to all labours realised within a branch of production producing a given kind of commodity, but also to the total labour objectified in the total product of a given society. The reduction of all individual labours to simple labour is established, as discussed above,

through the constitution of the money-form of value and therefore through the monetary exchange process of the commodities they produce. As such a process, it is, according to Marx (1976a:135), 'a social process that goes on behind the back of the producers'.

The Quantitative Determination of Abstract Labour: Socially Necessary Labour-Time

According to Marx's presentation, after the reduction to uniform simple labour has been considered, the determinant of the quantity of abstract labour which represents the magnitude of value, that is, socially necessary labour-time,[10] should be considered: 'Socially necessary labour-time is the labour-time required to produce any use-value under the conditions of production normal for a given society and with the average degree of skill and intensity of labour prevalent in that society' (Marx 1976a:129).

But since the individual producers may perform their labours in producing the same kind of commodities under different material conditions of production and different degrees of skill and intensity, Marx (1976a:434) further clarifies the meaning of socially necessary labour-time determining the magnitude of the social value of commodities: 'The real value of a commodity, however, is not its individual value, but its social value; that is to say, its value is not measured by the labour-time that the article costs the producer in each individual case, but by the labour-time socially required for its production'.

This latter sense of socially necessary labour-time is obviously implied in the former. Two related aspects must be emphasised. As the labour-time required to produce any commodity, socially necessary labour-time representing its social value includes both the labour-time expended by the producer and the labour-time of the means of production used in its production. In this sense, the determination of the magnitude of the value of all commodity implies that the magnitude of values of the means of production used to produce it must represent also a given socially necessary labour-time. Moreover, since this determination implies several possible combinations between different degrees of skill and intensity of labour with different material conditions of production in producing the same kind of commodities, its realisation can only be brought about at the same time as the reduction to uniform simple labour.

Marx (1981:238, emphasis in original) further concretises the meaning of socially necessary labour-time in *Capital* III:

> The value of any commodity – and thus also of the commodities which capital consists of – is determined not by the necessary labour-time that it itself contains, but by the *socially* necessary labour-time required for its reproduction. This reproduction may differ from the conditions of its original

> production by taking place under easier or more difficult circumstances.

This latter sense of socially necessary labour-time determining the actual magnitude of the value of commodities incorporates the possibility that when there are changes in the material conditions of production and/or in their values and/or in the degree of skill and intensity of labour by means of which the already-existing commodities were produced, the original magnitudes of their values also change. It is in this case that Marx (1971b:129, emphasis in original) says,

> as value it [the commodity] appears as something merely *contingent*, something merely determined by its relation to socially necessary, equal, simple labour-time. It is to such an extent relative that when the labour-time required for its reproduction changes, its value changes, although the labour-time really contained in the commodity has remained unaltered.

This sense of socially necessary labour-time shows more clearly that the determination of the magnitude of the values of commodities does not represent a simple redistribution of the labour originally embodied in them.

The Unity of the Qualitative and Qualitative Determinations: The *Quantum*

The determination of socially necessary labour-time, which represents the social value of commodities, thus concerns the realisation of both a qualitative and a quantitative reduction; not only of the direct and indirect expenditure of labour objectified in the commodities produced by each individual producer within a branch of production, but also of all individual labours required to produce the total mass of commodities in a given capitalist economy. From the above presentation, some questions emerge: Can the social value of commodities be considered a weighted average of all individual values of commodities? If so, who makes that average?

To respond to these questions, it is necessary to discuss first a crucial determination related to both of the determinants of abstract labour, and therefore of value: one must distinguish between quantity as a quantity not determined, and quantity as a *quantum* that is socially determined as a definite magnitude. In a passage from Chapter 1 of the first edition of *Capital*, Marx (1976c:17) states that 'magnitude of value is both things: value in general, and quantitatively measured value'. In our view, this means that value in general contains both the quality and the quantity-not-determined, but not the *quantum* socially measured. That is to say, if value in general is considered the objectification of labour in the production of commodities, it can only contain both the quality and the quantity (not determined) of labour-in-general,[11] because, as such labour, it has not been socially validated yet. Since this validation can only be

done through the whole process of exchange of commodities, it is only through this process that the *quantum* of labour that represents the social value of any commodity can be determined and therefore measured.

This determinacy of the *quantum* of the social value of commodities has important implications for the positing of value itself. In the first place, the constitution of this *quantum* of the value of commodities requires, as Marx (1976a:168) says, that:

> The production of commodities must be fully developed before the scientific conviction emerges, from experience itself, that all the different kinds of private labour ... are continually being reduced to the quantitative proportions in which society requires them. The reason for this reduction in that in the midst of the accidental and ever-fluctuating exchange relations between the products, the labour-time socially necessary to produce them asserts itself as a regulative law of nature.

This so-called 'natural law' of socially necessary labour-time has usually been understood by Marxist political economists as the sum of all labour-time embodied in the total mass of commodities produced in an industry divided by this total mass of commodities. In a strict sense, this average can only constitute the social value of commodities if all labour-times had been already reduced to simple labour-time. But even so, does this average value imply transfers of value? Who makes this average value? In this sense, Castoriadis (1978:256–7, my translation) questions the determination of socially necessary labour-time not only as a real average time but also as a theoretical result,

> average time is an empty abstraction, the simple result of an arithmetical fictitious operation which does not have any effectiveness and any efficacy on the real functioning of the economy: does there exist any real or logical reason to consider that the value of a commodity is determined by the result of a division that nobody does or would be able to do?

In order to respond to Castoriadis, it is necessary to answer the following question: how is socially necessary labour (time) really posited in capitalism? This question implies two things. One is that socially necessary labour corresponds to the labour which is imposed socially by capital through competition, not necessarily to average labour:

> The fundamental law of competition, as distinct from that advanced about value and surplus value, is that it is determined not by the labour contained in it, or by the labour time in which it is produced, but rather by the *labour time in which it can be produced, or, the labour time necessary for repro-*

> *duction*. By this means, the individual capital is in reality only placed within the conditions of capital as such, although it seems as if the original law were overturned. *Necessary labour time as determined by the movement of capital*; *but only in this way is it posited.* This is the fundamental law of competition. ... In short, here [in competition] all determinants appear in a position which is the *inverse* of their position in capital in general. *There price determined by labour, here labour determined by price* etc. etc. (Marx 1973b:657, some emphases added)

From the above statement, it appears clear that, for Marx, it is only after socially necessary labour has been posited by the movement of capital in all branches of production of an economy, and therefore in that economy as a whole, that the averages can be established. In this sense, the determination of the social value of commodities does not imply transfers of value, but the social validation of all labour-times by capital through the prices of commodities. The other aspect is related precisely to the last sentence of the above passage, which indicates that in competition 'labour [is] determined by price'. This means that the socially necessary labour-time that commodities-as-capital represent corresponds to the time which is imposed through socially determining value, that is, in the first instance, through their money-prices. But, to what type of prices does Marx refer in this passage, to market prices or to production prices? In my view, Marx's response would be both types of prices. As argued elsewhere (Robles 1992), if, as Marx says, the socially necessary labour-time representing the magnitude of value of commodities is determined by their prices, the only prices that may represent an identity among commodities-as-capital are the prices of production. They are thus the money expression of the actual social value (or, the real exchange-value) of commodities-as-capital. This means that the quantity of socially necessary labour, which is determined by prices of production, represents the *quantum* of social labour of the commodities as values imposed by capital. This is the reason why the qualitative and quantitative reduction to abstract labour must be considered as being realised at the same time that the prices of production are determined.[12] Moreover, these real values are posited through its own negation as market prices by the movement of capital itself, that is, as Marx (1973b:137) argues:

> Market value equates itself with real value by means of its constant oscillations, never by means of an equation with real value as if the latter were a third party, but rather by means of constant non-equation of itself (as Hegel would say, not by way of abstract identity, but by constant negation of the negation, i.e., of itself as negation of real value). ... real value itself – independently of its rule over the oscillations of the market price (seen apart from its role as the *law* of these oscillations) – in turn negates itself and

value of commodities is socially validated is through the money-form and therefore through the money-prices of the commodities in the market. This implies that if, for Marx, value is the objectification of the abstraction of labour, the money-form of value is the being-there or the immediate form of existence of the objectification of this abstraction, and therefore the form in which commodities exist as the objectification of social abstract labour. Thus it is only through the mediated money-form of value that its substance, i.e., abstract labour, can be considered as a singular concrete universal and, therefore, as a unity having an independent existence for itself and, at the same time, as the incarnation of all individual labours of a capitalist society.

3) Another implication of the positedness of abstract labour was that the qualitative, i.e., simple labour, and the quantitative, i.e., socially necessary labour-time, determinations of abstract labour and therefore of the value of commodities are realised at the same time that their prices of production are determined. As was argued, this implied that the quantity of socially necessary labour determined by the prices of production is the *quantum* of social labour representing the value of commodities imposed by the movement of industrial capital as a whole. This is opposed to the traditional understanding of the determination of the magnitude of the social value of commodities as being constructed by means of a weighted average of the individual values of the commodities produced within a branch of production.

Finally, we must recognise that our presentation of the abstraction of labour is a partial one because, as was indicated throughout the presentation, Marx's understanding of the positedness of the abstraction of labour as a social abstraction can only be completely grounded by means of his concept of capital as the subject of capitalist society.

NOTES

1. The necessity to examine this question is posited in Arthur (1977:6–7, emphasis in original): 'We need to examine at that level "the specific manner in which the social character of labour is established". In particular we need to examine the question of the *value of commodities* because *the "abstract labour" which Marx postulates as the substance of value cannot be identified with physiological similarity of labours* (even if we understand the latter in terms of the reality of "labour pure and simple" as the wealth producing activity of bourgeois society). Such labour is a universal productive force rather than *value-creating labour* explicated in terms of the relations of commodity production'. This text is a preliminary draft of Arthur (1979b); the latter, however, does not examine the distinction between physiological labour and abstract labour.
2. This implies the transformation, as Marx (1987a:463, emphasis in original) says, of 'property in one's labour into property in social labour'.
3. 'Only the products of mutually independent acts of labour, performed in isolation, can confront each other as commodities' (Marx 1976a:132).
4. 'The representation of the commodity as money implies not only that the different magnitudes of commodity values are measured by expressing the value in the use-

value of one exclusive commodity, but at the same time that they are all expressed in the form in which they *exist* as the embodiment of *social labour* and are therefore exchangeable for every other commodity' (Marx 1971b:130, emphasis added).

5. '[A]s soon as capital has become capital as such, it creates its own presuppositions ... These presuppositions, which originally appeared as conditions of its becoming – and hence could not spring from its *action as capital* – now appear as results of its own realization, reality, *as posited by it – not as conditions of its arising, but as results of its presence*. It no longer proceeds from presuppositions in order to become, but rather it is itself presupposed, and proceeds from itself to create the conditions of its maintenance and growth. ... In order to develop the laws of bourgeois economy, therefore, it is not necessary to write the *real history of the relations of production*' (Marx 1973b:460, emphases in original).
6. A first approximation to the passage from Part 1 to Part 2 of *Capital* I, where Marx treats the passage to capital-in-general, is found in Robles (1992).
7. 'In order to find out how the simple expression of the value of a commodity lies hidden in the value-relation between two commodities, we must, first of all, consider the value relation quite independently of its quantitative aspect' (Marx 1976a:140).
8. In *Theories of Surplus Value* Marx (1971b:135, emphases in original) argues that the simplicity of labour and social labour are the determinants of the quality of abstract labour: 'This reduction to simple, average labour is not, however, the only determinant of the *quality* of this labour to which as a unity of the values of the commodities are reduced.... However, the product as value must be the embodiment of *social* labour.'
9. '[T]he magnitudes of different things only become comparable in quantitative terms when they have been reduced to the same unit. Only as expressions of the same unit do they have a common denominator, and are therefore commensurable magnitudes' (Marx 1976a:140–41).
10. In *Theories of Surplus Value,* Marx (1971b:135, emphases in original) defines socially necessary labour-time as a determinant of a quantity of abstract labour: 'That the quantity of labour embodied in a commodity is the quantity *socially necessary* for its production – the labour-time being thus *necessary labour-time* – is a definition which concerns only the *magnitude of value*'.
11. This meaning of value in general is what allows Marx (1976a:188) to say that 'It is not money that renders commodities commensurable. Quite the contrary. Because all commodities, as values, are objectified human labour, and therefore in themselves commensurable, their values can be communally measured in one and the same specific commodity, and this commodity can be converted into the common measure of their values, that is into money'.
12. For a more complete explanation, see Robles (1992, 1994). It is important to mention that, on the basis of a completely different conceptual and methodological approach, Krause (1982) and then Roberts (1995a) arrive at a solution that appears to be similar to our own. However, their solution differ from ours in two central aspects. First, they think the problem to be solved in relation to the abstraction of labour concerns only the reduction from concrete labour to abstract labour. Second, although they think the problem is solved by means of the determination of the prices of production, the procedure is conceived in terms of linear logic, that is, by means of a system of simultaneous linear equations. By considering these two aspects of the problem, they not only contradict Marx's systematic dialectic in *Capital* but are also kept trapped within the neo-Ricardian theoretical framework.

10 Defining the Concreteness of the Abstract and its Measure: Notes on the Relation between Key Concepts in Marx's Theory of Capitalism

Massimo De Angelis

10.1 INTRODUCTION

What is abstract labour, the substance of value? Within the Marxist literature, there have generally been two answers. First, by equalising products of labour in exchange we abstract from the concrete differences of their labour. Abstract labour is the result of this abstraction. Second, in order to define a quantum of labour one needs a criterion of aggregation, and this criterion is provided by the category of abstract labour. We confront here two paradigms which de Vroey (1982) has dubbed the social and the technological, respectively. For the former, the roles of exchange and of money are central for the definition of abstract labour, while for the latter, the importance is in the quantitative dimension of production. The limitation of these two approaches cannot be investigated here at length.[1] Suffice here to say that in both cases abstract labour is a mental abstraction, the reality of which is defined in terms of the fact that people actually engage in these abstractions. The main difference between the two approaches therefore is about what represents labour as abstract and not about what is in reality abstract labour and how labour becomes abstract.

My argument is that abstract labour is not only real (as real as a mental abstraction can be) but also a tangible reality, in a way that our senses can apprehend it: it is, in other words, a concrete lived experience. As such however, it also defines a social relation of struggle. Abstract labour thus is a social substance, defined in terms of the social character of a lived experience and consequently a class relation of struggle. On a general formal level, the implication of this understanding of abstract labour as substance of value is that the use of a simultaneous model to represent value, in which the temporal dimension and therefore the contradictions inherent in this lived experience are entirely obliterated, represents a gross distortion of Marx. Far preferable is a

sequential understanding of value (for example Kliman and McGlone 1988, McGlone and Kliman 1996, Freeman 1995) in which the openness of history and the ruptures of class struggle become possibilities embedded in each period. In other words, it seems to me that the labour vector in simultaneous systems already presupposes that, whatever decisions capitalists make, labour will go along with it. This is not the case when one puts a time subscript, and frames the determination of value in a temporal framework. In this case the analytical representation of value embeds the crucial recognition that every capitalist decision faces the test of tomorrow.

In this chapter, I build on my previous work on the substance of value, which focused on the concreteness of abstract labour as a social relation of production (De Angelis 1994, 1995b), and discuss value in terms of its qualitative and quantitative aspects. This chapter is structured into two main sections, in each of which I analyse both the qualitative and quantitative aspects of the object of enquiry. In section 10.2 the object of enquiry is the substance of value (abstract labour) and its quantitative aspect is socially necessary labour time. In section 10.3 I deal with the value-form, that is money as general equivalent (qualitative aspect) and a certain 'price tag' (quantitative aspect).

10.2 ABSTRACT LABOUR AND SOCIALLY NECESSARY LABOUR TIME

In this section I follow Marx and start to present 'the nature of value independently of its form of appearance' (Marx 1976a:128). This nature of value has a qualitative and a quantitative aspect. The qualitative aspect is defined by the qualities of the value-forming substance: abstract labour. The quantitative aspect is defined in terms of a quantum of this abstract labour.

Qualitative Aspect: Abstract Labour

In contrast to Ricardo, who 'does not examine... the form – the peculiar characteristic of labour that creates exchange-value or manifests itself in exchange-values – the nature of this labour' (Marx 1968:164),[2] Marx makes the character of this value-creating labour the pillar of his analysis of class relations in capitalism. A hint is given in Marx's criticism of Ricardo himself: 'Ricardo's mistake is that he is concerned only with the magnitude of value ... But the labour embodied [in the commodities] must be represented as social labour, as alienated individual labour' (Marx 1968:131). In *Capital* I the character of this 'alienated individual labour' creating value is defined in terms of abstract labour. Marx defines abstract labour as 'human labour-power expended without regard to the form of its expenditure' (Marx 1976a:128). In the *Grundrisse*

he defines it in this way:

> this economic relation – the character which capitalist and worker have as the extremes of a single relation of production – therefore develops more purely and adequately in proportion as labour loses all the characteristics of art; as its particular skill becomes something more and more abstract and irrelevant, and as it becomes more and more a purely abstract activity, a purely mechanical activity, hence indifferent to its particular form; a merely formal activity, or, what is the same, a merely material activity, activity pure and simple, regardless of its form (Marx 1973b:297).

I think there is a strong indication in these passages that Marx was referring to abstract labour as a real activity, an activity lived by and experienced by real workers, an activity whose qualitative aspect is defined by its abstract character. It follows therefore that the kind of 'abstraction' involved in the category of abstract labour is not a mental trick to reduce qualitatively different kinds of labour, but a reflection in thought of a real abstraction that the commodity producers must go through. This indication is confirmed if we explore the meaning of the category of the 'abstract'. In the *Economic and Philosophical Manuscripts* this is a category defining a real human sensuous activity of a particular nature. It is therefore possible to use the insights from the discussion of the 'abstract' to shed light on the category of one particular 'abstract' activity, abstract labour.

The Sensuous and the Abstract in the Early Writings

If there is one general result of Marx's critique of economic thinking of his time, this is his insistence on de-fetishising theoretical categories (of the mind), whether religious, philosophical, political or economic, in a continuous effort to put at the centre of the enquiry human beings in their interrelation. Human beings for Marx are 'sensuous beings'. The 'sensuous' is in Marx the appropriation and confirmation of 'human reality' and manifests itself in a plural way: 'seeing, hearing, smelling, tasting, feeling, thinking, contemplating, sensing, wanting, acting, loving' (Marx 1975:351). The category of the sensuous is so important for the young Marx that he can state that 'the supersession of private property is ... the complete emancipation of all human senses and attributes' (Marx 1975:352). What makes an individual human is what makes an individual a sensuous being, not only a being with senses, but a being able to act upon these senses (individually and socially), to shape them, to educate them, to refine them. It is important to notice that the activity of 'thinking' is just one of the activities that constitutes us as human for the young Marx. The senses constituting us as human are not only the five physical senses 'but also the so called spiritual senses [thinking, contemplating, etc.], the practical senses (will,

love, etc.), in a word, the human sense, the humanity of senses' (Marx 1975:353). The totality of people's sensuous existence is what makes people human. All these senses however 'come into being only through the existence of their objects, through humanized nature' (Marx 1975:353). The relation of people with the object of their senses is therefore what defines their sensuous existence. It must be noted that these objects of the senses are not just external material things. The 'objects' Marx refers to are the constellation of 'objects' outside individuals, including, say, other individuals (objects of love or hate), natural resources (objects of devastation or preservation), or products of labour. But these objects are external only in relation to individual subjects or groups of subjects. Humanity as a totality, in its metabolic exchange with 'nature', is not outside 'nature', but is a moment of it. This is why I believe Marx refers to 'humanized nature' as a synonym for the objects through which 'all senses come into being'.

This relation of people with the object of their senses is obviously first constituted by the degree of 'cultivation' of the senses, which 'is a work of all previous history' (Marx 1975:353). People learn through history and communication among them to refine and cultivate their tastes for food, wine, etc.; that is, to constitute their human and social form of taste. But there is a second factor: the degree of material need has a determining influence on the sensuous experience:

> Sense which is a prisoner of crude practical need has only a restricted sense. For a man who is starving the human form of food does not exist, only its abstract form exists ... The man who is burdened with worries and needs has no sense for the finest of plays; the dealer in minerals sees only the commercial value, and not the beauty and peculiar nature of the minerals; he lacks a mineralogical sense (Marx 1975:353).

There are some striking points in all these examples. First, the notion of a 'restricted sense' arises from a form of constraint ('a man who is starving ... who is burdened with ... needs'), or from an hegemonic concern, which is another form of constraint and limitation ('the man who is ... burdened with worries'; 'the dealer in minerals sees only the commercial value'). Second, this restricted sense so constituted by some form of constraint, is a sense after all, that is, a sensuous experience, a lived experience, and therefore concrete. Third, these restricted senses also 'come into being only through the existence of their objects', but this time these are not humanised objects. A person 'who is starving' is indifferent toward different forms of food. For this person, only the 'abstract form' of food exists. Also, this person's way of eating, which Marx suggests hardly 'differs from that of animals', is not primarily a 'human form' of eating (this person does not care about the shape of the bowls or whether there are bowls at all, or whether s/he has company while eating, etc.), but an abstract

form, that is, eating simply as activity through which the body is nourished.

We have arrived at one important junction. The category of the 'abstract' is indeed a category indicating a sensuous activity (point 2 above), generated by some form of constraint (point 1 above), a lived experience in which human sensibility is confined and restricted to one dominant character, in which the form of expenditure of human energy in this activity does not matter; it is secondary, contingent. I call this restricted sensibility de-sensualised lived experience.

Abstract Labour as Social Relation

The notion of the 'abstract' in the *Economic and Philosophical Manuscripts* helps us to throw new light on Marx's definition of abstract labour, the substance of value in *Capital*. By defining abstract labour as 'human labour power expended *without regard to the form of its expenditure*' (Marx 1976a:128, my emphasis) Marx defines the substance of value as labour abstracted from its specific concrete determinations. This means obviously abstracting from the concrete determinations of useful labour which constitute its useful properties (the work of the weaver, spinner, tailor, etc., in Marx's examples). But it means more, much more, than this. Abstracting from the concrete determinations of useful labour also necessarily means abstracting from those concrete determinations of labour which constitute the realm of workers' sensuousness. It means, in other words, to abstract from the lived experience of the workers. To abstract from the lived experience of the labourers means essentially that the labourers are posed in a position of restricted sensuousness as discussed above.

The character of this abstract labour is therefore that it is alienated, forced and inherently boundless. The first two follow directly from the definition of abstract labour itself. By being an activity which abstracts from the lived activity of the labourer, abstract labour is alienated labour. By being alienated labour, it is forced (see De Angelis 1995a and below). Its boundless character derives from the simple fact that people's needs and aspirations are not posed as the inherent limit of the extension of this activity. The inherent boundlessness of the substance of value can therefore be actualised as the boundlessness of the circuit of capital $M - C - M'$.

By being labour which is alienated, forced, and inherently boundless, abstract labour is therefore a social relation of a particular kind. Since the notion of a 'restricted sense' arises from a form of constraint or external limitation and these constraints cannot be natural, as there is no 'natural' drive for unlimited growth of production and consumption, as well as unlimited de-sensualised work experience, these constraints must therefore be social, and present themselves as different forms of power over the labourers. One of these constraints may be the prevention of the labourers' direct access to the means of livelihood, land, etc., as Marx's analysis of so-called 'primitive accumulation' pointed

out, and which recent analyses term 'modern enclosures' (Midnight Notes Collective 1990). Another may be cultural patterns which shape consumption as consumerism, that is, consumption for consumption's sake. Another may be the eliciting of a continuous sense of insecurity in the mind of the labourers, caused for example by cuts in welfare programmes, the persistent presence of a reserve army of labour, the different forms of modern 'debt bondage', including house mortgages, student loans, personal loans for durable goods, etc. In all these illustrative examples, constraints are social constraints, and the workers' consequent need to perform abstract labour is socially induced.

If the presupposition of abstract labour is a socially induced constraint, a form of power over the labourers, abstract labour itself as abstracted from the lived experience of the workers, as the activity that reduces the workers to a position of restricted sensuousness, is not less a social relation. This is because abstract labour understood as real activity has a twofold character: on one side it means abstracting from the lived experience of the workers, on the other side it means the lived experience of the abstraction. Who is abstracting from this lived experience? Not the workers themselves who are living subject of the abstraction. From the perspective of the labourers, there is no human activity which is entirely 'sensuous-less'; at most from this perspective there is a lived contradiction between an activity which carries the burden of a restricted sensuousness and the realm of sensuous needs, sensuous desires and sensuous aspirations. Labour is entirely sensuous-less only from the perspective of those whose 'unceasing movement of profit-making' requires them to look upon labour purely as external objectivity to be controlled. I use the word 'capitalists' to indicate these social agents, but note that I use the word 'capitalists' in the same fashion as Marx, i.e., as bearers of a social function. From the perspective of this function, living subjects are acting as labour-power, as inputs of production, things. This can also be expressed by de-personalising the function and defining with Marx the 'rule of the capitalist over the worker' as 'the rule of the independent conditions of labour over the worker, conditions that have made themselves independent of him' (Marx 1976b:988–9). We could therefore replace the word 'capitalists' with the word 'capital' in order to identify this despotism of dead over living labour, a despotism that takes the form of abstract labour as discussed above.

The reality of abstract labour must therefore identify a social relation, a relation of work, in which the different sides hold two opposite and contradictory objective positions. This is what defines the capitalist relation of work as a relation of struggle. Thus Marx's category of abstract labour as labour creating value is not a theoretical representation abstracted from reality, nor even a formal theoretical means to equalise different concrete labours for the sake of measurement, but the mirror image in thought of a real activity, which has a twofold meaning corresponding to the different sides of the work relation. The

reality of abstract labour is, from capital's perspective, one of an external objectivity to be controlled: 'the owners of the conditions of production treat living labour-power as a thing' (Marx 1976b:989). The reality of abstract labour as lived by the workers is that of the contradiction between 'restricted sensuousness' and the realm of sensuous needs and aspirations.

Quantitative Aspect: Socially Necessary Labour Time

Value has a magnitude, and this is measured by 'the quantity of the "value-forming substance"' (Marx 1976a:129); that is, the quantity of abstract labour. How much of this de-sensualised lived experience enters into the formation of values? This is the question which must be asked to approach the quantitative aspect of value creation. The quantitative determination of value must carry a trace of this qualitative character of labour. Indeed, the answer to the question above is embedded in the qualitative character of value. As life-activity, abstract labour can only constitute itself as labour-time. Thus, the measure of the quantity of value is given by

> socially necessary labour-time, that is the labour-time required to produce any use-value under the conditions of production normal for a given society and with the average degree of skill and intensity of labour prevalent in that society (Marx 1976a:129).

One crucial thing must be pointed out. The quantity of value-forming substance is given by socially necessary labour-time and this measures the magnitude of value. There is thus a distinction between the magnitude of value and the quantity of value-forming substance we use to measure that magnitude (just as there is a difference between the distance separating two objects A and B and the representation of that distance by the yardstick we use to measure it). This distinction is generally not appreciated in the current literature. By stating for example that 'value is labour, its measure is labour time', Duménil (1983:441) not only should have said that value is abstract labour and its measure is socially necessary labour-time, but also that this measure is a measure not of 'labour', but of a quantum of abstract labour.

The magnitude of value is the magnitude of this de-sensualised lived experience, of this social relation, called abstract labour. As magnitude this lived experience has an extensive and an intensive dimension, namely the time in which labour power is expended 'without regard to the form of its expenditure' and the intensity of this expenditure. Everybody would know, upon a brief reflection on his or her own experience, that this is indeed what constitutes the 'magnitude' of our work experience, what determines the 'draining' of our human energy. The question therefore is, how is this magnitude measured in

society? The magnitude of value can be measured only by the quantity of the value-creating substance. But in society, this quantity is given by its average socially necessary labour-time (SNLT); that is, not just hours or days, but hours or days of de-sensualised lived experience of a given average intensity, and an average degree of skill. In a word, the measure of the magnitude of labour is given by a social average. The yardstick of one's performance is measured in terms of the performance of the collective worker in the industry: there is no hope for the individual worker (or group of workers) if s/he does not keep up. The collective worker has a mind of its own and therefore does not care about one's individual needs: it is trained to abstract from the form of the expenditure of one's human labour-power. The measure of the magnitude of value therefore must carry the trace of the substance it measures (abstract labour) and it acts on the individual labour-powers as an external force which tends to make them conform to the requirement of a social average, and in so doing it continuously reshapes the social average itself.[3] To the individual producers therefore, SNLT presents itself as external constraint, as a yardstick against which to measure their life-activity, their labour-time. To them, therefore, it presents itself as a given standard, a given presupposition of the production process. To capital as a whole, however, SNLT does not present itself as a presupposition, but as a result, the result of the contradictory process of formation of a standard, a process which necessarily embeds the contradictory forces of capital (aiming at increasing intensity of work) and the working class as human subjects (aiming at escaping abstract labour). In a word, SNLT as result is the result of the class struggle at the point of production.

How then does the measure of the magnitude of value come about? Let us take for example one industry composed of, say, 100 'firms' all producing the same multipurpose commodity. Thus:

$$l_{t+1}X_{t+1} = p_tC_t + L_t$$

in which l_{t+1} and p_t are, respectively, the output value and input price, X_{t+1} is the output, C_t input and L_t abstract labour. Suppose there are two subsections of the industry; subsection I includes, say, 95 per cent of 'firms' and subsection II the rest. We then have:

I $\quad l_{t+1}100 = p_t50 + 50$

II $\quad l_{t+1}2 = p_t1 + 1$

At time $t = 0$, value was 1, which is the same for $t = 1$. Both subsections have the same values, corresponding to the SNLT. Furthermore, let us suppose that variable capital v and surplus-value s for both subsectors are (both expressed in value terms):

I $v = 20 \quad s = 30$
II $v = 0.4 \quad s = 0.6$

Now, say the capitalists in subsection I succeed in speeding up labour in such a way that:

I $$l_{t+1}200 = p_t50 + 50$$

Given $p_t = 1$, suppose commodities are sold at this subsection value as determined by SNLT, that is $l_{t+1} = 0.5$. Yet if nothing changes in subsection II, its individual value (labour embodied in the technological sense!!) is still $l_{t+1} = 1$. The mathematical SNLT, that is the two subsections' average value, is 0.504. This average, however, is an average that imposes itself. In the context of this example, 'firms' in subsection I will have an unaltered mass of surplus-value in period 1 ($200 \times 0.5 - 50 \times 1 - 20 = 30$). However, 'firms' in II will be faced by a halved market value. If they attempt to sell at their 'technological values', they will be forced off the market. If they sell at the predominant market value of 0.5, they have a surplus value of ($2 \times 0.5 - 1 - 0.4 = -0.4$) and face losses. The only thing they can do is to introduce measures to make their workers work at the standard pace. That is, subsector II will have to produce four units of commodity given that technological setting, and thus:

II $$l_{t+1}4 = p_t1 + 1$$

This means that by selling the product at the SNLT 0.5, capitalists in II will now make a profit: $4 \times 0.5 - 1 - 0.4 = 0.6$.

The point of this very simple illustration – which should be corrected in order to take into account a more dynamic framework – is that the only thing that the market has to do with SNLT is that it acts as the external constraint that each 'firm' faces, a constraint which is then used *vis-à-vis* workers to make them work at 'standard' pace.

10.3 THE VALUE-FORM

We have now to move from the nature of value to the form of its appearance. This too includes a qualitative and a quantitative aspect. And once again the framing of its qualitative aspect enables us to better locate its quantitative aspect.

I must first clear the ground of what I believe is a common limitation of those interpretations which, by attempting to proceed beyond the shortcomings of the labour embodied approach and re-establish the centrality of money in capitalist production, define the value-form as what makes labour abstract

rather than as what represents abstract labour. This is a common feature of those approaches that de Vroey (1982) has labelled as the 'social paradigm' and I have criticised elsewhere (De Angelis 1995a). It is also a common feature of some contributions in the non-sequentialist/non-dualist camp (Wolff *et al.* 1982, Roberts 1995a, Ramos 1995a). The latter author offers the most detailed exposition of this thesis.

Abstract labour arises from the reproduction of capital as a whole, in which circulation – competition and price formation – is a necessary phase of mediation. The fact that the substance of value must be expressed as money implies that it is not 'labour', but abstract labour; this aspect of labour arises from the equalisation of commodities against money (Ramos 1995a:10).

It must be stressed again that this interpretation is representative of a significant number of writers, all of whom share the thesis that abstract labour 'arises from the equalisation of commodities against money'.[4] The main problem with this interpretation has already been pointed out to be in the definition of abstract labour. Following the interpretation I have offered in the previous section, abstract labour arises at the point of production, and not 'from the reproduction of capital as a whole, in which circulation – competition and price formation – is a necessary phase of mediation'. What instead does arise from the reproduction of capital as a whole, from the process of competition, etc., is the process by means of which the interplay and interaction of different individual capitals enforces a standard of labour upon the workers in a particular sector or firm, which therefore constitutes an apparent external constraint for the determination of a particular SNLT.

This distinction is particularly important in shedding light on the question of the value-form, money, and its relation with value. As value-form, money has both a qualitative and a quantitative character. The qualitative character of money must represent the qualitative character of value (abstract labour), while the quantitative character of money must represent the quantitative character of value (SNLT). I therefore start with the former.

Money as the Representation of Abstract Labour

Marx arrives at the form of money in Chapter 1 of *Capital* I through a series of logical passages, which I cannot survey here in detail. I want however to point out a few key characteristics of his enquiry. A useful starting point is Marx's analogy between the category of capital and the category of money:

> Since living labour ... is incorporated in capital, and appears as an activity belonging to capital from the moment that the labour-process begins, all the productive powers of social labour appear as the productive powers of capital, just as the general social form of labour appears in money as the

property of a thing (Marx 1963:388).

The subject of the analogy is living labour. In capital, the productive powers of social labour take on an 'independent form' (Marx 1963:388) as productive power of capital, while in the case of money, 'the general social form of labour appears ... as the property of a thing'. Abstract labour, this general social form of labour in capitalism, is represented in a thing, money.

The question is therefore this: why must the social relation discussed above, abstract labour, take the form of a thing, money? Money is nothing else than a thing with the property of representing the world of commodities as values, that is as the products of (abstract) labour, a real-life sensuous activity, and therefore able to be exchanged with the universe of commodities. The character of money's 'thinghood' is thus constituted through its external positing *vis-à-vis* the value-producing activity. In the simple form of value, in which 'the whole mystery of the form of value lies hidden' (Marx 1976a:139), a use value, a thing, becomes the form in which value, the result of a de-sensualised human activity, is represented. In the general form of value, and in the money-form, a use value, a thing, represents the value of the world of commodities, that is, the social universe of this de-sensualised human activity of labour. In the relation between a set of commodities expressing their values and the general equivalent, the latter is posited as an objectivity outside labour. It is in this general sense that the suggestion that 'money is a tautology for power' (Negri 1984: 35) is well taken. Abstract labour is a social activity in the double sense that it is work performed in different interdependent trades (and to this extent it is paired with the form of different concrete labours), and in the sense that all these activities are facing the same 'social boss', the same drive to regard their lived experience as secondary in relation to their expenditure of human energies as such. Thus 'the social character of activity ... appears as something alien and objective' (Marx 1973b:157). In other words, because the individual workers perform abstract labour as defined above, their sociality is not an immediate product of their (labour) activity, but is brought about through the mediation of an external and objective thing, money. The 'mutual interconnection' of the individuals, 'here appears as something alien to them, autonomous, as a thing' (Marx 1973b:157). This thing, money, has the power to represent (as general equivalent) and mediate (as means of circulation) social labour. But it can do so only to the extent that social labour is expended in a particular form, as abstract labour, as labour power expended without regard to the form of its expenditure.

When human labour-power is expended in such a way that all these sensuous characteristics of being are of secondary importance as far as the production of a commodity is concerned, with what are we left? We are only left with a phantom-like objectivity, a thing. Only this form of human activity can claim representation as a thing, precisely because, from the point of view of the

capitalists, it is itself stripped of sensuality, an external, objective thing. Not only a thing, though, but a thing with the inherent property of boundless quantitative increment, a thing which is therefore able to represent the inherent boundlessness of abstract labour. This is evident in both a synchronic and diachronic dimension. In the first case, in the form of a general equivalent, 'money is the absolutely alienable commodity, because it is all other commodities divested of their shape, the product of their universal alienation' (Marx 1976a:205). Therefore money represents an inherently boundless list of commodity-values, that is, an inherently boundless list of de-sensualised activities. In the second case, money is capital, is value in process, M – C – M′ – C′ – M″ … which represents capital's 'unceasing movement of profit-making' (Marx 1976a:254), boundless drive for accumulation, and therefore, boundless quantitative increase at the social level of the 'substance of value', abstract labour. Thus money (an inherently boundless, sensuousless thing) is work as people's work is seen from the perspective of capital, that is from a perspective outside the lived experience of work itself. The old adage derived from business practitioners' wisdom that 'time is money' has never been truer than in the following form: 'abstract labour-time is money'.

The Quantitative Aspect

On several occasions in *Capital*, Marx indifferently uses examples in hours or money (Marx 1976a: 301, 314, 417, 502–3, 676). It seems to me this is because hours or money are two different measures of the same thing, abstract labour. The difference is of course important. Hours of labour, as in socially necessary labour-time, are the immanent measure of value, meaning it is the inherent measure of life-time spent on work. Money, on the other hand, is an external representation of the same thing, the life-time spent on work. This, however, does not mean that 'social labour and money are … two aspects of the same measure', and that therefore 'value must be simultaneously expressed in social labour and money' (Ramos 1995a:11–12). This is because, first, SNLT (and not social labour) and money are not two aspects of the same measure but two measures of the same activity, abstract labour. Second, it is true that value must be 'simultaneously' measured (not expressed) in SNLT (not social labour) and money. However, in exploring further the character of this 'simultaneous' measure, one wonders why one needs to measure the same activity (abstract labour) in two different ways (SNLT and money). The key question therefore is, from the perspective of which class does one or the other measure acquire immediate relevance? SNLT is the way the measure is directly experienced by the workers, it is the rhythms of the seconds' hand *vis-à-vis* the workers' sensuous needs and aspirations. Money is the representation of that same labour activity from a perspective which is external to that labour activity, the perspec-

tive of capital. By analogy with Ramos' statement – 'value is, simultaneously, social labour and money, therefore it is not limited to one or another of these aspects' (Ramos 1995a:8) – we could say that a punch on the nose is simultaneously a punch for the one who strikes and the one who is hit. The former, however, will conceive the punch as 'external', on someone else's nose, while the latter will perceive it as an 'inherent' pain in his or her nose. Both experiences are real and, in principle, could be analysed in isolation from the other.

The same is true of money as measure of abstract labour and therefore as representation of the other, inherent measure, SNLT. To 'represent' SNLT qualitatively, money must have the same 'qualities' of SNLT; that is, they are both measures of a reified experience, a sensuous human activity treated as a thing. To represent SNLT quantitatively, a quantum of money must be in a certain proportion to a quantum of SNLT. Consider an economy with one sector producing a multipurpose commodity and another sector producing gold, commodity-money. Assume for simplicity that the conditions of production of gold do not change, so that $l_{t+1g} = l_{tg} = l_g$ = value of gold. The multipurpose sector can be represented as

$$l_{t+1m}X_{tm} = l_{tm}C_{tm} + L_{tm}$$

where subscript m stands for the multipurpose commodity. To represent commodity m in terms of gold, we must simply divide the value of commodity 1 (hours of labour per unit of commodity) by the value of gold (hours of labour per unit of gold) and thus obtain the gold price of commodity 1. Thus we have

$$\frac{l_{t+1m}}{l_g}X_{t+1m} = \frac{l_{tm}}{l_g}C_{tm} + \frac{l_{tm}}{l_g}$$

The ratio is the price of commodity 1, while the ratio is the money value of living labour, or, in economic terms, the 'value added'. The expression above can therefore be rewritten as

$$p_{t+1m}X_{tm} = p_{tm}C_{tm} + VA_{tm}$$

in which all traces of alienated labour have disappeared. And yet, for a constant value of money, p_t will change only in proportion to changes in SNLT.

10.4 CONCLUSION

The title of this chapter promised some notes on the investigation of the 'relation between key concepts in Marx's theory of capitalism'. I conclude by em-

phasising that there is a common denominator in all of Marx's categories discussed here, and this common denominator is abstract labour as a real life-activity and as a class relation of struggle. It is therefore no mystery that Marx calls this the 'substance of value'. Furthermore, value itself is the basic category out of which all other categories acquire meaning in Marx, especially that of capital. The category of capital is defined as 'value valorizing itself, value that gives birth to value' (Marx 1976b:1060). In the money circuit of capital M – C – M´ the sum of value invested M – C 'is only capital in itself, only potentially'. It actualises its existence as capital only by becoming more than itself, but it can do so only by incorporating more abstract labour: 'only when living labour is really incorporated into the objectively existent forms of capital, only when additional labour is sucked into the process, only then do we find that this labour is converted into capital'.

But this result, this conversion of labour into capital is now the precondition of another round of abstract labour, of alienated lived experience. Therefore, 'the process of accumulation is itself an intrinsic feature of the capitalist process of production' (Marx 1976b:1061). Thus, the terms accumulation–capital-value–abstract labour stand in a sequence which does not presuppose different assumptions approaching reality at different 'levels of analysis'. Instead, the reality of accumulation is already contained in that of value and abstract labour. As 'labour-power expended without regard of the form of its expenditure', abstract labour does not have any inherent limit, it is inherently boundless. On the other hand, the reality of abstract labour, of an alienated lived experience and the struggle against it, is contained in the category of accumulation, as this presupposes labour's subsumption and at the same time is limited by the struggles at the point of production against this subsumption.

NOTES

1. For a discussion see De Angelis (1995a).
2. As the passage quoted continues: '... hence [Ricardo] does not grasp the connection of this labour with money or that it must assume the form of money ...' (*ibid.*). Marx is thus stressing that Ricardo does not have a theory of money because he does not fully grasp the character of labour creating value but deals only with the quantitative aspect of this labour. Ramos (1995a:9) comments on the above passage by saying that 'The main defect of Ricardo's theory of value is thus the incomprehension of the connection between the substance and the form of value, of the link between social labour and money in capitalist society'. This is true, but a consequence of Ricardo's failure to understand the character of labour that creates exchange-values or manifests itself in exchange-values; that is, Ricardo fails to understand the nature of labour substance of value. The connection between this labour and money can be understood only after the character of this labour is properly understood.
3. This is for example the inherent logic of competition (De Angelis 1994).
4. For example Elson (1979b), Arthur (1979), Clarke (1989), Himmelweit and Mohun (1994) and Mohun (1984) as well as the authors referred to in the main text.

11 Forms of Existence of Abstract Labour and Value-Form

Stavros D. Mavroudeas

11.1 INTRODUCTION

The ontology of abstract labour (that is, its mode of existence) is a thorny issue for Marxist value theory, since it touches upon the realism of the concept and its subsequent relevance for differentiating Marx's value theory from that of Ricardo. The first part of the chapter surveys the methodological foundations of the problem. These are situated in the dialectics of essence and form and, more specifically, in the nature of essence and its dialectical and contradictory relationship to form.

The second part examines the popular approaches to the question. One – exemplified in Gleicher's work but popular also in other writers – claims that the ongoing transformations of the labour-process lead to the immediate appearance of abstract labour as concrete undifferentiated labour. The other popular approach, usually misappropriating the name of I. I. Rubin, attempts to discover an equally unmediated existence of abstract labour in money. The so-called 'Rubin school' represents a first attempt in this direction, which is analysed and criticised in the last half of the second part.

The last part discusses a more ingenious version of the second route: the construction of a Labour Equivalent of Money – the value of money – or a Monetary Expression of Labour (its inverse) as the necessary link between value and money. In this way, abstract labour is indirectly actualised in money without falling into a crude identification of these two concepts. The forerunner of this approach, Aglietta's monetary expression of the working-hour – which culminated later in the 'New Solution' to the transformation problem – is reviewed and criticised.

The main thesis of this chapter is that all of these approaches to the question at hand fail to establish the ontology of abstract labour properly because they suffer from crypto-empiricism and mistreat dialectics. Their common attempt to discover an unmediated mode of existence of essence cannot properly grasp socio-economic reality. This, in turn, creates significant problems for their economic analyses.

11.2 VALUE, PRICE AND THE FORM-ESSENCE DIALECTICS

The Value Abstraction in Marx

The Marxian critique of political economy – in contrast to classical political economy – emphasises the social and historical dimension of economic analysis. The Marxian differentiation is founded on two essential areas: method, and value theory.

Marx's method does not make the separation between logic and object that is characteristic of the positivist 'model/real world' dichotomy, prevalent in economics. Instead, he applies rigorously the dialectics of form and essence by positing that all science would be redundant if the outward appearance of things coincided with its internal essence. It is the latter that generates the former and, therefore, science should discover it and then explain why and how appearance is created. In this approach, Marx follows the perspective of Ricardo, who broke radically with the pre-Ricardian methodology by insisting that science can no longer operate with 'description' on the one hand and 'analysis' on the other, but must, starting with its basic principle – the determination of value by labour-time – make all the outward appearances of the system 'answerable' to it (Pilling 1986:29).

However, Marx's understanding of the form-essence dialectics differs significantly from Ricardo's. While for Ricardo essence is something qualitatively fixed and non-differentiable, Marx sees and investigates the alteration of that essence; he understands it as something historically transitory which proceeds through different levels of development and qualitatively changes (Zelený 1980, chapter 3). This perspective enables Marx to capture the historical, social and transitory character of capitalism.

From within this methodological perspective, Marx advances his value theory. Whereas Ricardo employed a concept of embodied-labour that is a mere mental construct, Marx derives his labour theory of value from the actual workings of commodity-producing society itself, as a consequence of social relations between producers and non-producers, and formulates an abstract-labour value theory. Value abstraction is a real – not mental – abstraction because it derives from a real social process: that of commodity exchange. The 'reality' of the commodity abstraction, however, defies the dominant (positivist–empiricist) perception of what is 'real' (as opposed to 'ideal'): an empirically specifiable content. It is precisely this empirical non-particularity of the value that renders it 'abstract', just as its provenance in the socio-temporal sphere of actual human interactions renders it 'real'.

Thus, Marx studies the determination of prices (the sphere of exchange) by values (the sphere of production) as a dynamic relationship involving layered

levels of determination and feedback relations. Values constitute the essence of which prices are the necessary form of appearance; this implies a process of determination as well as a feedback relationship between them. This perspective hinges upon his understanding of the movement of capital as a total circuit of capital (production–circulation–exchange–distribution) where production is the dominant moment but in close correlation with the other moments (Fine and Harris 1979, chapter 1). Consequently, the Marxian labour theory of value exhibits not only the primacy of the social dimension but also a more complex structure than the Ricardian one. Ricardo, by not considering the social dimension, limited his perspective to the determination of the magnitude of value (that is, the quantitative aspect of value). Therefore, he could not distinguish between exchange-value and value, but used both terms almost synonymously in contrast with use-value. Marx, on the other hand, notices the social and historical character of the difference between use-value and exchange-value. Moreover, he distinguishes rigorously between the substance of value (labour-time), value and exchange-value.

Value is the representation of abstract labour and it is a characteristic pertaining exclusively to the capitalist mode of production. In this it differs from exchange-value (the exchange ratio between commodities) which applies to all modes of commodity production. Every social mode of production has a certain mechanism of equalisation of concrete labours. In capitalism this equalisation takes the form of the commensuration of concrete labours to the space of abstract labour. The latter is expressed through market exchange. However, the value abstraction – and therefore abstract labour – is not generated in exchange but in production. It refers to the capital-labour relation, that is, the separation of the labourers from their means of production and their subsequent alienation from the product of their labour. It hinges upon a double indifference. On the one hand, capitalists are indifferent towards the particular type of production process they are going to exploit, since use-value is of no significance for them. The only thing that matters is the availability of a working population for exploitation. Only at a secondary level does an individual capitalist consider the particular type of production process he will exploit. On the other hand, with the advent of the real subsumption of labour by capital, workers become equally indifferent to the particular type of labour they are going to perform in exchange for wages:

> On the other side, this abstraction of labour as such is not merely the mental product of a concrete totality of labours. Indifference towards specific labours corresponds to a form of society in which individuals can with ease transfer from one labour to another, and where the specific kind is a matter of chance for them, hence of indifference. Not only the category, labour, but labour in reality has here become the means of creating wealth in general

> and has ceased to be organically linked with particular individuals in any specific form. Such a state of affairs is at its most developed in the most modern form of existence of bourgeois society – in the United States. Here, then, for the first time, the point of departure of modern economics, namely the abstraction of the category 'labour', 'labour as such', labour pure and simple, becomes true in practice. (Marx 1973b:104–5)

Thus, the basis for labour becoming abstract is established at the primary determining level of production and then expressed through exchange. Individual capitalists, when choosing an entrepreneurial field, take social relations as given and consider the state of the market. Thus, concrete labour performed under their command is already rendered commensurable with general social labour available for exploitation. However, this preliminary, tentative but also latent commensuration is ultimately validated – or not – in the sphere of exchange. For this reason, value – as the expression of abstract labour – has socially necessary labour-time (a production concept which, however, refers to exchange) as its immanent measure. Then, value acquires its most mature form of the general equivalent (which belongs to the exchange dimension) and its external measure (money). However, the money-form acquires its power of representation only because labour has already been abstracted in production.

The Ontological Status of the Marxian Type of Abstraction

For Marx (preface to the first (1867) edition of *Capital* I), the power of abstraction should provide the point of departure and the foundation of the dialectical movement of investigation, through a continuum of mediations, towards the concrete. The starting point of the investigation is the 'cell-form' (Marx 1976a:90), which he identifies with Hegel's 'in itself' (or essence) in the first edition of Chapter 1 of Volume I (Zelený 1980, Banaji 1979:17). The movement from the essence to the concrete is continuous, so that in approaching the concrete forms in which the world exists we do not abandon the sphere of essence; rather, we now investigate this very essence in its form of appearance. This is a journey from the simple (the abstract) to the combined (the concrete is the unity of many determinations). This process is supplemented with a movement from the concrete to the abstract. In this two-way process the movement from the abstract to concrete is the leading or determining aspect (Ilyenkov 1982:138).[1]

There are two major alternatives to the Marxian perspective. The first rejects outright the dialectic of form-essence – and therefore of the value–price relationship – as Hegelian sophistry. Orthodox economics – as exemplified first of all by Böhm-Bawerk (1984) – is the most vocal representative of this view. Here theory becomes only a mental activity, since in the positivist world the

status of the 'real' is attributed solely to empirically unmediated presences. Theory becomes a mere simulation of reality. In this case, dialectical abstraction is rejected outright and replaced by the inductive–deductive method of positivism (usually in the form of successive approximation). If abstraction is not altogether discarded, it is replaced by the contentless abstraction that is characteristic of the positivist method. Abstraction becomes either a purely logical trick, which enables us to approximate reality (similar to the neoclassical method), or an average of immediately observable factors. In its strong version, it hinges on the more general proposition that logic stands outside the object of the study and that 'reasoning' exists solely in the mind and has no organic relation with the world outside. In its weaker version, it contends that not all theory, but only abstraction, is merely a logical construction.

From the point of view of dialectical logic, both versions are equally unacceptable. Marx's method does not make the separation between logic and object that is characteristic of the positivist 'model/real world' dichotomy. In dialectics the object under investigation determines the path and the movement of logic, while the latter retains its separate identity. According to Marx (1973b:101–2), 'the totality as it appears in the head, as a totality of thoughts, is a product of a thinking head, which appropriates the world in the only way it can... the real subject retains its autonomous existence outside the head just as before; namely as long as the head's conduct is merely speculative, merely theoretical'. In Zelený's (1980:23) words, Marx's advance from Ricardo's fixed essence to a new materialist relativist–substantialist logic has nothing to do with the relativism which disputes the possibility of perceiving objective reality correctly; it is rather a presupposition of true objective knowledge. Instead of a dichotomy between reality and its appropriation by thought, characteristic of positivism, historical materialism posits a dialectical relationship between them, which is grounded in reality. Marx's analysis operates simultaneously on both the level of theoretical or logical development and on the level of real historical events.

The other major alternative to the Marxian perspective, while accepting the reality of abstraction, attempts to discover the presence of its subject in an empirically unmediated manner. It therefore searches for a historically present essence as such. In this sense, concepts should follow and closely reflect historical reality. However, the grounding of Marxian dialectical abstraction in historical reality does not imply a crude and vulgar naturalistic identification of theory and objective reality. The ordering of economic categories is derived, not from their historical sequence, but from their essential relations of determination within capitalism, which might be precisely the opposite of their historical order (Marx 1973b:107–8).

The level of theoretical development is derived from real historical events. Activity on this level, insofar as it diverges from and runs counter to the actual

historical events (and the level of immediate appearances), is not an *a priori* construction, but reflects the 'life of the material' in its essence and expresses the essential and necessary relations of reality. There is, therefore, in Marx's works a continuous dialectical oscillation between abstract dialectical development and concrete historical reality. The Marxian system does not posit a simple, straight line from reality to the theory nor from appearance to essence. On the contrary, it relates them through a continuous spiral pattern: it oscillates from the one to the other, each time at more complex levels (assuming more determinations). Therefore, the search for an unmediated presence of essence within the totality of concretes – while attempting to answer the positivist rejection of essence as non-existent and, hence, as either redundant or a logical trick – falls into the same empiricist error by implicitly attributing the status of the 'real' only to empirically tangible things.

11.3 THE MODE OF EXISTENCE OF ABSTRACT LABOUR: MONEY VERSUS CONCRETE UNDIFFERENTIATED LABOUR

In recent years, there has been a continuing controversy over the nature and the mode of existence of abstract labour. One approach attempted to discover an unmediated (not existing through the mediation of others) actual presence of abstract labour within the production process; that is, a generally common form of undifferentiated work. Another approach posited money as the incarnation and the sole measure of abstract labour.

Unmediated Existence of Abstract Labour

Gleicher's (1983, 1985) approach is characteristic of the first (and today less-popular) answer to the problem of abstract labour. Gleicher (1985:463) sketches 'an alternative ontology of value as abstract labour... an ontology which includes both traditional Marxist, as well as Sraffian elements, while also rejecting elements from both approaches'. He assumes a middle-of-the-road position and contends 'that the conditions cited by the Sraffians – technical coefficients and the wage rate – can be understood to determine prices of production only through the existence of abstract labour as an actual social phenomenon constituting commodity value, as well as through the formation of surplus value'. Regarding the ontology of abstract labour, he maintains that it exists in its own right (that is, as a great mass of basically undifferentiated work), through the implications of Babbage's (1832) principle on the simplification of collective labour and Braverman's (1974) thesis on the de-skilling of work in capitalism. That is, abstract labour has been the ongoing historical result of the devel-

opment of the capitalist mode of production. In this historical abstraction of labour, 'abstract labour is taken to be actual (concrete) labour that has become independent of, and hence homogeneous across, various use-values' (Gleicher 1983:107). Thus, abstract labour acquires an actual–tangible existence in the production process.

There are certain slippery issues in Gleicher's definition of abstract labour as 'subjective activity of producing use-value that is not specific to the production of any single use-value, but which, to the contrary, represents the possibility of producing a wide variety of use-values' (Gleicher 1983:107). First, this view makes the very distinction between abstract and concrete labour obscure and almost redundant. Second, it can leave unaccounted as abstract (social) labour those categories of work that – even if they represent a small minority – aim at a specific use-value (e.g. highly skilled and dedicated work).

Facing criticisms – well grounded in the fact that capitalism has not a single tendency to de-skill labour but a contradictory trend of skilling/de-skilling – Gleicher (1985:466) shifted his answer from the organisation of production to the system of hierarchy:

> While the proportion of unskilled workers is vastly increased by mechanization, the existence of a hierarchy of skills is not eliminated... With mechanization the differentiation of human activities manifest in the hierarchy of skills is no longer determined by the nature of the direct interaction of the worker and the commodity in the process of being produced. Instead, the hierarchy of skills comes to correspond to the differences in activities operating, maintaining and designing systems of machinery... As such, they come to be common over a wide range of industries. Even skilled tasks become available to industries across the social division of labor; that is, even highly skilled labor becomes abstract.

Thus, he concluded: 'the hierarchy of skills is not a ranking of the relative productivity (units of use-value per hour) of individual workers engaged in the different tasks associated with a labour process. The individual worker, no matter what rank he/she occupies in the hierarchy of skills, is not the producer of a use-value. Each worker's labour is abstract' (Gleicher 1983:115–16). This argument is highly controversial. It is indeed rather simplistic to suggest that the hierarchy of skills is a ranking of labour productivity. However, this does not refute the existence of differences in skill and productivity. There is no conclusive evidence that these hierarchies and types become common over a great range of branches. Moreover, since the end of manufacture and the mechanisation of production, no individual worker is the sole and exclusive creator of a use-value; instead, use-values are produced through co-operation. But

again, co-operation and collective production do not suggest similar work activities or a tendency of de-skilling.

Gleicher (1983:98) contrasted his approach with what he branded the 'Rubin school', that is, those writers who argue that money is the sole measure of abstract labour and that labour becomes abstract only in the act of exchange between commodity and money. However, he classified in this trend, rather hastily, nearly every writer that adhered to value-form analysis (for example, Pilling, Rowthorn, Arthur, Gerstein, Kay, Fine and Harris, Himmelweit and Mohun, Elson, Eldred and Hanlon, de Vroey, Foley and Lipietz), disregarding significant differences. For example, de Vroey and Lipietz accept this characterisation. Eldred and Hanlon support the same theses and even discard value theory in general, but they recognise that Rubin actively disagreed with their view. Himmelweit and Mohun occupy a middle position: they hold that socially necessary labour time is determined in the sphere of exchange. On the other hand, Elson,[2] Fine and Harris, Pilling, Gerstein and so on do not accept that money is the immediate incarnation of abstract labour and they distinguish rigorously – following Marx – between the immanent (labour time) and the external (money) measure of value.

The So-called 'Rubin School'

The second and more popular course has been proposed by certain authors (Benetti 1974, Cartelier 1976, etc.), who accepted the characterisation 'Rubin school' and opposed Sraffian technicism by elaborating an abstract-labour value theory on the basis of a social paradigm. They therefore emphasised the necessity for a connection between the physical–technical dimension and the social dimension of economic activities. Money, then, was posited as an indispensable element and the ultimate expression of the transformation of private into social labour, and as the social embodiment of value-in-process. Benetti *et al.* argued that it is only through the exchange of commodities against money that private labour is validated and becomes abstract social labour. For them, value, rather than being linked to a mere embodiment of labour – a technical process – refers to this validation of private labour through the exchange of commodities against money. Hence, value-form analysis is crucial for the construction of the social paradigm. They maintained that value theory, rather than determining the equilibrium exchange-magnitudes, should explain the specific functioning of a decentralised economy in which no *a priori* defined social cohesion is conceivable. The qualitative aspect of value theory was divorced from the quantitative one; and while the former was prioritised, the latter was undermined. In this context, Benetti and Cartelier argued that values and prices are 'incommensurable' factors and attacked Marx for attempting to establish equations of the type 'sum of prices

equals sum of values'.

It should, however, be emphasised that Rubin explicitly disagreed with these views. In many places he affirmed that value can be studied without money having previously been established (I. I. Rubin 1978:36). Additionally, he explicitly condemned the view that value is created in circulation, stating that 'abstract labour and value are created or "come about", "become" in the process of direct production ... and are only realised in the process of exchange' (I. I. Rubin 1978:125). Finally, referring to the quantitative determination of abstract labour, I. I. Rubin (1973:154) said that it is a misunderstanding 'to admit that the social equalization of labour in the process of exchange is carried out in isolation of dependence on production (for example, the length, intensity, length of training for a given level of qualification, and so on), and thus, the social equalization would lack any regularity since it would be exclusively determined by market spontaneity'.

The 'Rubin school' has important shortcomings that led most of these authors to overhaul their initial theses completely, and to reject value and replace it with money as the main determinant of their theoretical systems. Benetti and Cartelier (1980) and Deleplace (1979), for example, while still supporting a social paradigm, have rejected all reference to value. They dropped the commodity as the starting-point for connecting the physical and social aspects of capitalism. They retained only the social aspect, arguing that economics cannot say anything about the physical aspect. The new starting-point is money, which serves as both substance and form of socialisation and is no longer related to abstract labour and value. The valuation of commodities is simply their monetary equivalence.

The main deficiency of the 'Rubin school' is that its justified preoccupation with the social dimension often results in positing one of its elements as its absolute embodiment. This is usually discovered to be money. Indeed money, as the general equivalent, has an obvious social character. However, the deification of the general equivalent as the sole and absolute expression of the social dimension is an oversimplification and has its own fetishistic connotations as well. It certainly undermines the inherently social character of production and reduces it to a fragmented sum of private processes, conceived from a basically technical perspective, and related solely through exchange. This is a caricature of Marx's theory of capitalism's anarchic character; it neglects the social division of labour (or understands it in a circulationist sense) and has strong similarities to the exchange economics of vulgar political economy. For Marx, exchange makes visible the contradiction internal to production itself, that is, the contradiction between private labour and the social division of labour. This contradiction is internal, inherent in the social division of labour itself. The social dimension, therefore, derives from, and exists first and foremost in, production. Value, as the

central pivot of social relations, is created in production and is defined prior to, and independent of, money. In this sense, Marx employs value theory, in *Capital* Volume I, in order to analyse production while abstracting from exchange and distribution. Exchange is considered only in the simple form of worker–capitalist relations. The fact that exchange, which in its developed form implies the level of 'many capitals', is not present does not hinder Marx from employing value theory in the analysis of production in abstraction from the other spheres. Of course, for Marx money is indispensable for capitalism (contrary to the classicals' theorisation of the economy as a barter system). Nevertheless, it is a secondary and dependent element.

A common consequence of the 'Rubin school' is the recourse to circulationism and the undermining of the primacy of the moment of production within the total circuit of capital. These errors opened the way, at a later stage, to the dethronement of value by money. The initial hypercriticism and the absolute separation between the qualitative and quantitative aspects of value (in order to establish the significance of the social aspect) led, later, to a subsequent divorce of the physical and social dimensions. Money, then, provided an easy but also highly narrow and unstructured solution to this dilemma. On the one hand, it could not be accused of technicism since it was posited directly at the social level (usually *via* its derivation from the functions of the state rather than the Marxian derivation from the commodity). On the other hand, it has an immediate physical presence. Hence, the broken relation between the social and the physical was re-established through an arbitrary reformulation around money and at the cost of the redundancy of value. The initial dive into the social and the realm of essence ended with a covert return to the physically observable and the level of appearance.

De Vroey provides a typical example of this circulationism by declaring that value theory is neither a production nor a circulation theory, since exchange creates value, but production determines its magnitude. Abstract labour truly becomes a circulation category (being defined as the social form for the allocation of social labour among specific production tasks) and is separated from labour expended in production. In order to disengage value from a crude and simplistic linkage to the difficulty of production, he ends up downgrading the primacy of production within the total circuit of capital. He criticises Meek for seeing the economy as a 'system of production' and for neglecting commodity circulation ('the particular social form in which social labour is allocated in a decentralised economy'), since 'the theory of value is constructed without any consideration of circulation or money' (de Vroey 1982:40). He fortifies these accusations with the argument that without money the theory of value simply cannot stand up (de Vroey 1982:40). For de Vroey (1982:40), 'the notion of value refers to a social property of commodities: rather than being linked to a mere embodiment of labour – a technical process – value refers to

the validation of private labour through the exchange of commodities against money'. From this thesis it follows necessarily that value is created in exchange.

De Vroey correctly rejects the embodied-labour value theory. But then he breaks almost any link between the socially necessary labour-time and the concrete labour expended for a particular commodity. In his approach, labour is the substance of value at the general level (as total abstract labour) but the relation between particular production processes and commodity values (based on and mediated through socially necessary labour-time and concrete labour) is significantly undermined. Hence, the assertion of this relation in respect of the whole opens the way for its negation in its parts: labour expended in all production processes establishes the commensurability of the products of these processes in general. Money is posited as the necessary and sufficient factor, the true incarnation of this relation. Money then displaces labour-time as the main determinant at the level of exchange of particular commodities. Abstract labour and value become exchange categories.

On the contrary, for Marx commodity exchange is organically prior to the category of money. This has nothing to do with the actual historical succession, but refers to the essential nature of history. Capitalism inherited forms of money derived from pre-capitalist modes. However, these forms have to be transformed to the money-form appropriate for capitalism. In this sense, the capital–labour relation is an organic prerequisite for the emergence of the capitalist money-form. Thus, the exchange equivalence – the commensurability – between commodities derives primarily from their common intrinsic character, namely that of being products of labour. Money and money prices mediate this equivalence, but are not the primary determining factors (as Marx's (1971b:161–3) polemic against Bailey has shown). Money does not precede the commodity but is generated from the differentiation within commodity exchange. Value is created in production and is validated in exchange. The crucial distinction is between use-value (expressing the material foundation of production) and value (the social form). The production and circulation of use-values can be defined independently: a certain determinate quantity of use-values is first produced and then exchanged. However, the production and circulation of value cannot be defined independently: labour-time is expended in production but is socially validated in circulation. Consequently, abstract labour and value are prior to money. Abstract labour creates value in the immediate production process, prior to exchange. The category of money is derived from the commodity category only when the value category is sufficiently developed.

Marx's critique of Franklin amounts to the above. Franklin (1836) was one of the first theorists to propose labour, instead of the precious metals, as the measure of value. However, his theory of abstract labour failed to distinguish

between concrete and abstract labour and, hence, mistook money to be the direct incarnation of abstract labour:

> Franklin, on the contrary, considers that the value of shoes, minerals, yarn, paintings, and so on, is determined by abstract labour which has no particular quality and can thus be measured only in terms of quantity. But since he does not explain that the labour contained in exchange value is abstract universal social labour, which is brought about by the universal alienation of individual labour, he is bound to mistake money for the direct embodiment of this alienated labour. He therefore fails to see the intrinsic connection between money and labour which posits exchange value, but on the contrary regards money as a convenient technical device which has been introduced into the sphere of exchange from outside. (Marx 1987a:296–7)

In contrast to Marx's approach, de Vroey posits money before value and abstract labour, as the necessary condition for their existence. Hence, money, in liaison with a vague notion of labour as the source of human wealth and as the creator of commodities, creates abstract labour, at the level of the whole economy. Value, in its turn, determines the market value of each particular commodity. Market value is a money-mediated representation of the amount of abstract labour congealed in the particular commodity. The primary determining factor is money, which should exist from the outset. It is, therefore, posited implicitly as an exogenous parameter that determines the whole circuit. The weak and ill-defined association of money with abstract social labour at the general level, which gives a flimsy imitation of a value perspective, collapses completely as de Vroey moves from the general level to that of particular commodities. Money – albeit under the guise of being the social incarnation of total abstract labour – then openly becomes the chief determinant; the link between labour and value is all but lost.

11.4 A LABOUR EQUIVALENT OF MONEY?

The attempt to discover a mode of direct existence of abstract labour through money found a more sophisticated expression in the theories that revolve around the value of money. Aglietta and the Regulation Approach have been the forerunners of this route that culminated in the ambitious 'New Solution'.

Aglietta on the Monetary Expression of the Working Hour

Aglietta (1979) attempts to connect value and monetary terms in the same equation but he ends up with a qualified confusion of the distinction between

the immanent and the external measure of value and an arbitrary juxtaposition of these two, rather than a dialectical interrelationship. Ultimately, what is wrong in his approach is not the aim of theorising value and monetary terms in a unified framework and within the same system of equations (as Böhm-Bawerk had accused Marx of doing), but the way he establishes this link.

His theoretical and definitional premises are quite contradictory.[3] In a number of places, Aglietta holds that value is the primary determinant and he even supports Marx's derivation of money from commodity money. Yet, behind this assertion lies a more subtle argument, which is derived from a 'Rubin school' type of approach and which culminated in the New Solution to the transformation problem. Money is derived from abstract labour and value on the aggregate level, but this derivation is implicitly refuted in its constituent parts (individual commodities and production processes), where money is posited as the main determinant. The separation of abstract labour from concrete useful labour, and from socially necessary labour-time expended in the production of a particular commodity, operate as the implicit and silent foundations of his approach. It has been argued (Mavroudeas 1990) that Aglietta separates the determination of the wage from the labour-time socially necessary for the reproduction of labour-power. Now this separation seems to be generalised for all commodities and not only labour-power (the commodity nature of which is seriously questioned by the Regulation school). The neglect of concrete labour and its relation to abstract labour, and the conception of the latter exclusively through money, are the next steps.

He maintains that the dual problem of conceptualising a commodity economy (expressed by abstract labour) and the wage relation (expressed by the partition of abstract labour into the value of labour-power and surplus-value) requires an intermediate theory of social forms. These social forms give rise to the concepts of the monetary expression of the working hour and the nominal reference wage (Aglietta 1979:275) and link value and income magnitudes. It should be noted that when Aglietta is talking about social forms, he refers primarily to structural (and, in his conception, institutionalist and historicist) forms.

Aglietta (1979:64) follows a net product approach and defines total abstract labour (VA) as the sum of the value of labour-power (V) and surplus-value (SV):

$$VA = V + SV \tag{11.1}$$

Then, he assumes Marx's equation of total price to total value, albeit in a slightly transformed version: total income (VP) is the monetary form of total abstract labour. From this he derives the 'monetary expression of the working hour' as the lever equating individual values and prices:

$$m = VP/VA \tag{11.2}$$

He subsequently normalises this variable by taking into consideration its past magnitudes. This is the 'monetary expression of the socially necessary labour', which is a function of the past magnitudes of m and on which the conversion of the value of labour-power into wages (S = total wages) depends:

$$m' = S/V \tag{11.3}$$

Therewith, the 'nominal reference wage' is the wage related to the quantum of abstract labour:

$$s' = S/VA \tag{11.4}$$

From (11.4) it follows that:

$$s' = S/(V + SV) = (S/V)/[(V/V) + (SV/V)] = m'/(1 + e) \tag{11.5}$$

where the rate of surplus-value $e = SV/V$.

Despite his assertions of the primacy of production ('the overall distribution of revenue is founded on the social relations of production and depends on the transformation of the conditions of production'), he ends up with the replacement of value by money as the main determinant of income distribution ('income distribution depends crucially on the conditions that form the general equivalent, which has a determining influence on the wage relation'). All of these fallacies are made evident in his autonomy of the monetary system and the consequent 'pivoting' of value by monetary factors.

Aglietta (1979:329) argues that 'the formation of the general equivalent, and consequently also its reproduction in time, has a certain autonomy in relation to the sum total of conditions of production and exchange'. This autonomy is the necessary instrument for synthesising the separate and independent economic acts into a commodity economy. It is indicative of this covert inversion of the Marxian position by Aglietta (1979:329) that he explicitly maintains that, although capitalism 'can only be analyzed scientifically on the basis of an objective, abstract labour, that defines a homogeneous social space', this social space cannot solve its main contradiction:

> The solution to this contradiction lies in the autonomy of the monetary system. The formation of the general equivalent makes possible a refraction of the homogeneous space of value that evolves over time. This refraction is summed up in the monetary expression of the working hour. On the basis of this logical solution, we were able to link the formation and division of total income to the fundamental concepts that define value and capitalist relations of production.

From this, the pivoting of value by monetary factors follows necessarily. Innovating individual capitals are able to gain a surplus profit, but the generalisation of the new techniques leads to the disappearance of this surplus profit. The old conditions of production will then have been destroyed and the capital still fixed in them devalorised. This process is effected through the monetary determination of (monetary) prices, separately from the system of prices of production:

> This ability of the monetary determination of prices to give an objective economic representation to local changes in the division of labour beyond the coherence of a system of production prices can be called the pivoting of value. It is the continuous evolution of nominal market prices that maintains over time the social link between individual capitals, despite the heterogeneity of the conditions of production. The pivoting of value is thus the homogenization by the monetary exchange C – M through which the value generated in a particular productive operation is measured within the current system of norms of production and exchange. (Aglietta 1979:302)

But if the monetary system is autonomised and if values are pivoted by monetary factors, then what determines the monetary system? If monetary circulation (that is, the price level) affects value commensuration, then how is the former determined? In the case in which the monetary system assumes an absolute autonomy, then a variant of the good old quantity theory of money is in sight. The other route open is an exogenous institutionalist determination of the monetary system. In this case, if distributional struggle is the main determinant of institutional compromises, then is it itself beyond almost any determination? Aglietta hints that it is loosely determined – in the interaction between the regime of accumulation and the mode of regulation – by labour productivity and the general price level. The first constrains the capital–labour distributional struggle. The question remains, what determines the latter?

Finally, it is worth mentioning that, in later works, Aglietta (Aglietta and Brender 1984, Aglietta and Orléan 1984) proposes a theory of socialisation based on routines and money and dismisses 'labour value' as a Ricardian remnant. Commodity exchange is considered to be a process of socialisation that does not presuppose a social substance. Money replaces value as the basis of social forms and operates as the necessary mediator of social cohesion. As even Lipietz (1985:169) admits, production is removed from the centre of attention and Aglietta and Orléan slip back to the economics of exchange.

Regulation's Historicist Perspective

Aglietta's thesis is situated within the historicist and middle-range framework of Regulation (Mavroudeas 1990). The autonomisation of the monetary sys-

tem and the institutional determination of the wage are considered as special features of the Fordist epoch. In this sense, they rely on two supposedly undisputed empirical factors ('stylised facts'): (i) the development of credit money and the predominance of fiat money, and (ii) collective bargaining and the supposed institutional determination of the wage independently from the value of any bundle of wage goods.

For Regulation, it is only in the pre-Fordist stages that the Marxian determination of the wage, on the basis of the value of a bundle of commodities, holds. In Fordism the wage is determined according to the balance of forces between classes, which is expressed through institutional arrangements. The monetary system – which, contrary to money commodity, is supposed to be free from a close association with production – is the main lever for accommodating these arrangements. Additionally, even in the case of pre-Fordist epochs, wage goods are not considered as commodities or at least as capitalist commodities. When wage goods become capitalist commodities – in Fordism – then the determination of the wage ceases to have any relation to them. Broadly speaking, for Regulation the Marxian understanding of the relation of the value of labour power (based on the labour time expended for the production of a bundle of goods) which is expressed in its price (the wage) holds only for the pre-Fordist periods and with the proviso that these wage goods were not either commodities or capitalist commodities. In Fordism, when workers' consumption is fully commodified by capitalist products, there is no structural relation between the value of their consumption basket and their wage. The wage is flexibly related to productivity increases and the balance of class forces.

The argument about when and how working class consumption has been commodified is quite subtle and popular. It has been proposed in two versions. The strong one (de Vroey 1984:48, 52) argues that workers' consumption during the pre-Fordist stages lay mainly outside the sphere of commodification and was only supplemented by (mainly non-capitalist) commodities. Wages only supplemented the reproduction of labour power. The weaker version (Lipietz 1985) sidesteps the extent of commodification of working class consumption and asserts only that it did not include capitalist products. In this case the distinction between capitalist and non-capitalist commodities is crucial, because it may be accepted that workers' consumption was commodified, but by non-capitalist commodities.

The strong version faces insurmountable empirical problems. The commodification of working class consumption is a prerequisite for the existence of capitalism and it actually took place very early. If workers are able to support themselves and their families, there is no structural drive to sell their ability to work. The separation of producers from their means of production results in them not being able to produce the greater amount of their means of subsistence. Even during capitalism's early phases, the major part of workers'

needs (food, clothing, housing and so on) had to be bought.

The weak version proposes a more sustainable position. Workers' consumption may have come under the dominance of commodity relations, but these relations were mainly non-capitalist until the 1920s. However, this version is also problematic. First, Regulation has a simplistic understanding of capitalist commodification, derived from its Althusserian understanding of a social formation as the co-articulation of different modes of production under the dominance of one of them. Consequently, it cannot conceive how remnants of previous modes can be assimilated by capitalism and cease to represent a different mode. Second, Regulation's empirical belief that mass production came before mass consumption and that Fordism ultimately coupled them is not verified empirically. There is no reason whatsoever why mass consumption must follow mass production, let alone Fordist mass production. Indeed, there existed products of mass consumption before the advent of mass production. Even in the case of consumer durables – which may provide a last-ditch defence for the regulationist argument – a mass market was created before the 1920s (Vatter 1967).

On top of these points, Aglietta (1979:31–2) and Regulation (Lipietz 1985:154) question Marx's thesis about the commodity nature of labour-power and the derivation of money from a money commodity, at least from Fordism onwards. This creates more problems for economic analysis than those it is supposed to solve, and it cannot stand up to empirical scrutiny. Capitalism's characteristic feature is that it transforms money and labour-power into peculiar commodities. Rejection of the commodity nature of labour-power leads to an inability to explain wage determination without recourse to institutionalism and the black box of distributional class struggle. Equally, the separation of monetary circulation from a money commodity also requires an exogenous institutional explanation of the former, and might flirt dangerously with quantity theory. Finally, Regulation failed to prove that such radical changes in both workers' consumption and the monetary system took place after the 1920s (Mavroudeas 1990, chapter III).

11.5 CONCLUSION

The attempt to discover an unmediated mode of existence of abstract labour is theoretically and empirically unsound. Abstract labour is a real factor but, like most essences, exists through other things and external relations. This perspective leads to an economic analysis that evolves on several levels and employs an array of levels of abstraction. On the contrary, the 'violent' attempt to discover a direct representative of abstract labour lacks dialectical rigour, cannot recognise different levels of abstraction and makes it difficult to analyse important aspects of the capitalist system properly.

NOTES

1. See also Marx (1973b:100), Rosdolsky (1977:25), I. I. Rubin (1978:109–10).
2. Elson (1979b) not only distanced herself from Rubin, but even accused him of technicism.
3. It is interesting that Aglietta (1979) supports both these approaches to the status of abstract value. Sometimes he suggests, following Braverman, that it actually exists within the labour process, and at other times – and without any explanation – he maintains that money is not only indispensable but also autonomous in determining the space of value.

12 Calculating Labour Values Empirically

Edward B. Chilcote

The objective of this chapter is to demonstrate the steps which must be taken, and the assumptions which must be made to calculate embodied labour and Marx's value categories. Functioning both as a guide and a review of the underlying methodology for calculating values, this chapter outlines the basic framework, identifies the key data, and pinpoints many of the major difficulties which must be surmounted to calculate labour values empirically. I follow the method developed by Shaikh (1984, 1998), Ochoa (1988), and Khanjian (1988) to illustrate how Marxian value categories can be given empirical content. Despite the existence of extensive empirical data, most of the Marxian literature remains at a very abstract level of analysis. Yet, Marx's theory of value is predicated on the conception of embodied labour time. To calculate embodied labour requires data on the technical conditions of production. While this data was not available to Ricardo or Marx, the existence of input–output accounts and related data today makes the calculation of embodied labour possible.

Vertical integration provides the foundation for the empirical analysis of the embodied labour approach of the classical economists. Sraffa (1960) points out that the 'operation' of vertical integration can be used to reduce the quantities of labour needed for the production of each industry's commodity output, or it can be used to resolve the composition of the commodity to vertically integrated labour or to profits and wages. Not until the works of Leontief (1986), Shaikh (1984), and Ochoa (1984) were the classical theories of price given empirical content.

Input–output data has been used by a few contemporary authors to evaluate both micro-economic and macro-economic issues. On the micro-economic side, the embodied labour approach has provided insight into the sources of the movement in relative prices (Ochoa 1984). Shaikh (1984), Ochoa (1984), Petrovic (1987), and Cockshott and Cottrell (1994) conclude that relative embodied labour times are excellent predictors of relative market prices. Ochoa (1984) demonstrates that changes in relative embodied labour times principally explain the movement in relative prices. Suggesting that many of the issues related to the effects of distribution on relative prices are overblown, it has been shown that wage–profit frontiers are nearly linear (Ochoa 1984). On

the macro-economic side, the input–output accounts have been used to account for aggregate Marxian accounting categories such as surplus value, variable capital, and constant capital (Shaikh and Tonak 1994, Khanjian 1988). These in turn are used to measure rates of surplus value and movements in the organic and value compositions of capital. Empirical estimates of Marxian value categories have provided the foundation for significant contributions, including Shaikh and Tonak's (1994) recent work on national income accounting. Several important conclusions have been drawn. Shaikh and Tonak show that the conventional profit–wage ratios are inadequate proxies for measuring rates of surplus value (1994). Rebecca Kalmans' (1994) dissertation, which follows up on their methodology, demonstrates that the higher rates of accumulation in postwar Japan relative to the United States were due more to higher rates of reinvestment than to higher rates of exploitation. Her empirical work challenges the conclusions of many profit-squeeze theorists who emphasise the debilitating effects of high wages on accumulation.

While only a few authors have developed and extended this approach, input–output analysis offers the potential for providing new insights and contributions to political economy. This chapter sets out, by means of careful analytical discussion and a simple numerical example, to show how Marxian categories are empirically estimated. In part one, I highlight the critical developments and theoretical issues associated with calculating labour values. In part two, I develop a brief example to illustrate the issues involved in calculating labour values. This example demonstrates how Marx's basic approach can be put into practice for an economy in which all the relevant data is available. I calculate embodied labour, variable capital, surplus value, and constant capital. In part three, I outline the basic steps and necessary assumptions which must be made to arrive at an empirical database capable of estimating Marxian value categories. I explicitly address many of the critical assumptions which must be made for the calculation of variable capital. I estimate variable capital, surplus value, constant capital, the value composition of capital, and the relation of direct prices to market prices.

12.1 VERTICAL INTEGRATION IN EMPIRICAL ANALYSIS

While the conception of vertical integration plays a critical role in the classical economic tradition, it was not until Wassily Leontief's (1986) pathbreaking empirical work that the theories of vertical integration were given empirical possibilities with the well-known Leontief inverse. The Leontief inverse matrix $(I - A)^{-1}$ shows the direct and indirect commodity requirements needed to produce a given level and composition of final demand. The elements of the

Leontief inverse show the total inputs from each sector needed to meet a unit of final demand for every other sector. The Leontief inverse is derived from the familiar accounting relation:

$$X - AX = Y \tag{12.1}$$

where X is the total product, Y is the net product, and AX represents intermediate inputs.

This accounting relation shows that total output minus intermediate input is equal to the surplus or net product. The conception of surplus is common to both the classical economic tradition and input–output analysis. In national accounting total output, intermediate inputs and the 'gross national product' (final demand or the net product) are also represented by this simple accounting relation. From matrix algebra we know that this can be rewritten and expressed as $(I - A)X = Y$. Inverting the matrix $(I - A)$ gives the Leontief inverse which is shown in equation (12.2):

$$X = (I - A)^{-1}Y \tag{12.2}$$

The Leontief inverse matrix $(I - A)^{-1}$ can be used to quantitatively calculate labour values, prices of production, and other key categories used by Marx and the classical economic tradition.

12.2 CALCULATING LABOUR VALUES

Labour values can be thought of as the embodied labour used in the production of a given quantity of commodities. Calculating embodied labour (or vertically integrated labour coefficients) requires both the commodity input requirements and the direct labour coefficients. The analysis of micro-economic questions has proceeded using total labour requirements (Ochoa 1984). The analysis of macro-economic issues has progressed by integrating the distinction between productive and unproductive labour into the analysis of Marxian categories (Khanjian 1988). Since some industries, such as finance and wholesale and retail trade, are entirely unproductive, productive labour alone has not yet been utilised in the study of relative prices (Ochoa 1984). Instead, total labour is used to measure embodied labour for micro-economic questions related to relative prices. However, in the calculation of macro-economic variables, such as variable capital and surplus value, the distinction between productive and unproductive labour is necessary. Another important modification is the reduction of skilled labour to simple labour. These are important considerations in empirical work.

12.3 EMBODIED LABOUR – TOTAL VALUE

Labour values represent both the direct as well as the indirect labour used in the production of commodities. Given the direct labour requirements needed to produce a given total product and also the technical coefficients matrix, the calculation of labour coefficients and vertically integrated labour coefficients is straightforward. The total embodied labour time (or labour values) is determined by calculating the vertically integrated labour used in the production of a given output. The unit values are given in equation (12.3):

$$\lambda = l(I - A)^{-1} \tag{12.3}$$

This represents the embodied labour per unit output. To arrive at the total value produced in each industry requires that the output be multiplied by the embodied labour coefficients:

$$\Lambda = \lambda X \tag{12.4}$$

To calculate the added value involves determining the embodied labour of the net product:

$$W = lY \tag{12.5}$$

The embodied labour contained in the net product represents the labour value of variable capital and surplus value.

12.4 SUBSYSTEMS, SURPLUS VALUE AND VARIABLE CAPITAL

The calculation of surplus value (s) and variable capital (v) can be thought of as a question of subsystems. Every economic system which produces a net product can be divided into distinct parts in such a way that each part is represented as a self-replacing state, a subsystem, for a given net product. Smith, Ricardo, and Marx in their analysis of profitability and accumulation examined the conditions of production of the wage good sector. While Smith and Ricardo focus on the production conditions in the economy which affect the corn sector alone, Marx concentrates on the factors which affect a broader bundle of the goods – those which he believed constituted the wage basket. Marx's discussion of relative surplus value in Volume I of *Capital* focuses on the changing productivity of the industries which produce the goods which sustain workers.

Deriving subsystems involves dividing the net product (or final demand)

vector into smaller vectors and determining the commodity composition of inputs needed to produce these specific net products (Juillard *et al.* 1982). We know that the net product can be divided into a number of clusters. I assume two clusters for illustrative purposes:

$$Y = Y_1 + Y_2$$

Each clustering of the net product Y_i has a corresponding output vector which we designate as X_i:

$$X = X_1 + X_2$$

Remembering that $X = AX + Y$ we can rewrite equation (12.2) so that

$$X = (I - A)^{-1}Y_1 + (I - A)^{-1}Y_2 \qquad (12.2')$$

which itself can be rewritten as

$$X_1 + X_2 = (I - A)^{-1}Y_1 + (I - A)^{-1}Y_2 \qquad (12.2'')$$

For any individual net product the relation of inputs to outputs can be expressed as

$$X_i = (I - A)^{-1}Y_i$$

The vertically integrated labour requirements to produce Y_i equal

$$\Omega_i = l(I - A)^{-1}Y_i$$

The measurement of the vertically integrated labour needed to produce variable capital necessitates the specification of a cluster or grouping of the net product according to the commodities which make up the wage basket of productive workers. The division of the net product into clusters and subsystems is how variable capital is – and surplus value can be – calculated. If Y_v is the cluster of commodities that sustain productive workers and Y_s is the remaining portion, equation (12.2) can be rewritten to reflect this division of the net product:

$$X_v + X_s = (I - A)^{-1}Y_v + (I - A)^{-1}Y_s \qquad (12.2''')$$

Variable Capital

The calculation of the value of variable capital begins by determining the

portion of the net product which forms the wage basket of productive workers, and then calculating the embodied labour needed to reproduce this basket of commodities. Variable capital is equal to the embodied labour needed to produce the commodities which sustain productive workers – the wage basket (Y_v).

$$v = \Sigma l(I - A)^{-1}Y_v \tag{12.6}$$

If the net product which goes to sustain productive workers is Y_v then the rest of the net product is Y_s.

Surplus Value

The remaining portion of the net product, which I call Y_s, is equivalent to the commodities in which surplus value is contained. Thus, the embodied labour needed to produce this portion of the net product is equal to surplus value:

$$s = \Sigma l(I - A)^{-1}Y_s \tag{12.7}$$

Alternatively, since only living labour adds value and the sum of variable capital plus surplus value is equal to value added, surplus value can be calculated as the sum of direct labour (l) minus the sum of variable capital (v):

$$s = \Sigma l(I - A)^{-1}Y_s \tag{12.7'}$$

12.5 CONSTANT CAPITAL

The value of constant circulating capital is equal to the embodied labour time needed to produce the intermediate materials used up:

$$c_c = \Sigma(\Lambda A) \tag{12.8}$$

The value of constant fixed capital can be determined in much the same way the value of intermediate commodities and commodities produced for final demand are calculated. The matrix which represents the current replacement costs of each type of capital is given by

$$c_f = \Sigma(\Lambda K) \tag{12.9}$$

From this information, I can calculate important economic variables such as the rate of surplus value (s/v) and the value composition of capital $(c_f + c_c)/v$

which are fundamental measures used in Marx's theory of distribution and accumulation.

12.6 EXAMPLE

For illustrative purposes, I assume an economy with three industries, in which only circulating capital is used, as Marx does in the transformation solution in Volume III of *Capital*, and an economy in which three commodities corn, pigs, and iron are produced, as Sraffa does in his *Production of Commodities by Means of Commodities* (1960). Further, I assume that all labour is productive and homogeneous. I also assume the technical relations listed in Table 12.1.

Table 12.1 Industries by Use-Values

To produce 500 bushels of corn requires	100 bushels of corn	75 pigs	200 tons of iron	50 worker years
To produce 1000 pigs requires	150 bushels of corn	200 pigs	300 tons of iron	75 worker years
To produce 750 tons of iron requires	150 bushels of corn	250 pigs	200 tons of iron	100 worker years

From this information the technical matrices are easily derived:

$$A = \begin{pmatrix} 0.2 & 0.15 & 0.2 \\ 0.15 & 0.2 & 0.333 \\ 0.4 & 0.3 & 0.267 \end{pmatrix} \quad X = \begin{pmatrix} 500 \\ 1000 \\ 730 \end{pmatrix} \quad Y = \begin{pmatrix} 100 \\ 475 \\ 125 \end{pmatrix}$$

$$an = (0.1\ 0.075\ 0.133)$$

This information is used to examine both micro-economic and macro-economic questions of value.

12.7 MACRO-ECONOMIC QUESTIONS

From the macro-economic perspective, the coefficients matrices above along with a specified wage basket is sufficient to calculate surplus value and variable capital. Multiplying these coefficients by total output, as in equation (12.4), gives the total embodied labour used up in the economy. This is equivalent to 882.594. It includes the direct labour (225) plus the indirect labour (657.594). The total labour which goes to produce corn, pigs, and iron is equal to 206.522, 339.488, and 336.584 respectively. Direct labour is equal to the sum of variable capital and surplus value, as pointed out in equation (12.7') above. The indirect labour is equal to constant capital.

To calculate variable capital and surplus value it is necessary to know the wage basket of productive workers. If productive workers consume 50 bushels of corn and 50 pigs in a year then this is their wage basket.

Given this information the measurement of variable capital (v) is straightforward. Variable capital is equal to the embodied labour necessary to produce the wage basket. From equation (12.5), I calculate the vertically integrated coefficients associated with the production of the wage basket and the total labour required for its production. Multiplying the vertically integrated labour coefficients by Y_v gives the variable capital which when summed is equal to 37.627. I can calculate surplus value deductively by subtracting Σv (37.627) from living labour (225). Or alternatively, I can calculate the embodied labour which yields the same result – s =187.373. Given this information, the rate of surplus value s/v is easily calculated. In this case the rate of surplus value equals [187.373/37.627] = 4.98 or roughly 5.

The calculation of constant capital is also relatively straightforward. Following equation (12.7), I calculate the constant capital for this example, and find that it is equal to 657.594. The value composition of capital (c/v) is equal to 17.477.

To calculate values by industry, I multiply the coefficients above by each industry's output to determine the worker-years used in production. Table 12.2 below is similar in structure to Marx's own tables because it expresses the inputs in terms of the vertically integrated labour inputs (or values) which make up each category type.

Table 12.2 Industries by Values

	Constant capital (c)	Variable capital (v)	Surplus value (s)	Total value
I. (corn)	156.52	8.36	41.64	206.52
II. (pigs)	264.48	12.54	62.46	339.49
III. (iron)	236.58	16.72	83.28	336.58

The representation of value in Table 12.2 is precisely how Marx handles the relation of value to prices of production. In this example the average value composition of capital ($\Sigma c \Sigma v$) is equal to 17.47. For Marx this represents the watershed or threshold from which industries are determined to be surplus or deficit sectors in the transfer of value. He argues that value will be transferred out of sectors with lower than the average value composition of capital and value will be transferred into sectors with above average value compositions of capital. In this example, the value compositions of capital for each sector equal {c1/v1 = 18.72, c2/v2 = 21.09, and c3/v3 = 14.15}. This means that there will be a transfer of value out of the iron sector, where the value composition of capital (14.15) is less than the average (17.32) and into the corn (18.72) and pig (21.09) sectors where the value composition of capital is greater than the average. From this information, the direction which prices of production will deviate from labour values is evident. Examining figure 12.2 confirms that there will be a transfer from the iron sector to the corn and pig sectors at rates of profit greater than zero.

Given these simple numerical examples, the calculations of variable capital, surplus value, and constant capital are relatively straightforward. Variable capital is computed by calculating the embodied labour needed to produce the cluster of commodities which sustain productive workers. Surplus value is calculated by computing the embodied labour needed to produce the remaining portion of the net product. This example, although quite simple in its construction, clearly shows how to give Marx's theory of value empirical content.

12.8 MICRO-ECONOMIC QUESTIONS

Labour Values

On the micro-economic side, I calculate the vertically integrated labour coefficients specified in equation (12.3) above. They equal

$$\lambda = (0.413 \quad 0.339 \quad 0.449)$$

If one accepts the labour theory of price as a reasonable approximation for relative prices then it would be expected that one bushel of corn would exchange against 1.218 pigs and 0.92 tons of iron.

Wages, Profits, and Prices of Production

Marx, himself, noted that the economic system must fulfil certain conditions for reproduction. In particular, he argued that prices must allow producers to

cover their input costs of production plus some ordinary or 'average' rate of return on the capital advanced. These prices, which he called prices of production act as 'attractors' or 'balance' points toward which market prices gravitate, and reflect the persistent and non-accidental pressures of competition.

Prices of Production (Marx's First Iteration)

Marx proposed his own unique solution for transforming values to prices of production in Volume III of *Capital*. First, he calculated the average rate of profit as the sum of surplus value divided by the sum of constant and variable capital:

$$r = \Sigma s/(\Sigma c + \Sigma v) \qquad (12.10)$$

Marx proposed the application of this rate of profit to the value of the inputs to calculate prices of production:

$$p = (c + v)(1 + r) \qquad (12.11)$$

From the example given above we know that the value rate of profit in the example will equal 26.8 per cent and one bushel of corn would exchange against 1.17 pigs and 1.01 tons of iron. Marx's own presentation would look something like below:

I. (corn)	[232.49c1 + 12.42v1][1 + 0.268] = 310.55
II. (pigs)	[200.27c2 + 9.50v2][1 + 0.268] = 265.99
III. (iron)	[227.34c3 + 16.07v3][1 + 0.268] = 308.64

Marx argues that prices must ultimately reflect prices of production and not just values. Of course, it is around this proposed 'solution' that so much discussion of the effects of distribution on relative prices has been centred. As many have pointed out, Marx failed to transform the inputs so that they reflect prices of production. This led to inconsistencies which brought into question Marx's theory of value.

Prices of Production in General (Circulating Capital Models)

As has been pointed out by several economists, prices of production can be calculated without reference to labour values (Steedman 1977). Again, vertical integration is the method used to analyse the influence of changes in distribution on relative prices. Sraffa (1960:34) points out in his chapter on the reduction to dated quantities of labour that prices 'resolve themselves into wages and profits'. Vertical integration allows us to break down the components of

prices into the costs associated with labour and the costs associated with capital as Smith and Ricardo do. Prices of production assume that profit rates are equalised across industries. The determination of prices of production has been approached from two angles, one which assumes that wages are advanced and constitute a portion of capital, and the other which assumes that wages are paid at the end of production and have the same composition as the sum of the inputs.

Real Wage Basket (Annual Turnover & No Fixed Capital)

Let us first consider the circulating capital model in which fixed capital is abstracted from, wages are treated as a part of capital advanced, and an annual turnover is assumed. This model assumes a uniform profit margin on the cost of the flow inputs (Ochoa 1984:53). Wages and means of production are regarded as part of the necessary product and profits of the net product:

$$p = pb'a0 + pA + r(pA + pb'a0) \qquad (12.12)$$

In this model the vector b represents the composition of the real wage bundle which is a row vector of consumer goods used to reproduce workers. Collecting terms and reorganising we can see that determining the rate of profit is an eigenvalue problem. Prices are related to both technical conditions of production and distribution

$$p = p(b'a0 + A) + rp(A + b'a0)$$
$$p(I - b'a0 - A) = rp(A + b'a0)$$
$$(1/r)p = p(A + b'a0)(I - b'a0 - A) - 1$$

From the largest eigenvalue of $(A + b'a0)(I - b'a0 - A) - 1$ we can uniquely define the rate of profit for the economic system. In this system the net product is equivalent to profits. This is the Marxist conception of surplus.

Standard Wage Basket (Annual Turnover No Fixed Capital)

Sraffa proposed to conceptualize the net product so that it included both wages and profits. Moreover, he chose to view the wage being paid *ex post* so that the issue of the effect of distribution on prices would become more transparent. While this conception is distinct from most classical economists, because it does not account for wages as a part of capital advanced, it is particularly useful for analysing the effect of changes in distribution upon relative prices (Sraffa 1960). In addition, Sraffa assumes that the wage is composed of 'standard' units rather than real units. The composition of the standard commodity is equal to the composition of the inputs used in the production of the net prod-

uct. Following Ochoa (1986), let us call prices of production which are calculated using the standard commodity 'Sraffian prices of production' for the circulating capital model:

$$p = wa0 + pA + rpA \text{ or}$$
$$p = pA(1 + r) + wa0 \text{ where } w = 1 - r/R$$

The price equation corresponding to these conditions can be broken into three elements: direct labour and wages, intermediate inputs, and profit on intermediate inputs and wages advanced. In addition, prices can be thought of as being broken down into two component parts, a wage component and a profit component. Pasinetti (1980:20) points out that we can express this as $p - rpA - pA = wa0$, or in its 'solution form' $p = wa0[I - A - rA] - 1$. Alternately, we can rewrite the equation above such that

$$p(I - A) = a0w + rpA$$

Following Pasinetti (1980:20) and particularly Shaikh (1995:2) we can define the series of heterogeneous physical quantities of commodities which are directly and indirectly used as stocks:

$$p = \lambda w + rpA(I - A)^{-1}$$

Pasinetti indicates that this expression is 'remarkable' because it shows that each price can be decomposed into wages and profits, which is precisely how Adam Smith approaches the problem (Pasinetti 1980:22). In the first component embodied labour is multiplied by wages to get vertically integrated unit labour costs. The second component is evaluated at a given rate of profit and its corresponding price vector which gives the total profit component of price. Thus, we know that the prices of individual commodities can be broken down into a wage component $w\lambda$ and a profit component $rpA(I - A)^{-1}$. As Pasinetti (1980) points out, the logical operation of vertical integration makes evident the intermediate inputs, evaluated at prices of production, which go into the production of a single unit of productive capacity $A(I - A)^{-1}$ and the unit of vertically integrated labour λ. One notable difficulty is that the price of any one commodity must be expressed in terms of the price of another commodity. Since both commodities have components which can create complex behaviour, changes in distribution make it difficult to determine if the changes in relative prices come from the commodity being assessed or from the one which serves as the standard.

The necessity of expressing the price of one commodity in terms of another commodity complicates the study of price movements which are the result of

changes in distribution (Sraffa 1960:18). Price bulges at one wage level and price depressions at others necessitate that a standard which is invariant to changes in distribution be found (Sraffa 1960:18). Sraffa proposes just such a commodity which he calls the standard commodity. The mixture of the inputs required set in proportions which represent what Sraffa calls the standard commodity. The advantage of a standard system is that the standard of value is not subject to change due to changes in distribution.

Now, we know that two extreme poles of distribution exist; one where all of the net product goes to profit ($r = R$), and the other where all of the net product goes to wages ($r = 0$). Where $r = 0$ and $w = W$ prices are proportional to labour values. $P(0) = W\lambda$.

Sraffa (1960:12) points out that if the initial proportions of labour and means of production in various industries were all the same there would be no change in relative prices due to changes in distribution. This is analogous to the examples Marx constructs where the organic composition of capital is equal across industries. Sraffa contends that the greater the diversity of the commodity composition in various industries the greater the effect of changes in distribution on relative prices. He points out that 'it is impossible for prices to remain unchanged when there is inequality of proportions' (Sraffa 1960:13). Moreover, Sraffa contends that the 'critical proportion' of labour to means of production is the watershed between deficit and surplus industries.

Sraffa examines relative prices via the standard commodity, which is itself unaffected by changes in distribution. In calculating the maximum rate of profit we must find the maximum eigenvalue (E) of A. The maximum rate of profit is equal to:

$$R = 1/E - 1$$

If I define the wage in terms of the standard commodity it will be equal to value added minus profit, and the wage share will equal

$$w(r) = 1 - (r/R)$$

In the standard system the relation between wages and profit is linear.

Now, if we return to the numerical example and conceptualise wages as a portion of the standard net product we can look at the affect of changes in distribution on relative prices. If you recall unit labour values equal 0.413, 0.339, and 0.449. The maximum eigenvalue is equal to 0.738 and the maximum rate of profit is equal to 0.355. Figure 12.1 shows the effect of changes in distribution on prices. You'll notice that where the profit rate equals zero prices of production are equal to labour values. As the rate of profit increases, prices change.

The maximum eigenvalue (E) of A equals 0.738. Thus, the maximum rate of

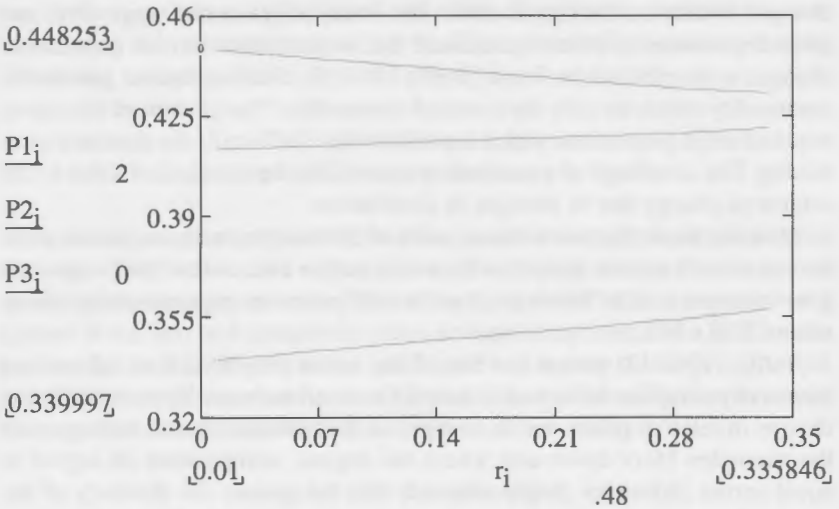

Figure 12.1 Sraffian Prices of Production at Different Rates of Profit

profit equals 0.355. Unlike labour values which are invariant to distributional changes, prices of production vary with changes in distribution:

$$p(r) = an(I - (1 + r)A) - 1w(r)$$

At low rates of profit, prices of production are very close to labour values. Table 12.3 shows the changes in prices of production as the distribution variables change.

Figure 12.1 shows the movement in prices of production as the rate of profit increases. Regardless of how high the profit rate is, it is evident from Figure 12.1 that values are excellent approximations of prices of production. While it is true that as the rate of profit increases the deviations of prices of production grow, these deviations are not substantial. Figure 12.2 shows that at low rates of profit prices of production are very close to labour values. As the rate of profit increases the deviation of values from prices of production grows, but not substantially.

As we expected, due to the value compositions of capital as the prices of corn and pigs rise the price of iron falls. In Figure 12.2, I decompose the price of corn into wages and profits. As is illustrated in the figure, at low rates of profit the wage component (the shaded area) is the principle determinant and at higher rates of profit the profit component (the striped area) is the principle determinant.

Table 12.3 Prices of Production at Different Rates of Profit

Profit rate	Wage share	P.o.p. corn	P.o.p. pigs	P.o.p. iron
0.01	0.972	0.413	0.34	0.488
0.024	0.934	0.414	0.341	0.488
0.037	0.895	0.414	0.341	0.477
0.051	0.857	0.414	0.342	0.466
0.064	0.819	0.414	0.343	0.445
0.078	0.781	0.415	0.343	0.445
0.091	0.742	0.415	0.344	0.444
0.105	0.704	0.415	0.345	0.443
0.119	0.666	0.416	0.346	0.443
0.132	0.628	0.416	0.346	0.442
0.146	0.589	0.416	0.347	0.441
0.159	0.551	0.416	0.348	0.441
0.173	0.513	0.417	0.348	0.44
0.187	0.475	0.417	0.349	0.439
0.2	0.436	0.417	0.35	0.439
0.214	0.398	0.418	0.35	0.438
0.227	0.36	0.418	0.351	0.437
0.241	0.322	0.418	0.352	0.437
0.254	0.283	0.418	0.352	0.436
0.268	0.245	0.419	0.353	0.435
0.282	0.207	0.419	0.354	0.435
0.295	0.169	0.42	0.355	0.434
0.309	0.13	0.42	0.355	0.434
0.322	0.092	0.42	0.356	0.433
0.336	0.054	0.421	0.357	0.433

The figure shows that in my example even at very high rates of profit the deviation of prices of production to labour values never exceeds 6 per cent. In addition, we can examine price–value deviations at higher rates of profit. One feature of this graph is that even at very high profit rates prices of production deviate by only about 6 per cent. This is shown clearly in Figure 12.3, which maps the ratio of Sraffian prices of production to labour values as the rate of profit changes.

Since the objective of this project is not to generate abstract models for their own sake, but to explain price phenomena in the real world, more concrete determinations must be introduced. Specifically, we must account for fixed capital, changes in capacity utilisation, and turnover.

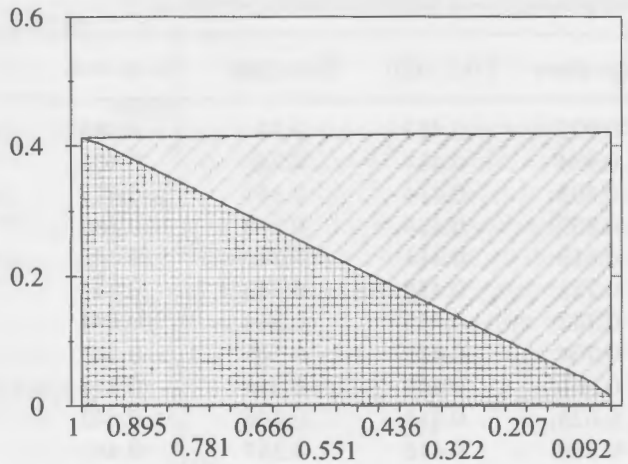

Figure 12.2 Wage and Profit Component of Price as Rate of Profit Changes

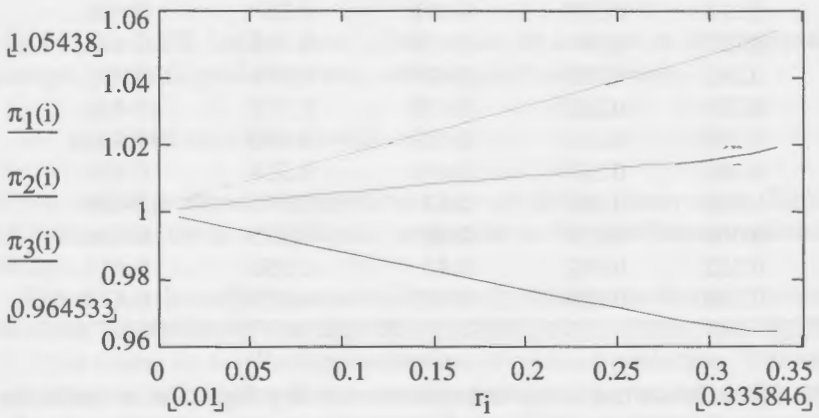

Figure 12.3 Prices of Production Value Ratios at Different Rates of Profit

12.9 PRICES OF PRODUCTION WITH FIXED CAPITAL AND TURNOVER

The conception of relative prices based on the equalisation of profit margins (profit calculated on the circulating capital advanced) is inadequate because it fails to account for turnover or fixed capital. Fortunately, these more concrete

factors can be addressed.

Fixed Capital

Let us first consider fixed capital. Obviously, with fixed capital there is a portion of the capital advanced which does not enter the product (K) and a portion which is depreciated (D). These can easily be incorporated into our prices of production equation:

$$p = p(A + b'a0 + D) + rp[K + A + b'a0]$$

Capacity Utilisation

The rate of capacity utilisation differs depending on which phase of the business cycle the economy is in. This can improperly distort the measurement of the rate profit. To adequately eliminate this influence we can multiply the capital stock by its rate of utilisation (U):

$$p = p(A + b'l + D) + rp[K(U) + A + b'a0]$$

Turnover

A third element which needs to be accounted for is the rate of turnover of the circulating capital advanced (T). Since the capitalist only has to advance wages every week or two and only needs a finite inventory, the amount of circulating capital used in a year is not equivalent to the amount of money capital advanced. Because the profit rate is measured on an annual basis, the annual circulating portion of capital advanced must be adjusted for its rate of turnover:

$$p = p(A + b'a0 + D) + rp[K(U) + (A + b'a0)T]$$

This is the proper specification of prices of production for the real economy. To calculate the rate of profit and hence prices of production we need to collect terms:

$$p(I - A - b'a0 - D) = rp[K(U) + (A + b'a0)T]$$
$$(1/r)p = rp[K(U) + (A + b'a0)T][I - (A + b'a0 + D)] - 1$$

As we can see from the above equation the calculation of the rate of profit is an eigenvalue problem for the expression

$$[K(U) + (A + b'a0)T][I - (A + b'a0 + D)] - 1$$

The eigenvector which corresponds to the maximum eigenvalue gives the relative prices of production.

12.10 ASSUMPTIONS AND EMPIRICAL DATA

The challenge in measuring value, variable capital, constant capital, and surplus value is not with small hypothetical examples, but with overcoming the complications real world data poses. In the above example, I assume no depreciation or fixed capital, an annual turnover rate for all industries equal to one year, and I assume that all labour is productive and homogeneous. The real economy, in contrast, is characterised by fixed capital, differential turnover rates, and unproductive and skilled labour. The data which attempts to capture fixed capital, depreciation, and productive labour is complex and intricate. These complexities demand that careful attention be paid to subtle issues related to data collection and methodology (see Chilcote 1996).

There are several shortcomings in the US data. The benchmark input–output tables, for example, are available at only five-year intervals. Thus, if annual estimates are to be constructed they must be interpolated for non-benchmark years (Shaikh and Tonak 1994). In addition, several modifications must be made to the input–output tables to make the data consistent. In order to properly arrive at estimates of the stock of capital and the flow of depreciation several modifications must be made (see appendix E of my dissertation). These problems and many more are important and addressed in chapters 2 and 3 of my dissertation (Chilcote 1997).

Particularly consequential for the calculation of variable capital is the estimation of productive labour and the productive worker consumption basket. Calculating these two pieces of information forms the most significant steps in the estimation of variable capital and necessitates a close examination.[1]

Production labour is estimated using the conventional definitions of production labour for manufacturing industries and non-supervisory workers for non-manufacturing industries. The definition of production workers includes all those who engage directly in the manufacture of each industry's product. Excluded from the category of production are executives, managers and persons engaged in accounting, sales, advertising, and routine office work. Non-manufacturing production labour is estimated by excluding supervisory workers.

To estimate the basket of commodities which sustain productive workers two major steps and several assumptions must be made. The first step is to calculate the total compensation of production workers. To calculate this, multiply the ratio of production to non-production workers within each industry by the difference in the wage rate of production to non-production workers

in each industry. Then multiply this ratio by the value added vector of compensation. The sum of the elements of this vector yields an estimate of productive worker income which is assumed to be fully consumed. Dividing total productive worker income by total personal consumption expenditure gives an estimate of the share of productive worker consumption. Multiply this scalar by the vector of personal consumption to arrive at a preliminary estimate of the wage basket of productive workers. Next, eliminate unproductive industries from the basket of consumption commodities. The resulting net product is an appropriate estimate of the productive worker wage basket.[2] The calculation of variable capital involves determining the embodied labour which goes to produce this wage basket. Following this method, the calculations of surplus value and constant are straightforward.

12.11 CONCLUDING REMARKS

In this chapter, vertical integration is used to give empirical content to Marx's theory of value. In part one, I show how to calculate value, prices of production, constant capital, variable capital, and surplus value given specific technical relations. I show that the calculation of variable capital is a subsystem problem which involves determining the emobied labour time needed to produce the commodities which sustain productive workers. The calculation of surplus value is also straightforward, and involves determining the embodied labour of the remaining portion of the net product. The hypothetical example developed in part two illustrates that the calculation procedures are straightforward. The key empirical considerations in the estimation of variable capital and surplus value are the estimation of productive labour and also the estimation of the bundle of commodities which go to sustain production workers.

NOTES

1. See Khanjian (1988) for a more detailed discussion.
2. Since the final demand vector 'personal consumption expenditure' contains not only the consumption expenditure of productive workers but also unproductive worker consumption and even more significantly capitalist consumption it skews the estimated vector of productive worker consumption basket towards luxury items. Hence a uniform consumption assumption biases the results. Overcoming this problem requires that more work be done on workers' consumption patterns.

13 Socialism and Value Categories in Early Soviet Doctrine: Lenin, Trotsky, Bukharin, Preobrazhensky

Paresh Chattopadhyay

13.1 INTRODUCTION

The early period of soviet rule in Russia was marked by rich discussions on the theoretical as well as policy issues concerning socialist construction. For the purpose of this chapter, we leave aside the policy discussions (as well as the actual policies pursued) and instead review briefly the relevant *theoretical* reflections of Lenin, Trotsky, Bukharin, and Preobrazhensky, in this respect perhaps the most important soviet spokespersons of the epoch, in order to have a representative idea of the contemporary soviet concept of socialism. Of these four authors the last two discuss the relation of value categories to socialism more specifically. Dealing with their positions successively, we will review their analyses in the light of Marx's relevant categories, which always served as the conceptual reference points of these authors.

13.2 LENIN

Lenin's image of socialism became increasingly laid bare starting a few months before the seizure of power. His discussion of socialism as a pure theoretical category is developed in, and in fact mostly confined to, his *State and Revolution*, a work that remained unfinished. However, from time to time, theoretical formulations on socialism do appear in his post-October writings devoted to the concrete problems of socialist construction.

Lenin distinguishes socialism from communism equating them, respectively, with Marx's first and second phase of communism (Lenin 1963b:280; 1982a:42, 301–2, 305; 1982b:530, 541–2). Secondly, Lenin conceives socialism basically in terms of property relations rather than relations of production. For him socialism is 'social ownership' in the means of production, and social ownership is taken to be the equivalent of the abolition of 'private ownership'. The

latter ownership, again, is defined as ownership by 'separate persons'. Lenin further specifies that social ownership of the means of production signifies ownership of the means of production by the working-class state (1982a:300, 302, 669; 1982b:711, 712, 714).

Lenin's concept of socialism as such considerably impoverishes its emancipatory connotation in Marx. Not clearly envisaging it as an ensemble of new social *relations* of production constituting a free association, Lenin reduces socialism to a specific *property form* – namely (working-class) state ownership of the means of production through the elimination of *individual* private ownership – which he called 'social ownership' of the means of production. According to Marx, individual private property in the means of production tends to be superseded at a particular stage of capitalism itself without the means of production being thereby *socially appropriated.* Indeed, far from socialist property being identical to working-class state property, socialism excludes not only individual private property but also working class state property in the means of production. The very first phase of the association along with the social appropriation of the means of production arrives on the historical scene only at the end of the transformation period to which the working-class *state* belongs.

As for exchange relations, Lenin (1962:151, 1963a:121) excludes commodity production (and money) from socialism. The end of capitalism would signify the 'suppression' of commodity production, and the new society would be characterised by organised, statewide distribution of 'products' replacing commerce.

As regards the distribution of the means of consumption under socialism, Lenin's reflections are almost exclusively confined to the *State and Revolution* (Chapter V), upon which we draw in our present discussion.

On the division of the consumable part of the total social product among the individual producers in socialism – understood as the first phase of communism – Lenin mostly paraphrases Marx's *Gothakritik.* However, Lenin adds here a couple of ideas of his own that are not specifically Marx's. Referring to what Marx calls the (remaining) 'bourgeois right' in the first phase of communism, Lenin envisages the equality of 'labour and wage' for all citizens, now transformed into 'hired employees of the state' where, further, the enforcement of bourgeois right would, according to him, necessitate the presence of the 'bourgeois state'.

Let us examine Lenin's ideas on exchange and distribution under socialism. As regards exchange relations, Lenin basically follows Marx on the elimination of commodity–money relations in socialism. However, Lenin's position in this regard is not without ambiguity. He says that state factory products 'exchanged' against peasants' products are 'not commodities' (Lenin 1964a:275–6). Now, to the extent that products are exchanged taking the *value form,* they

are commodities, even in the elementary case of product against product, the 'simplest value expression' of commodities (Marx 1962:62). *A contrario*, already in the 'lower phase' of the new society (Lenin's 'socialism') 'producers do not exchange their products' (Marx 1966b:178).

As regards distribution in socialism, we first note that by envisaging the 'equality of labour and wage' for producers and regarding them as 'hired employees' of the state, Lenin in fact is introducing *wage labour* in socialism. The wage, as a specific form of labour remuneration, Marx shows, is unique to capitalism, and in the society of associated producers there is no wage system, denounced by Marx as a 'system of slavery' in the very text that Lenin paraphrases. The distribution of the means of consumption through labour tokens, as envisaged by Marx, has nothing to do with their distribution through wage remuneration. In the same way, the very idea of 'hired employees' contradicts the socialist character of society. Indeed, in his inaugural address to the International (1864), Marx expressly opposes (capitalism's) 'hired labour' to (socialism's) 'associated labour'.

Next, Lenin affirms the existence of state in socialism. First he speaks of 'state wide' distribution of products and of *socialist* exchange of 'state products' (Lenin 1963a:121; 1964a:275–6; 1964b:207). Again, as we mentioned above, he envisages the citizens under socialism as hired employees of the *state* who receive wages and, moreover, postulates a 'bourgeois state' (without the bourgeoisie) to enforce 'bourgeois right' in socialism. It should be clear that Lenin's position here is the opposite of Marx's.

For Marx the existence of the state contradicts the existence of the producers' *free* association. Even when socialism is equated with communism's first phase, there is no place here for the state. The first phase of communism starts only *after* the end of the transformation period, along with the end of the (proletarian) state itself which presided over it. The alleged necessity of a bourgeois state to enforce bourgeois right is unwarranted by Marx's texts and is only Lenin's own gloss on the *Gothakritik*.[1]

As regards the distribution of consumer goods in the new society, Marx speaks of it in alternative ways in various works referred to earlier. But *nowhere* does he bring in the state to enforce 'bourgeois right'. Whatever 'bourgeois right' remains in the sphere of distribution does not require a political apparatus to enforce it. Indeed, Marx specifically envisages *society* itself as distributing the labour tokens among its members along with the allocation of labour power and material means of production among different spheres of production. This is of course as it should be since, as the *Manifesto* affirms, public power in the new society no longer has a political character (Marx 1966b:178; 1973a:358).

On the whole – by obscuring the distinction between production and ownership relations; by equating the juridical abolition of individual (private)

ownership with the establishment of social ownership and identifying the latter with (proletarian) state ownership; by not eliminating the state and wage labour – Lenin's socialist economy turns out to be much closer to Lassalle and Kautsky's visions of a state-owned and -planned economy than to Marx's emancipatory project of 'union of free individuals'. Lenin ultimately does not seem to have succeeded in transcending the Second International's narrow horizon concerning the future society.

13.3 TROTSKY

Trotsky's soviet period being very short – effectively ending in the mid-twenties – most of his voluminous writings are outside the scope of our discussion. Even for this very short period, Trotsky did not write much on economic matters. It was mostly politics that engaged his attention. Again, unlike his two eminent contemporaries, Bukharin and Preobrazhensky, he did not write any particular treatise on the theoretical aspects of socialist construction. His relevant remarks of a theoretical nature were made mostly in connection with his analysis of concrete problems of socialist construction in Russia. He developed these remarks mainly in three works: *Terrorism and Communism* (1920), 'Report (on the NEP) to the 4th congress of the Comintern' (1922) and *New Course* (1923).

Trotsky's approach to socialism is *juridical*. In order to establish socialism the principal task is to win the fight against private capital, which means abolishing 'individual ownership' of the means of production. With the most important industries in the hands of the worker's state, capitalism and, with it, exploitation cease to exist (Trotsky 1963:187; 1972:245; 1984:226). It is interesting that the *same text* that asserts the *abolition* of capitalism through the elimination of individual private ownership also speaks of the ongoing struggle between 'state capital and private capital' as well as of state capital competing with private capital (Trotsky 1972:239, 245). The obvious inconsistency in Trotsky's position, of asserting the abolition of capitalism and the existence of capital at the same time, seems to follow from his insufficient understanding of capital (in Marx's sense).

For Trotsky (1963:243; 1972:233; 1984:226, 227) capitalism is the system of individual private ownership in the means of production and market regulation of the economy. That is, for him capital is a specific juridical form of ownership and not a social relation of production, at least not primarily. Not only that. Capital for Trotsky (1972:245, 270) seems to signify, in the second place, a *thing* inasmuch as he speaks of the soviet state's accumulation of fixed and circulating 'capital' through 'primitive socialist accumulation' when capitalism and exploitation are supposed to have been already eliminated. Natu-

rally for Trotsky socialism is far from being a (stateless) society of associated producers; it is basically the working class state power founded on the elimination of individual ownership of the means of production.

Again, precisely because capitalism is a market regulated economy the socialist economy is viewed as a centralised, directed economy in which a general plan would establish the current allocation of society's means of production and labour power among the different branches of the economy. The socialist economy is the planned 'state economy', where planning would mean abolition of the market (Trotsky 1984:229, 220–22).

Thus Trotsky's image of socialism directly follows from his specific concept of capitalism. Inasmuch as capitalism is conceived not primarily as a specific social (production) relation, but only in terms of a specific property form and a specific type of circulation, socialism is also envisaged not as a higher form of social relation but simply as the abolition of those forms of ownership and circulation. Here socialism as state ownership is opposed to individual ownership and, as a centrally planned economy, opposed to the market. In this perspective, socialism as free and associated labour is not opposed to capitalism as wage labour. There is absolutely no perspective of what Marx calls 'free union' in socialism as opposed to capitalism's separation (and alienation). More than anything else, what is most important to Trotsky is the 'class nature' of the state. If the state is in the hands of the working class – that is, of what is supposed to be its party – then, in spite of the presence of commodity categories and wage labour, there is no exploitation and thus no capitalism, although the latter's 'forms' still persist, where those 'forms' refer to the 'methods and institutions' created by capitalism (Trotsky 1963:256–8; 1972:233, 245, 271–2).[2] Clearly rationalising the New Economic Policy, Trotsky insists that every workers' state on its way to socialism has to use the methods and organisational forms of capitalism like money, banks, exchange, which of course does not involve any exploitation (Trotsky 1972:272, 274).

That by socialism Trotsky is far from meaning an association of free labourers is also seen from the way he envisages the organisation of labour and the allocation of labour power among the productive spheres of the new society. This distribution and this organisation are not effected by society itself, as in Marx; on the contrary, they are done by the *state* through its central planning. The whole process involves workers' subordination to the state and the latter's *coercive power* over the workers.[3] The way Trotsky conceives the character of labour under *socialism* is also clear from his debate with the Mensheviks. There he seems to conceive 'freedom' of labourers uniquely as this 'freedom' is understood in capitalism. Indeed, for him the Mensheviks' 'free' or 'non-coercive' labour signifies the freedom of sale and purchase of labour power as opposed to 'obligatory labour' supposed to prevail under socialism. Quite logically and clearly rationalising soviet practice, he holds, as against the

Mensheviks, that piece work or contract work, which are forms of exploitation under capitalism, assume a different quality once production is 'socialised'. They then become the instruments of 'socialist production' and thus contribute to the common well-being (Trotsky 1963:212, 213, 225).[4]

13.4 BUKHARIN

We shall be concerned here mainly with the author's 1920 *Economics of the Transition Period* (1970). Written in the midst of the civil war and under the direct influence of the recently adopted Party programme, the book deals with the organisation of production in an economy transitional between capitalism and communism and the extent to which categories developed by Marx for his critique of capitalism are applicable to such an economy. Though the work ostensibly refers to the 'transitional period', the author's ideas on the (post-transitional) *socialist* economy clearly come out in the book.

Bukharin's (1970:9–12) point of departure for analysing the transition period is 'state capitalism' – reached by capitalism in its latter day 'organised' phase – which is supposed to have eliminated the market with its free competition along with anarchy of production, giving rise to 'a new type of production relations'.

After distinguishing 'socialism' from 'communism' – following the soviet tradition initiated by Lenin – Bukharin (1970:72, 116, 119) makes the transitional system the repository of some of the basic characteristics of Marx's 'lower phase of communism'. Already in this transitional system, a new type of 'production relations' arises 'based on a radical change in property relations'. With the proletarian nationalisation of the means of production, there arises the 'state form of socialism' and the process of the creation of surplus value ceases.

Bukharin poses the question whether the Marxian categories relevant to capitalism are applicable to the transitional economy, and his answer is essentially negative. First of all, to the extent that during this period 'conscious "social order" [will]' replace 'spontaneity' (*Elementarkraft*), the commodity is turned into a product together with the collapse of the monetary system. Naturally, with the elimination of commodity production, there is no value or price, and, by definition, profit disappears (along with surplus value).

As a matter of fact, as we mentioned earlier, according to Bukharin, commodity production tends to be abolished even *before* the 'transition period', that is, under 'state capitalism', when the 'statisation of the economic functions' puts an end to the anarchy of production. 'In the state capitalist society there exists the tendency toward the abolition of commodity economy within the country' (though the anarchy of production is reproduced in the world at

large, outside a country's frontier) (Bukharin 1970:33, 16).

It appears that Bukharin does not consider commodity production as a 'historically determined social *mode of production*' (Marx 1962:90, emphasis added) but takes a historically specific *form of its existence* – namely, the so-called free market – as commodity production's existence itself, so that the absence (or at least a considerable modification) of this particular form under the state control of the economy appears to him as the abolition of commodity production itself. Thus, when, under a (proletarian) state economy, products of labour continue to be exchanged in their price form, prices are simply explained away as purely formal, without value-content (Bukharin 1970:145). Now, commodities, by definition, are the products of private – that is, non-directly social – labour executed in reciprocal isolation, the independent producers recognising only the 'authority of competition' (Marx 1962:87, 377). For the existence of commodity production, the units of production need not be separately owned and controlled. It is sufficient if they are *functionally* separated from one another, so that the reciprocal relation of producers could only be indirect – that is mediated through the value form of their products. To the extent that *society* is not in a position collectively to appropriate the conditions of production (directly), the units of production will remain reciprocally isolated and the relations of persons will continue to appear as the relations of things through the commodity form of the persons' products. In this case, state enforced regulation, which is not *society's* conscious regulation, becomes simply a particular form of existence of commodities, however much such regulation might curb the 'anarchy of production'.[5]

On the other hand, as regards labourers' remuneration under proletarian dictatorship, what appears as the wage, according to Bukharin, is really a 'phenomenal magnitude' or an 'outer shell' in the monetary form without any 'content'. What the labourers really receive is a 'social share' but not wages, inasmuch as there can be no wage labour under proletarian rule (Bukharin 1970: 145). Once again, this affirmation is not made to follow from an analysis of the *mode of production* under the proletarian rule. Wage labour, that is, the capitalist relation of production, is simply wished away as a consequence of changes in the state form and the ownership form of the means of production, that is, changes in the superstructural elements and not in the base, as Marx (1958:13) would say. Bukharin seems not to be aware of the (logical) contradiction in his position. If there is no wage labour there is, by definition, no proletariat either, and there would then be no *proletarian* rule. Indeed, if the capitalist mode of production could change on the morrow of the establishment of the proletarian state and its ownership of the means of production, there would be no need for a 'transformation period' between capitalism and socialism. As the *Communist Manifesto* declares, the installation of workers' rule and its taking over of the instruments of production constitute only the '*first step* in the workers' revolu-

tion' (emphasis added).

Bukharin in fact continually confuses the transition period with what Marx calls the 'lower phase of communism' by ascribing to the former many of the attributes of the latter. He does this by inverting the materialist method. He makes society's ownership relations the foundation of its production relations and affirms that since ownership relations change under proletarian rule, the relations of production also change. By change in the ownership relation, Bukharin in fact means change in the ownership *form*, that is, the change from individual ownership to state ownership (of the means of production).[6] The materialist method, on the contrary, holds that ownership relations only 'reflect' the production relations which are their 'content' and that production relations are the basis from which 'arise' the relations of property as the latter's juridical expression (Marx 1964:352; 1966b:177).[7]

The inconsistencies in Bukharin's argument, though embodied in his *theory* of the transition period, could in fact be seen as following from his attempt at rationalising the policies pursued by the soviet regime of the epoch. Bukharin's complete change in theoretical position a few years later could again be viewed as an exercise in rationalisation of the then-existing soviet economic policy. Four years after the adoption of the New Economic Policy, Bukharin acknowledges his 'mistake' in believing earlier in the abolition of market, the installation of a planned economy and the elimination of the capitalist economy immediately after the establishment of proletarian rule. On the contrary, according to Bukharin (1988:128), market relations, money, the stock exchange and the banks play a 'very big role' in the transitional economy. Again, toward the end of the NEP period, Bukharin speaks of the transitional economy's 'relative absence of plan' and asserts the possibility of a planned economy only for a 'developed socialist society'. In the same way, contrary to his earlier negative position on the relevance of the Marxian categories (of capitalism) to the transitional economy, Bukharin (1988:395, 396) now holds that the reproduction schemes as elaborated in *Capital* II are relevant for the dynamic equilibrium of the transitional economy such as the NEP economy. Bukharin's rationalisation of the new situation is also clear here.

Bukharin's (1989) last discussion of socialism – equated to Marx's lower phase of communism – appears in a text that he penned on the occasion of the 50th anniversary of Marx's death. In this text, apparently free from any relation to the actual soviet reality, the author on the whole clearly distinguishes between socialism and the transition period. Dealing with the first phase of communism – that is, socialism following Lenin – Bukharin (1989:417) enumerates its six basic characteristics: (a) less-than-full development of the productive forces; (b) non-suppression of the differences between mental and physical labour; (c) distribution according to labour, not according to needs; (d) preservation of the residue of bourgeois right; (e) residues of hierarchy, subor-

dination and state; and (f) the elimination of the commodity character of labour's product. However, even in this discussion, the most important feature that characterises the new society as opposed to all earlier societies does not come out clearly. Bukharin hardly emphasises that socialism is a society of free and associated producers based on the associated mode of production in opposition to both the enforced union (as in pre-capitalism) and the (enforced) separation (as in capitalism) between the immediate producers and the conditions of production.

13.5 PREOBRAZHENSKY

Preobrazhensky's principal theoretical work, *The New Economics* (1926), unlike Bukharin's book, is not claimed to be a treatise on the transition period (or on socialism) in general. It is, as its author says, a work on the 'economic theory of the USSR', confined to the transition period. However, the book does raise a number of basic questions concerning the construction of socialism in a relatively backward economy. We first give a short account of the main ideas of this important work and then look at it critically.

According to Preobrazhensky the soviet economy is a 'socialist-commodity' economy with a commodity sector and a state or socialist sector. Hence there are two regulators of the economy – the law of value and the principle of planning, of which the fundamental tendency takes the form of the law of 'primitive socialist accumulation' (hereafter PSA).[8] Inasmuch as the two sectors cannot coexist in a state of equilibrium without the one trying to evict the other, these two regulators operate in a relation of antagonism. The distribution of material means of production and (living) labour between the two sectors, as well as the type of relation between them, is the resultant of the struggle between these two contending forces (Preobrazhensky 1926:62–3, 72, 122, 152, 154).

The law of value operates 'spontaneously' as a regulator of production and distribution in an unorganised economy. In a backward transitional economy of the soviet type with a relatively low level of productive forces and the majority of the population engaged in (backward) agriculture, the 'simple commodity' sector remains extensive, within which the law of value operates as the dominant regulator. On the other hand, within the (organised) state sector of the economy, where the state is both the monopoly producer and the unique purchaser of its own products, there is atrophy of the operation of the law of value.

In its turn, PSA – which Preobrazhensky puts forward as a fundamental concept for a backward transitional economy – signifies the accumulation of material resources in the hands of the state, drawn from the sources external to

the body of the state economy. It assumes the character of an economic 'law' in the sense of constancy of reproduction in relation to the same causes and the same situation. Preobrazhensky (1926:94, 138) considers the law of PSA to be of 'universal significance'. In its struggle against the law of value this law tries, progressively, to evict the commodity sector in favour of the state or socialist sector over the whole economy. PSA basically consists of the 'exploitation of pre-socialist forms' by the socialist system of the economy, and it is of 'colossal importance' for the soviet economy in view of the fact that here the 'historically progressive form' is not the predominant form.

Preobrazhensky distinguishes between PSA and 'socialist accumulation' (hereafter SA). Whereas PSA is accumulation by the state from sources outside of its own sphere, SA is the extended reproduction of the means of production on the basis of the surplus product created *within* the socialist economy (that is, the state economy). Just as the prerequisite for capitalist accumulation is the primitive (original) accumulation of capital (hereafter PCA), in the same way SA requires *previous* socialist accumulation (that is, PSA). The function of PSA is to accelerate the process of transition to the moment when the state economy starts to dominate the whole economy. While PCA could start long before the bourgeoisie came to power, PSA starts only after the establishment of the proletarian rule. Secondly, such sources of PCA as pillage and colonial exploitation are not open to PSA. On the other hand, unlike PCA, PSA takes full advantage of the methods of regulation developed by capitalism itself.

The sources of PSA lie in the pre-socialist part of the economy such as the alienation of the surplus product of the independent artisans and the peasants, as well as the surplus value of the remaining capitalist segment of the economy. The principal mechanism of the 'exploitation of pre-socialist forms' by the proletarian state is the transfer of a surplus product from agriculture to (nationalised) industry by way of non-equivalent exchange, that is, exchange (in value form) of a greater quantity of labour from agriculture against a lesser quantity from industry (Preobrazhensky 1926:99, 102).

Like Bukharin before him Preobrazhensky also denies the relevance of the categories of *Capital* for the 'socialist-commodity economy' since, according to him, those categories are valid only for the capitalist-commodity economy. First, within the planned state sector of the USSR, there is really no commodity production; the category of price used in the inter-trust transactions has a 'purely formal character'. The commodity categories that are found in the state sector arise only from its relations with the (outside) private sector. In the same way, through the statisation of the means of production – resulting in the atrophy of the value-category – surplus product within the state sector ceases to take the form of surplus value and the category of profit disappears. By the same logic, labour remuneration within the state sector is no longer a wage, since the so-called 'wages-fund' is regulated by planning and not by the opera-

tion of demand and supply of labour (Preobrazhensky 1926:160, 182, 212, 220). Similarly Marx's reproduction schemes do not hold for the transitional economy, since equilibrium is obtained there, not through equivalent exchange *via* the law of value, but through the clash between the latter and PSA (Preobrazhensky 1926:174).

Let us now examine Preobrazhensky's ideas about the new society. Preobrazhensky identifies the (proletarian) state ownership with *social* ownership, the state economy with *socialist* economy, and writes about the 'socialist relations of production of the state economy'. Thus according to Preobrazhensky, by a single juridical act the old relations of production are 'decreed away', as Marx would say.

Preobrazhensky conceives the transitional economy purely in terms of changes in property relations (forms). The period is as long as it takes to nationalise the (principal) means of production, and capitalism is supposed to change automatically into socialism along with it. The only remaining problem, after the basic completion of statisation of property in the means of production, would be the development of the productive forces.[9] Quite logically Preobrazhensky distinguishes between 'underdeveloped' and 'developed socialism' on the criterion of the extension of state ownership. Thus Preobrazhensky is clearly deriving production relations from ownership relations (or rather from ownership forms). In other words, ownership relations (forms) are taken as an independent variable in the process of social transformation. Preobrazhensky thereby seems to be suffering from what Marx had long ago denounced as 'metaphysical or juridical illusion' in his well-known critique of Proudhon.

Following Preobrazhensky's logic, there would be no need for a transition period and hence no need for proletarian dictatorship – at least not in the sense of Marx – for achieving socialism. The society of free and associated labour is ushered in on the morrow of the seizure of power with the nationalisation of the means of production. In the Preobrazhensky case, a transition period would be necessary only in the case of a backward society in which the underdevelopment of the forces of production would prevent immediate nationalisation after the seizure of power. Preobrazhensky's transitional economy is a caricature of the Marxian process of social emancipation.

Again, Preobrazhensky affirms the 'abolition' of commodity-capitalist categories within the state sector on the basis of (state) planning that eliminates the spontaneity of economic forces. Here also he abstracts from the social relations of production. The reasons advanced by Preobrazhensky for denying commodity-character to labour power and the products of labour in general, within the state sector in the 'socialist-commodity' economy, are basically the same as those proffered earlier by Bukharin (and Trotsky). These involve a number of stated and unstated assumptions ('enthymemes' in formal logic).

First, determination of (society's) production relation by the ownership relation; second, equating the capitalist ownership relation to a specific ownership form, namely, individual private ownership; finally, concluding that the substitution of private ownership by (proletarian) state ownership – associated with the (supposed) replacement of the 'free' market by state planning – signifies the abolition of capitalism itself along with its central categories, of which only the 'forms' (without 'content') remain. There is hardly any analysis of what, according to materialism, constitutes the basis of society – the social *relation of production* – under the (proletarian) statist regime, and how – if at all – the old relation of production has changed following a change in society's political and juridical edifice. This is, indeed, a complete inversion of the materialist method. Our earlier comments on Bukharin's method also apply here. Let us stress that categories such as prices and wages are not really 'abolished' simply because they cease to behave 'spontaneously'. What are 'fixed' or 'regulated' by plan are still *prices* and *wages*, the commodity-capitalist categories, even though Preobrazhensky might wish them away as only 'formal' categories. Why do all the products of labour have to take the *value form* and labour remuneration the *wage form*? Indeed, no 'plan', instituted either by 'state capitalism' or by the proletarian state, can eliminate the commodity-capitalist categories, whatever the specific forms they might take. These categories go out of existence only when the 'social individuals' appropriate collectively their own general productive power. In the latter case we of course have a plan, but it is of a qualitatively different kind.[10]

In the same way, Preobrazhensky abstracts from the social relations of production and makes labour power 'disappear' as a commodity (in the state sector) simply on the basis of the *state's* fixing the wages fund. He goes on to assert that the workers 'consciously' submit to *piece work* and the restrictions on the wage level imposed by the state, which thereby subordinates the law of wages to the law of socialist accumulation.

It is clear that, in all this theorising, Preobrazhensky is basically rationalising the policies of the contemporary soviet regime. However, with all its limitations, Preobrazhensky's work remains perhaps the most important soviet theoretical contribution on the economic problems of socialist construction in a relatively backward society.

13.6 CONCLUSION

What strikes one in this early soviet concept of socialism is a predominantly juridical approach to socialism, in which a specific type of ownership form, and not the specificity of the production relation, becomes the principal criterion for characterising the new society (the proletarian character of the state

being assumed). State ownership of the means of production is equated to socialism, from which commodity production and wage labour (when their existence is recognised) are wished away as merely 'formal', simply on the basis of (proletarian) state ownership of the means of production. Far from being Marxian socialism conceived as a 'society of free and associated labour' with no state, no commodity production and no wage labour, this socialism turns out to be simply a 'single national capital', in Marx's phrase, under a 'single ownership' (of the state).

NOTES

1. Indeed, it seems absurd that workers would recreate a 'bourgeois state' after having disposed of their own.
2. In this connection see the pertinent remarks in Bongiovanni (1975:179–80).
3. On the question of reorganising labour on a 'socialist basis', Trotsky (1963:207, 208, 214–15) lays down that 'if the organisation of the new society is based on the new organisation of labour, this organisation in its turn necessitates the regular application of the obligation to work', and he insists that the latter is impossible without the 'militarisation of labour' which, he does not fail to add, is 'in the interests of the workers themselves'.
4. At one place, in his polemic with the Mensheviks, Trotsky (1963:254) had to admit that 'there will be no state and no apparatus of coercion in a socialist regime'.
5. This was amply illustrated at the very moment when Bukharin was composing his work – under the so-called war communism. Even under this 'siege economy with a communist ideology', the anarchy of production, not to speak of commodity production as such, could not be eliminated; 'sleepless, leather-jacketed commissars worked under the clock in a vain effort to replace the free market' (Nove 1982:74).
6. While property relations are simply the production relations expressed juridically, within the particular property *relation* there could be different property *forms*. This is clear in Marx's discussion of the changing forms of the capitalist property relation through time, corresponding to the needs of capital accumulation. Thus capitalist property is basically individual private property (that is, of the individual household) in the early period of capitalism. The functionary of capital is at the same time its owner. But as capital accumulation progresses, the original ownership-function unity becomes too restrictive for the needs of accumulation, and a separation between them occurs till a stage is reached in which capitalist ownership is collective, rendering individual ownership irrelevant for administering capital (Marx 1964, Chapter 27 *passim*). Here the capitalist property relation assumes a form it did not have earlier. It follows that the state ownership of the means of production is a particular form of ownership within an ownership relation such that state ownership of capital does not *ipso facto* signify a change in the capitalist ownership relation, let alone in the capitalist relation of production. On the other hand, a specific ownership relation changes only on the basis of a change in the production relation to which it corresponds.
7. Bukharin's (1970:12, 34) inversion of the materialist method is clearly seen in his characterisation of state capitalism as a 'new type of production relation' – the 'state capitalist relation of production' – on the basis of the statisation of the economy under capitalism. He does not show in what way the relation between the immediate producers and the conditions of production – which *is* the production relation in a society – has changed with state capitalism, from what it had been in the pre-state capitalist stage of capitalism. Bukharin's (1970:114, 115) assertion seems to follow from what he calls the 'class character of the state' that controls the economy. In other words, to paraphrase

Marx (1958:13), society's relation of production is made to follow from its political (and juridical) edifice. (We have followed Marx's own term 'edifice' – rather than the commonly used term 'superstructure' – for rendering *Überbau*. This appears in the French version of *Capital* 1 citing these well-known lines. See Marx 1965:617.)

8. This category, originally due to Smirnov, was already employed by Bukharin in 1920 and Trotsky in 1922.
9. 'From now on', writes Preobrazhensky (1926:210), 'with the socialisation [that is, state ownership – P.C.] of the instruments of production, the future socialist development depends only on the purely quantitative growth of the productive forces within the state economy and the rhythm of this growth'.
10. It is a 'self-conscious plan' by the 'union of free individuals working with the common means of production (and) disposing their numerous individual labour powers as a single social labour power' (Marx 1962:92, 1965:613). The term 'plan' was inserted by Marx in the French version, but not reproduced in Engels' later German versions.
    Let us remark, without elaborating, that the artificial separation of 'form' from 'content', treating them as reciprocally independent entities – which we see in Trotsky, Bukharin, and Preobrazhensky – is of course completely undialectical. In Hegel and Marx, form is the form of content just as content is the content of form.

14 Value's Law, Value's Metric

W. Paul Cockshott and Allin F. Cottrell[1]

14.1 WHAT IS MEANT BY THE LAW OF VALUE?

The phrase 'law of value' was little used by Marx, although it is popular among his followers. It has no precise definition of the type that one would expect for a scientific law. Laws such as Hooke's law or Boyle's law have concise definitions that any chemist or physicist could repeat, but it is doubtful if anywhere in the Marxist literature there exists a comparable definition of the law of value.

The phrase is used a handful of times in Marx's *Capital*, but came into general use this century to refer to economic regulation, particularly in the context of debates about socialism. Thus, both in the 1920s and in the early 1950s, we had Soviet Marxists debating whether the law of value applied to the USSR. Stalin, in an influential pamphlet (Stalin 1972) argued that it did not so apply, by which he seemed to mean that market mechanisms did not regulate the allocation of resources. Bordiga, the founder of the Italian Communist Party, replied that to determine whether the law of value operated, one had only to go into a Russian market and see potatoes exchanged for roubles; for Bordiga, the law of value simply meant the exchange of equivalents, and the act of exchange made things equivalent (Bordiga 1954).

It seems to us that neither of these is an adequate definition and we would advance the following alternative: the law of value states that value, understood as the labour time socially necessary to produce a commodity, is conserved in the exchange of commodities.

There are several advantages of this definition: it is cast in the normal form of a scientific law; it is empirically testable; it has a precise meaning; and it emphasises the fundamental Marxian proposition that value cannot arise in circulation.

We should point out that we mean for this 'conservation principle' with respect to value to be understood in a stronger sense than that of the 'new solution' to the Marxian transformation problem (Foley 1982, Duménil 1984). The latter approach has value conserved across the aggregate of all exchanges. This is not an empirically testable proposition; rather, it is a stipulation defin-

ing the aggregate value of money. Our hypothesis, on the other hand, is that value is conserved in each particular exchange of commodities. Obviously we do not expect to find this law holding exactly; it is proposed as a stochastic law. (It might be worth remarking that the physical conservation of mass-energy also has to be conceived stochastically, if it is taken down to the quantum level.)

We begin by taking a new look at what Marx (1976a, Chapter 1, Section 3) called the 'value-form'.

14.2 METRIC SPACES

Instead of arguing about the value-form, or exchange value, in Hegelian terms,[2] we will use geometric concepts. This approach enables us to pose the problem of exchange-value with both greater generality and greater concision. It will be necessary to begin with a few definitions.

A *metric space* (S, d) is a space S together with a real-valued function d: $S \otimes S \rightarrow \Re$, which measures the distance between pairs of points $p, q \in S$, where d obeys the following axioms:

1. Commutation: $d(p, q) = d(q, p)$.
2. Positivity: $0 < d(p, q) < \infty$ if $p \neq q$.
3. Self-identity: $d(p, p) = 0$.
4. Triangle inequality: $d(p, q) \leq d(p, r) + d(r, q)$.

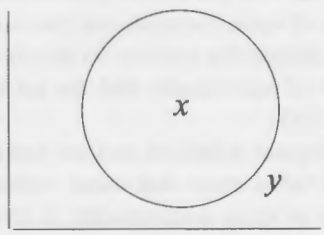

Figure 14.1 Euclidean 2-space

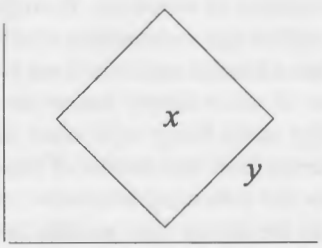

Figure 14.2 Manhattan metric

Examples of Metric Spaces

Euclidean 2-space. This is the familiar space of planar geometry. If p and q are two points with coordinates (p_1, p_2) and (q_1, q_2) respectively, then the distance between these points is given by the pythagorean metric

$$d = \sqrt{\Delta_1^2 + \Delta_2^2} ,$$

where $D_i = p_i - q_i$, $i = 1, 2$. It extends to multidimensional vector spaces as

$$d = \sqrt{\Delta_1^2 + \Delta_2^2 + \ldots + \Delta_n^2}$$

Manhattan space. So-called after the Manhattan street plan,[3] this metric is simply the sum of the absolute distances in the two dimensions: $d = |\Delta_1| + |\Delta_2|$.

Equality Operations in Metric Spaces

Let us define two points q, r $\in S$ to be equal with respect to p if they are equidistant from p under the metric d. Formally, $q =_p r$ if $d(p, r) = d(p, q)$.

Given an equality operator E and a member q of a set S, we can define an equality subset, that is to say, the set whose members are all equal to q under E. The equality set of q under $=_p$ using the Euclidean 2-space metric is shown in Figure 14.1, while Figure 14.2 shows the corresponding equality set under the Manhattan metric.

14.3 COMMODITY BUNDLE SPACE

What, it may be asked, has all this to do with value? Well, value is a metric on commodities. To apply the previous concepts, we define *commodity bundle space* as follows: a commodity bundle space of order 2 is the set of pairs (ax, by) whose elements are a units of commodity x and b units of commodity y; a commodity bundle space of order 3 is the set of triples (ax, by, cz) whose elements are bundles of a units of x, b units of y, c units of z... and so on.

Consider, for example, the commodity bundle space of order 2 composed of bundles of iron and corn. The set of all points equidistant with (e iron, f corn) from (a iron, b corn) under the Manhattan metric is shown in Figure 14.3.

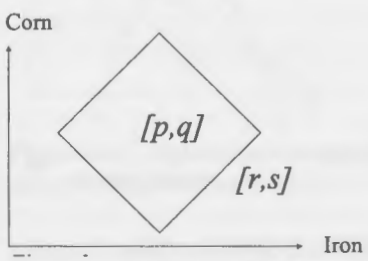

Figure 14.3 Manhattan equidistance

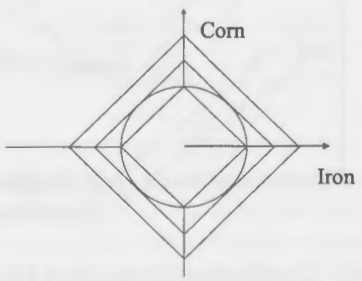

Figure 14.4 Valuation in Manhattan

We have a distinct equality operator, $=_p$, for each point p = (p_1 iron, p_2 corn) in our corn–iron space. Let us consider one particular equality operator, that which defines the equality set of points equidistant from the origin, $=_{(0,0)}$. Whichever metric we take, so long as we use it consistently, each point in the space belongs to only one such equality set under the given metric. These equality sets form an ordered set of sets of the space. It follows that any of the metrics could serve as a system of valuation, conceived as a partial ordering imposed upon all bundles. This is shown in Figure 14.4. Both the diamonds and the conventional circles are, in the relevant space, circles: the diamonds are circles in Minkowski or Manhattan space.

We now advance the hypothesis that if the elements of a set of commodity bundles are mutually exchangeable – that is, if they exchange as equivalents – then they form an equality set under some metric. If this is valid, then by examining the observed equality sets of commodity bundles we can deduce the properties of the underlying metric space.

The Metric of Commodity Bundle Space

What is the metric of commodity bundle space? The observed sets of exchangeable bundles constitute the isovalent contours, or *isovals*, in commodity bundle space. We find, in practice, that they are straight lines – known to economists as budget lines (see Figure 14.5). Note that they extend beyond the axes. Why, we may ask, are they not circles centred on the origin? Commodity space clearly has a non-Euclidean, and for what it is worth, a non-Manhattan geometry, but why? Before attempting an answer to this question, it will be useful to make some preliminary points.

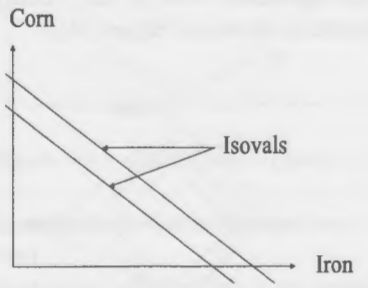

Figure 14.5 Isovals under exchange

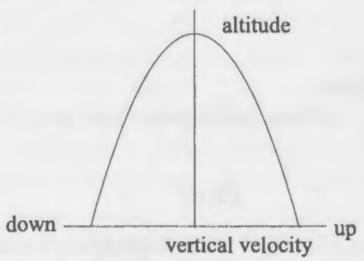

Figure 14.6 Isoval under energy conservation

We will call commodity bundle spaces obeying the observed metric of exchange-value, as displayed in the economist's budget lines, *commodity value space*, whereas a commodity bundle space obeying a Euclidean metric we will call *commodity vector space*. (Although our examples have applied to spaces of order 2, the argument can be extended to arbitrary hyperspaces.) There is something very particular about the metric of commodity value space, namely $d = |\alpha\Delta_x + \beta\Delta_y|$, where α and β are constants. This metric occurs elsewhere – for instance, in energy conservation.

Consider Figure 14.6, the graph of position versus velocity for a body thrown up and then falling. All points on the trajectory are 'freely exchangeable' with one another in the course of the time-evolution of the system. They may therefore be treated as an equivalence set. The graph does not look like the equivalence set of commodity value space until we square the velocity axis. This yields the diagram in Figure 14.7, which looks very much like the budget line in Figure 14.5. By squaring the velocity axis we obtain a measure proportional to what the physicists term kinetic energy. But this kinetic energy is only revealed through its exchange relation with height. Physics posits a one-dimensional 'substance', energy, whose conservative exchange between different forms underlies the phenomena.

Conjugate Isovals

Looking more closely at the metric we have deduced for commodity value space, we can see that our representation of the equality sets as budget lines is only half the story.

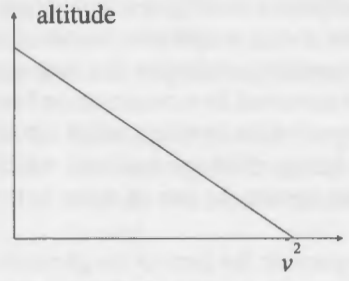

Figure 14.7 Equivalence under energy conservations

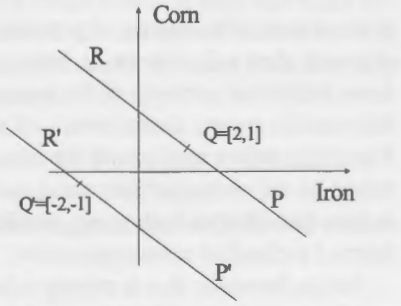

Figure 14.8 Equivalence under exchange

Let $\alpha = 1$ and $\beta = 2$ in the metric $d = |\alpha\Delta_x + \beta\Delta_y|$. Taking the point $Q = (2, 1)$ in Figure 14.8, we can show its equality set with respect to the origin as the line PQR along with its extension in either direction. All such points are at dis-

tance 4 from the origin. But by the definition of the metric, the point $Q' = (-2, -1)$ is also at distance 4 from the origin. There thus exists a second equality set on the line $P'Q'R'$, on the opposite side of the origin. In general, for a commodity bundle space of order n there will be a conjugate pair of isovals forming parallel hyperplanes of dimension $n - 1$ in commodity vector space.

If the positive isoval corresponds to having positive net wealth, its conjugate corresponds to being in debt to the same amount. There is an obvious echo of this in the practice of double-entry bookkeeping, the effect of which is to ensure that for every credit entry there exists a conjugate debt entry.

Points on an isoval and its conjugate are equidistant from the origin, but not exchangeable with one another. If I have a credit of 1 dollar, I will not readily exchange it for a debt of 1 dollar. This is reflected in the fact that points on an isoval may not be continuously deformed to a point on its conjugate isoval, whereas they may be continuously deformed within the isoval. In other words, the isovalent set is topologically disconnected.

Contrast this with what occurs on a Euclidean metric. The points $Q = (2, 1)$ and $Q' = (-2, -1)$ lie on a circle of radius $\sqrt{5}$, along which we may uninterruptedly move from one to the other. The disconnected character of the isovalent set in commodity value space becomes understandable once we realise that this space is a projection of a one-dimensional space into an n-dimensional one. As such, its unit circles comprise disjoint planes corresponding to the two disjoint points of the unit circle in one-space. It is this characteristic, of being multidimensional projections of one-space, that marks conservative systems.

Implications for Value Theory

If value were just a matter of providing an ordering or ranking of combinations of goods, then a Euclidean, or indeed any other, metric would pass muster. It is some additional property of the system of commodity production that imposes this specific metric characteristic of a system governed by a conservation law. This fits in rather nicely with the labour theory of value, in which social labour would be the embodied substance conserved during exchange relations, which in turn provides us with some justification for casting the law of value in the form of a classical conservation law.

So far, however, this is merely a formal argument: the form of the phenomena is *consistent* with a conservation relation. To justify our formulation fully we would have to (1) explain *why* the phenomena are such as to conform to a linear conservation law; (2) show *that* such a law holds empirically; and (3) rule out other potential 'value substances' as alternatives to labour. We have written on points (2) and (3) elsewhere;[4] in the remainder of this chapter we address point (1).

14.4 WHY COMMODITY SPACE IS NON-EUCLIDEAN

Spatial metrics are so much part of our mode of thought that to imagine a different metric is conceptually difficult. Most of us have difficulty imagining the curved space–time described by relativity theory, Euclidean metrics being so ingrained in our minds. Conversely, when looking at commodities, a non-Euclidean metric is so ingrained that we have difficulty imagining a Euclidean commodity space.

But it is worth the effort of trying to imagine a Euclidean commodity space, what we referred to earlier as commodity vector space. By bringing to light the implicit contradictions of this idea, we get a better idea of the underlying reasons why value takes the particular form that it does.

Is a Euclidean metric for commodity space internally consistent? In commodity bundle space of order 2, the Euclidean isovals take the form of circles centred on the origin. In higher-order spaces, they take the form of spheres or hyperspheres. (We assume in all cases that some linear scaling of the axes can convert them into a common set of units.) Let us suppose that the economic meaning of these isovals is that, given any pair of points p, q on an isoval, the bundle of commodities represented by p will be exchangeable as an equivalent with the bundle represented by q.

If the state of an economic agent is described by her position in this commodity bundle space, then the set of permissible moves that can be made via equivalent exchanges is characterised by unitary operators on commodity vector space. The set of equivalent exchanges of p is $\{|p|u$ such that $|u| = 1\}$, i.e. the radius-preserving rotations of p. Mathematically, this is certainly a consistent system.[5]

But economically, such a system would break down. It says that I can exchange one unit of corn, appropriately defined, for one unit of iron, or for any equivalent combination such as ($1/\sqrt{2}$ iron, $1/\sqrt{2}$ corn). But then what is to stop me from carrying out the following procedure?

1. Exchange my initial 1 unit of corn for $1/\sqrt{2}$ iron plus $1/\sqrt{2}$ corn.
2. Now sell my $1/\sqrt{2}$ iron for corn, giving me $1/\sqrt{2}$ corn.
3. Add my two bundles of corn together, to give a total of $2/\sqrt{2} = \sqrt{2}$ of corn in total.

I end up with more corn than I had at the start, so this cannot be a set of equivalent exchanges. The second step is illegal within the context of the Euclidean metric, since it involves operating upon one of the coordinates independently. But in the real world, commodities are physically separable, allowing one component of a commodity bundle to be exchanged without reference to others. It is this physical separability of the commodities that makes the

observed metric the only consistent one.

The existence of a commodity-producing society, in which the individual components of the wealth held by economic agents can be independently traded, selects, out of the possible value metrics, one consistent with the law of value. In a society in which commodity bundles could not be separated into distinct components, and exchange obeyed a Euclidean metric, the labour theory of value could not hold – but that is not the world we live in.

14.5 CONCLUSION

We have argued that several different metrics for the 'valuation' of bundles of commodities are possible in principle, most of them logically incompatible with the idea that any scalar quantity is conserved in exchange. But the fact that individual commodities are separable, and separately tradable, imposes one particular metric, corresponding to what we called commodity value space – and this metric is consistent with a conservation law. This formal argument does not in itself prove that any identifiable 'substance' is in fact conserved, nor does it establish the credentials of labour time as leading candidate for 'that which is conserved'. The present argument is complementary to other works (cited above) that address those empirical issues.

NOTES

1. Department of Computer Science, University of Glasgow, and Department of Economics, Wake Forest University.
2. In the postface to the second edition of *Capital*, Marx (1976a:103) noted that he had 'coquetted with the mode of expression peculiar to' Hegel in the chapter on the theory of value.
3. This is also known as a Minkowski metric.
4. The seminal contribution on the empirical assessment of the labour theory of value is Shaikh (1984); for a listing of subsequent work along similar lines see Cockshott and Cottrell (1997). The latter paper presents evidence that other possible candidates for the role of 'conserved substance' show much less fit with market prices than does labour time.
5. A very similar model is used in one of the standard formulations of quantum theory to describe possible state transformations (von Neumann 1955).

15 Towards an Empirical Measurement of International Transfers of Value[1]

Paul Cooney

15.1 INTRODUCTION

Contrary to the claims of the 'modernisation' school, inequalities in the world have not diminished but have rather worsened substantially in recent years. Although it is possible to measure the growing gap between the 'First' and 'Third' Worlds by using conventional empirical categories, for example World Bank data on GDP per capita, certain phenomena can only be identified through the use of value-theoretic categories. This chapter will first examine theories of unequal exchange and then identify theoretically the different mechanisms by which international transfers of value take place. The second aim of this chapter is to develop a methodology for empirically estimating international transfers of value. Depending on data availability, a future goal will be to use such a methodology for measuring the impacts of neoliberal policies in Latin America, and specifically for the case of NAFTA.

One of the hypotheses discussed in the unequal exchange debate was that underdevelopment was due to the transfer of value out of the 'Third World' to the 'First World', thereby keeping the 'Third World' impoverished and enriching the industrialised countries. Thus, several proponents of the unequal exchange thesis attempted to identify theoretically the mechanism of this transfer of value. These transfers are associated with exchange of imports and exports and are distinct from transfers of value arising from repatriation of profits, royalties or interest on bank loans. Because of the attention given to the unequal exchange debate, we will first consider the theories of unequal exchange of Emmanuel, Amin, and Mandel. We must evaluate the nature of the relationships between various international transfers of value and the growing gap between industrialised and less industrialised countries. The different types of international transfers of value must be theoretically distinguished and then empirical measurements would allow a judgement to be made regarding their impact on 'Third World' countries.

Future research should make all efforts to avoid the overly schematic theo-

retical analyses of the past, which paid insufficient attention to historical specificity. In fact, empirical analyses should be conducted simultaneously with historical research on both the economies of individual countries and regions but also the institutions that shape the historical context under examination. It is necessary to examine the role played by local, national, regional, and international institutions. In particular, a thorough historical analysis of the IMF and World Bank and their impact across the globe needs to be carried out for recent years.[2] In addition to institutions, the importance of understanding the operations of multinational corporations will become evident, as we examine the implications of the different international value transfers for 'development'. In fact, I would argue that, the accumulation process for multinationals is crucial for understanding underdevelopment today. However, this chapter is limited to considering the phenomena of international value transfers and their relationship to development issues in general. Let us now turn to theories of unequal exchange, starting with Arghiri Emmanuel.

15.2 THEORIES OF UNEQUAL EXCHANGE

Emmanuel

The most well known theory of unequal exchange was put forth in a book with the same title by Arghiri Emmanuel (1972), first published in French in 1969. There is some confusion regarding Emmanuel's definition of unequal exchange, or, better stated, definitions, that is, the broad and narrow sense. In his own words, Emmanuel (1972:160–61) provides the following distinction:

> In Chapter 2, I distinguished between two forms of non-equivalence. One (apparent) form arises from the mere transformation of values into prices of production, when wage rates are the same but the organic compositions of capital are different. The other, which I called non-equivalence in the strict sense, is characterized by differences in both wages and organic compositions. I refused to consider the first form as constituting unequal exchange and based my definition upon the second. ...when we consider the two forms of non-equivalence we might think fit to speak of unequal exchange 'in the broad sense' and unequal exchange 'in the narrow sense'.

Emmanuel (1972:161) accepts that unequal exchange in the broad sense involves a transfer of surplus value between countries due to differences in the organic composition of capital, but he cannot, he says, 'put this transfer in the same category with the transfer caused by differences in wage levels, even if we distinguish between a "broad" sense and a "narrow" sense, because I see be-

tween the two a difference not of degree but of quality'.

Even though Emmanuel places clear emphasis on the 'narrow' sense of unequal exchange, both cases involve the use of a very strong and unrealistic assumption, namely, that there is a strict correspondence between less developed countries and below-average organic composition industries on the one hand, and between the developed countries and above-average organic composition industries on the other. Such an assumption implies that the transfer of value from low organic composition industries to high organic composition industries always involves a transfer from the less developed countries to the more developed countries. The fact that light manufacturing or agriculture exists in the First World and heavy manufacturing in the Third World has to be assumed away. All the multinationals that produce manufactured goods in the developing countries seem to have been overlooked by Emmanuel. As a result, Emmanuel conflates equalisation of profit rates between industries with equalisation of profit rates between countries, having abstracted from combinations of above- and below-average organic compositions industries existing within countries.

A major point that Emmanuel stresses is that there is mobility of the capital factor internationally, but not the labour factor, and that this is the basis for significant wage disparities between countries. Thus, competition between industries leads to transfers of value as profit rate equalisation takes place, but the equalisation of wage rates is prevented and therefore unequal exchange blocks further development for the Third World. In fact, Emmanuel's main criticism of Ricardo's theory of free trade is his assumption about the mobility of labour, not Ricardo's use of the quantity theory of money as the basis for defending comparative advantage and justifying free trade (see Shaikh 1979: 298–9).

Another rather problematic assumption is that Emmanuel considers national wage rates to be directly correlated to rates of surplus value. This would suggest that the rate of surplus value is independent of the technology being used. It is as if Emmanuel forgets that the rate of surplus value is a ratio of surplus value to variable capital, not simply the inverse of variable capital. Despite an inverse relationship between wages and the rate of surplus value, when considering different countries, there are other factors that need to be considered; for example, technology, social differences, climate differences, and so on.

Emmanuel describes wages as the independent variable of the system, arguing that prices depend on wages and not *vice versa*. This is in contrast to Marx, who is very clear that increases in wages tend to have a direct impact on the level of profits, not prices. If the wages paid increase for a producer, this does not affect the amount of value created, nor the selling price, rather it will affect the amount of profits realised. Throughout the discussion about wages being the independent variable, Emmanuel makes no mention of the discussion in Marx about the relationship between wages and accumulation and how the latter variable is argued to be the independent variable. Of course, one can

argue that these two discussions are separate, and of course a variable which is the independent variable in one functional relationship can be the dependent variable in another relationship. More important than the functional relationship between economic variables is the role of class struggle and trade unions operating in socio-political historical contexts in which wages are fought over. By describing wages as the independent variable of the system, Emmanuel can argue that underdevelopment is caused by wages being lowered and can be superseded by wages being increased. In fact, in his analysis of 'First World' countries, he argues that development appears as the effect of high wages, not as its cause. Such an argument is less plausible if wages are seen as dependent on the process of accumulation. Instead, we need to be asking, to what extent is underdevelopment the cause of lower wages, due to high levels of underemployment, or perhaps, how do the two reinforce each other?

Overall, Emmanuel's (1972:66) argument is lacking in historical perspective and makes claims which ignore the differences which exist across countries but also across distinct historical periods. For example: 'Wages are differentiated by geographical areas and independently of ups and downs in commodity prices. They are rigid and remarkably stable in time'.

The recent history in Mexico provides strong proof counter to Emmanuel's claim, as real wages declined by 50 per cent over the decade of the 1980s and 40 per cent or more during 1995 alone. Such experiences are not unique to the last two decades. In discussing concrete countries and, in particular, issues around wages, he appears to have a rather economistic approach to historical processes. This is evidenced by his description of trade unions as extra-economic or in the realm of politics. Trade unions and class struggle are constituent elements in political economy, not issues only for other disciplines. The lack of a historical perspective may be related to Emmanuel's methodological approach. Although he uses certain Marxist terms and positions, his analytical approach has more in common with a mainstream economist's methodology than with Marx. It is not only the terminology used, but the manner in which he conceives of relationships, variables, and historical processes. As Mandel (1978:354) points out:

> (Emmanuel) does not even mention the one working assumption that is in keeping with the spirit of Marx's *Capital* – namely, that a far smaller mass of capital exists in underdeveloped countries, a much lower organic composition and a lower rate of surplus-value – the last of which by no means neutralizes the effect of the lower organic composition of capital. This hypothesis, moreover, corresponds fully to the actual development of international capital over the last century.

Finally, another major weakness picked up on by Bettelheim (1972) and others is Emmanuel's conclusions regarding the exploitation of poor countries by

rich countries and the working class in the First World as a clear beneficiary from the poverty in the Third World. Despite the fact that the more profitable conditions that exist in many Third World countries for multinational corporations may in boom times result in less hardened positions by the 'First World' capitalist classes domestically, this must be examined empirically across countries and over different periods. For example, real wages have declined steadily in the US during the last 20 years despite profitable ventures and projects throughout the 'Third World'. Using the term exploitation, when describing the relation between countries is problematic, as it abstracts from class exploitation, which is the basis of capitalism, and can give the impression that 'First World' workers exploit 'Third World' workers. The fact that products are produced under unacceptable conditions and result in cheaper products for export is not unique to 'First World' working-class consumption. Cheaper textiles and apparels are available in the US and Europe as well as in Latin America. This type of reasoning can lead to the conclusion that any worker who buys cheaper products is exploiting those workers even if one is a Bolivian peasant or an Indonesian mechanic. Exploitation takes place in the sphere of production, not in the sphere of exchange. There is simply a need to be more explicit in terms of who is benefiting from imperialism or neoliberal policies. It is clearly expected that there is more gained by the 'First World' overall, but there are 'Third World' capitalists gaining, not just 'First World' businessmen, and of the gains received by the 'First World', few tend to trickle down into concrete gains by the working classes of the industrialised countries. The whole topic and set of issues are more complex than Emmanuel implies. However, *Unequal Exchange* was written over 20 years ago and hopefully we have learned to appreciate the complexity of history and are less predisposed to simple formulas or categorisations than in the past.

Since we will be considering transfers of value other than those associated with unequal exchange, it is worth looking at Emmanuel's (1972:265) view on the relative importance of the different transfers, in that he places clear emphasis on the mechanism of unequal exchange:

> Even if we agree that unequal exchange is only one of the mechanisms whereby value is transferred from one group of countries to another, and that its *direct* effects account for only part of the difference in standards of living, I think it is possible to state that unequal exchange is the *elementary* transfer mechanism, and that, as such, it enables the advanced countries to begin and regularly to give new impetus to that *unevenness of development* that sets in motion all the other mechanisms of exploitation and fully explains the way that wealth is distributed.

In spite of the number of criticisms that Emmanuel's work received, several of

which have just been enumerated above, the importance of his work must still be acknowledged, most importantly for the impetus it gave to debate and discussion around issues of development and value theory. Let us now turn to another recognised contribution to the debate on unequal exchange – Samir Amin's *Accumulation on a World Scale* (1974).

Amin

Amin starts out by claiming that the dominant theory of international exchange is based on a false premise, that of exchange between pure capitalist economies. He argues instead that there is exchange between a *capitalism of the centre* and a *capitalism of the periphery*. Amin argues that unequal exchange arises from the coexistence of these different types of socio-economic formations and that the capitalism of the centre has basically been blocking the transition of the periphery through the stage of primitive accumulation. In fact, he sees Third World countries as representing different examples of attempts at primitive accumulation.

Amin is critical of Emmanuel's conflation of regions and industries and describes a more complex combination of industries within the Third World. He refers to the coexistence of an ultramodern sector with higher organic compositions and productivities with the 'traditional' sector of low organic composition and lower productivities. His definition of unequal exchange centres more around the differences in productivities within individual industries, in contrast to the differences between organic compositions of different industries. Amin (1977:219) argues that Emmanuel's analysis would lead to two myths that, upon closer analysis of concrete cases, would be rejected: '... the first myth is the myth that 'development' can be achieved by an 'artificial' increase of the 'independent' variable, i.e., the wage. The second is the myth that international transfer automatically benefits the working class at the centre'.

In his example of unequal exchange, Amin (1974:54) conflates the two moments of competition between and within industries. In describing the examples of how unequal exchange works, he argues:

> ...wages are equal (rates of surplus value are equal), but, because organic compositions are different, the prices of production – which are implied by the equalization of the rate of profit – are such that the hour of total labour (direct and indirect) of the more advanced country (characterized by a higher organic composition) obtains more products on the international market than the hour of total labour of the less developed one.

At this point, it seems clear that Amin is talking about two different industries

and the transfer of value associated with differences in organic compositions and competition between industries. However, in the next paragraph, referring to the same example, he states:

> It remains true that in this case exchange is unequal, all the same, and that this inequality reflects the inequality in productivity. It is important to note that the two equations here, which describe the conditions of one and the same product with different techniques – advanced in B, backward in A – are equations in terms of value...

Amin has moved into a discussion of transfers of value due to differences in productivity associated with competition within industries. Conflation of these two types of transfers makes it unclear as to the nature of the unequal exchange mechanism as understood by Amin.

Amin is critical of how Ricardo's theory of comparative advantage was divorced from a labour theory of value, and replaced with a subjectivist theory of value, thereby becoming more of an ideological tool which argues that exchange benefits everyone. Amin is critical of Ricardo for assuming the existence of a socio-economic formation that corresponds to a capitalist mode of production in its pure state. Amin does not seem to take issue with Ricardo's general argument that gold flows will lead to a new equilibrium; rather, he takes issue with the view that it is simply a *price effect*, not an *income effect*. Lastly, Amin accepts Emmanuel's identification of wages and rates of surplus value when comparing countries despite the problems associated with this assumption above. I would argue that Amin's *forte* is his historical analysis of specific countries, rather than his analysis of the mechanism of unequal exchange.

Mandel

Before presenting the specifics of Mandel's understanding of unequal exchange, we will first consider his (Mandel 1978:351–2) critical assessment of Emmanuel and Amin:

> Starting from theses originally advanced by Raul Prebisch, Arghiri Emmanuel and Samir Amin have sought to clarify this problem with the aid of an eclectic theory combining Marx and Ricardo and detouring through wage costs, even though it can be resolved quite satisfactorily and directly within the context of Marx's theory of value and surplus value. They thereby become entangled in numerous contradictions ... . Both authors start from the hypothesis that there exists international immobility of labour-power and international mobility of capital. The logical corollary is international

> equalization of the rates of profit – in other words, the formation of uniform prices of production on a world scale. But under such conditions capital would normally stream into those countries with lowest wages. Far from explaining structural underdevelopment, this hypothesis implies – in the classical Ricardian sense – the *impossibility of underdevelopment*; it is incapable of showing why countries with high wages undergo industrialization while underdeveloped nations possess relatively little industry.

Mandel argues that Emmanuel confused cause and effect when describing low wages in the periphery as the basis of underdevelopment, rather than the result of the uneven development of capitalism. Mandel (1978:351) turned to Marx to explain the 'exchange of *unequal* quantities of labour' in the context of international trade and considered 'basically two sources of unequal exchange':

> 1. The fact that the labour of the industrialized countries counts as more intensive (hence more productive of value) on the world market than that of the underdeveloped lands (or, what amounts to the same thing, by contrast to the situation within a national market, less intensive and productive labour creates average value, hence more intensive and productive labour creates higher value). 2. The fact that *no* equalization of the rates of profit occurs on the world market, where different national prices of production (average rates of profit) exist side by side and are articulated with one another in a manner described in Chapter 2.

Mandel describes how unequal exchange had not been significant prior to the Second World War, but has grown in importance when considering the overall transfer of value from the 'colonies' and 'semi-colonies' to the 'metropolitan' countries. For example (Mandel 1978:345):

> Although it is difficult to make statistical calculations, it is nonetheless clear that both before the First World War and in the interwar period unequal exchange was quantitatively less important than the direct production and transfer of colonial surplus-profits. Colonial surplus-profits were hence the *chief form* of the metropolitan exploitation of the Third World at that time, unequal exchange being only a *secondary form*.

Mandel (1978:346) continues: 'The proportions changed in the late capitalist epoch. Unequal exchange henceforth between [*sic*] the main form of colonial exploitation, the direct production of colonial surplus-profits playing a secondary role.'

And then (Mandel 1978:350): 'there is no doubt that the total volume of directly produced colonial surplus-profit is today less significant as a form of

imperialist exploitation of the Third World than unequal exchange'.

The second source of unequal exchange for Mandel differs from that of both Emmanuel and Amin, since they argue that the transfer of value is a result of the equalisation of profit rates. Mandel rightly argues that there is not unrestricted mobility of capital, given the existence of restrictions, regulations and barriers to the flow of capital between nation-states. However, these are often conditions that restrict the tendency for profit rates to equalise but do not eliminate this tendency. Mandel seems to go to an extreme by arguing that, due to certain national restrictions or conditions, only national prices of production exist. This becomes a problem when we consider the extent to which there is mobility of capital between industries across national boundaries. When discussing international equalisation of profit rates, one is not referring to the average rate of profit of Zaire compared to the average rate of profit in Mexico or Sweden. Rather we are talking, for example, about the average rate of profit in the automobile industry over a period of 'fat and lean' years, an industry that includes producers in many different countries, operating under distinct conditions, subject to different tariffs, and so on, in comparison to the average rate of profit of the semi-conductor industry. In order to assess to what extent the tendency for profit rates to equalise is achieved or not, at the international level, empirical studies, such as that carried out by Christodoulopoulos (1995), need to be pursued.

Unequal Exchange and Development

Once we take into account all the processes involved in the actual history of capitalism and the resultant uneven development, it is not viable to argue that unequal exchange is the primary mechanism explaining underdevelopment. However, one could attempt to measure the impact of value transfers caused by unequal exchange, and then determine whether they are helping to perpetuate international inequalities or whether they are dampening the effects of other transfers of value between the 'First' and 'Third' Worlds. There is a need to go beyond the standard field of international trade in economics, since the more compelling questions are understanding accumulation and the laws of motion of capitalism at the level of an international economy, which are not limited to trade, but must also include such things as investment, financial flows, and migration. Thus, it is not simply an issue of what is transferred via exports and imports but of the set of historical processes involving commodities, labourers, foreign direct investment and international bank loans, and so on.

The discussion of unequal exchange refers to certain types of value transfers taking place in the sphere of exchange, yet the production of surplus value and accumulation are the fundamental processes which define capitalism. In considering issues of 'development', our attention must not be limited to the sphere

of exchange; rather, our scope should reflect the broader question of reproduction, not only of individual capitals but of the relations of production.

15.3 TRANSFERS OF VALUE

The mechanisms associated with the different versions of unequal exchange involved transfers of value either between or within industries (see Shaikh 1980a:47–57); however, in examining a concrete historical example or period one must consider additional types of international value transfers. Therefore, despite differences in levels of theoretical abstraction, several types of transfers will be considered in this section, since they are relevant for addressing the issue of 'development'. The transfers of value associated with trade and unequal exchange, due to competition between and within industries, will be considered first. This will be followed by consideration of transfers of value associated with productive investment, that is, transfers due to repatriation of profits, royalties, and the like from foreign direct investment. Then we will consider transfers of value due to bank loans and interest payments. Lastly, we will consider other types of international transfers of value that do not fall into these more general categories.

Table 15.1 Sources of value transfer

Transfers of value due to:	**Description**
Competition between industries	From low organic composition industries to high organic composition industries
Competition within industries	From less efficient producers to more efficient producers
Repatriation of profits, royalties and rents	Multinationals shifting profits out of the 'third world' for accumulation
Bank loans and Third World debt	Payments of principle and interest on 'third world' debt

Transfers of Value due to Competition between Industries

The basic mechanism behind what Emmanuel reluctantly calls 'unequal exchange in the broad sense' is competition between industries. Marx understood competition to be a dynamic process and recognised two moments of competition, between and within industries. In the case of the former, capital

flows from industries with low rates of return, into industries with high rates of return. All industries are growing but where an industry's rate of profit is greater than the general rate of profit, there will be accelerated growth until the growth of supply exceeds that of demand, and *vice versa* for industrial rates of profit less than the general rate. This leads to a change in relative output proportions, and brings about supply and demand imbalances which subsequently lead to changes in relative market prices and profit rates. Marx's conception could be described as a crossover dynamic, such that as certain industries approach the average, another set will be moving away. The following provides insight into Marx's (1981:291) dynamic conception of competition and the interaction of supply and demand:

> Thus if there is no single individual case in which demand and supply actually do coincide, their disproportions still work out in the following way – and the result of a divergence in one direction is to call forth a divergence in the opposite direction – that supply and demand always coincide if a greater or lesser period of time is taken as a whole; but they coincide only as the average of the movement that has taken place and through the constant movement of their contradiction.

This conception is distinct from Emmanuel's, and other interpretations of prices of production as equilibrium prices, such that all forces are in balance and a stable equilibrium is attained. As a result of this process, there is a transfer of value from the industries with organic compositions lower than the average to those industries with organic compositions above the average. For Emmanuel, the low organic composition industries reside in the periphery while the high organic composition industries correspond to the centre. As discussed above, his assumption is an overgeneralisation.

Transfers of value due to competition between industries are taking place within nation-states and across borders depending upon the movement of capital across the globe. Where economies have been relatively 'closed' due to substantial limitations on investment and trade, international transfers may be minimal. However, most countries have a certain degree of openness and, in recent years, investment restrictions have been on the decline, be it due to trading blocs or to adherence to the World Trade Organisation. Measuring such transfers quantitatively is more difficult and will be considered in section 15.5. Another issue that must be addressed is the time required, not for a convergence of profit rates, as some Marxist authors argue, but for the dynamic cycle in which an industry, steel for example, goes from above-average profitability to below-average profitability and back. Although it has a theoretical component, this discussion is perhaps more suited to the empirical section (15.5) as well.

Transfers of Value due to Competition within Industries

Let us now turn to the other moment of competition, namely within industries. The formation of social values from a set of individual values comes about through competition within an industry. The tendency for a uniform selling price leads to the transfer of value from the least efficient producers (high individual values) to the most efficient producers (low individual values). Both Amin and Mandel stressed the productivity differential in their discussions of unequal exchange. As mentioned, Amin's presentation conflates the two types of transfers of value due to the two moments of competition, while Mandel stresses competition within industries as the primary mechanism of unequal exchange.

A major issue to be addressed in the context of transfers of value due to competition is that of ownership, since the majority of firms in the high organic composition industries are owned by the multinationals, which, with few exceptions, are foreign-owned. Such multinational corporations are often the most efficient international producers in an industry. When considering the international transfers of value from the low organic composition industries to the high organic composition industries, there are going to be transfers both into and out of Third World countries, and one cannot simply assert that the net transfer of value out of the 'Third World' due to competition between industries is positive; this has to be empirically confirmed (see Shaikh 1980a:49–50). Thus, the capital intensive, efficient firms operating in the Third World would be receiving two types of transfers of value but, since they are foreign owned, such transfers of value will often be transferred out again via repatriation of profits or possibly other mechanisms. Thus, even when the 'ultra-modern' sector to which Amin refers leads to a transfer of value into the Third World, this is often repatriated back to the First World, since this sector is predominantly foreign owned.

In considering the two types of value transfers due to competition, we must take into account both exports and imports. The exports from the Third World to the First World will tend to be competitive in order to be sold on the world market, and would thus tend to be more efficient than average (the case of agriculture, oil and mining dominating Third World exports). Such cases would involve a positive transfer of value from within an industry, but may involve a negative transfer of value due to competition between industries. Therefore, the net transfer could be either positive or negative.

The extent to which value is transferred from low-efficiency producers of one country to high-efficiency producers of another country depends on the degree to which producers share a market for their products. *Ad valorem* tariffs are in fact a way in which the less efficient (in general) producing country reduces the amount of value transferred due to imports. The case of import quotas puts a check on the total amount of value transferred, since a certain

percentage of the local production must be purchased. It is worth noting, however, that subsidies do not necessarily reduce the transfer of value out of a country, but will improve the profitability of local firms.

The discussion on unequal exchange deals with the two types of transfers discussed above. These can be described as involving the primary sectors, namely production and trade. There are several other transfers of value involving secondary flows, namely profits, rent, royalties, bank interest, and so on. We now consider a transfer of value that is not linked to trade, but rather to investment and accumulation – the repatriation of profits.

Transfers of Value due to Repatriation of Profits[3]

This particular transfer of value deserves particular attention, whether its importance has declined, as argued by Mandel (see above), or not. What is distinct is that this involves a flow of surplus value out of the country in which this surplus value was produced, often for the purposes of accumulation. This could be argued to be an even more fundamental kind of transfer out of the periphery than the phenomena of unequal exchange, since profits are the basis of accumulation, which is the prime mover of capitalism and is required for growth and thus development of any sort. The transfers of value due to the repatriation of profits of foreign firms derive primarily from multinationals operating throughout the Third World. As discussed above, some of these profits may be the result of positive transfers of surplus value to the Third World because of the products which the multinational company produced and exported. Upon repatriating these profits however, the net effect for the country in which the multinational is operating is the production of surplus value that is not realised locally. The impact for developing countries goes beyond the absolute amount of such transfers, since these transfers could be the basis for future local production and growth if they were to be invested locally. In addition, as pointed out by Mandel, there are a number of ways that multinational corporations, through subsidiaries or otherwise, are able to conceal profits or other value transfers, through various accounting devices. The most recognised example is that of transfer pricing, whereby a multinational can claim a lower price for an intermediate product which it exports to a subsidiary or itself. After additional processing the finished product may even be returned for another processing step or for sale, but now with a greater price. The result is 'surplus-value created not by metropolitan workers but by producers in the semi-colonies' (Mandel 1978:349).

Transfers of Value due to Bank Loans and Third Word Debt

Transfers of value due to payments of interest and principal on Third World debt may very well constitute the most significant transfers in recent years,

especially after the 1982 debt crisis. The main reason for this is that, despite the significant interest payments made during the 1970s, the net flow of capital to the Third World was often positive. This completely turned around in the 1980s, primarily due to the increasing influence of monetarism and subsequent policy changes at the IMF. The result after 1982 was such that the net capital flow became negative, and not by a small amount. In considering Third World debt, one needs to look carefully at the methods used, be it debt-swapping, transferring private companies' debt into public debts or the like. Beyond the issue of transfers of value out of Third World countries, there is also the class bias within such countries. Examples abound of privately incurred debt, sometimes foreign owned, being converted to public debt, thus shifting the burden from capitalist owners to the general public. At a more concrete level, the recurring balance of payments crises faced by many countries provides the context whereby the IMF forces governments to adopt austerity plans, and implement trade, investment and exchange rate policies, of which the primary beneficiaries are the multinational corporations.

Additional Transfers of Value

Before moving on to discuss the empirical measurement of the various transfers of value, a couple of additional transfers should be mentioned. The first is a transfer of value that arises from the interaction of capitalists with non-capitalist producers and results in profit on alienation (see Shaikh and Tonak 1994:35–7). Use values produced under non-capitalist relations are exchanged for capitalistically produced commodities such that profit is created without an equivalent surplus-value having been generated. The exchange results in an increase in exchange value and subsequently profit for the capitalists, while the aim of the exchange for the non-capitalists producers is to sell one set of use-values in order to obtain another set – the logic behind C – M – C. As non-capitalist production declines, this case is less and less common, but not to be overlooked, as its relevance depends on the specific set of relations that dominate and coexist in a given region.

The last international transfers of value we will consider are those which arise due to moral depreciation as discussed by Freeman (1995:31–43). He considers the impact on stocks or inventories after a sudden drop in prices due to technological change. He argues that owners of stocks of a commodity, which is suddenly produced more cheaply, lose value in the form of profit, but that others receive a balancing gain. If the individual value of older stocks enters into the average of a certain commodity's value, which can now be produced more cheaply, perhaps this is really a subset of transfers of value within industries. As mentioned in the quotation from Marx which he cites, the degree to which the individual values of stocks affect market price depends on

the balance of supply and demand and the relative proportions of the newly produced commodities and the existing stocks of the same commodity. However, some will argue that the case of moral depreciation is an unequivocal case of a loss of value, not a value transfer. The extension of this discussion to the case of multinationals that sell older technology to the 'Third World' is anticipated in the near future. The international transfers of value considered above have been chosen based on the attention given to them in the past and their importance historically. Further study may reveal others that have not been considered up till now.

15.4 MEASURING TRANSFERS OF VALUE INTERNATIONALLY

Conventional Measures of Disparity and International Transfers

Before examining what is involved in developing an empirical methodology using Marxist concepts, we should first consider which conventional measures have been used to measure disparity or inequalities and international transfers between the 'developing' and 'developed' countries. One of the most common measures of development is GNP per capita. The main limitation of this measure is that it is merely an average and does not provide a sense of the distribution of GNP, not to mention wealth, in a country. However, it is worth considering how the 'developing' countries have fared of late, using the mainstream's own yardstick. Since the 1960s, the number of countries suffering a decline in GDP per capita has more than quadrupled from 15 to 62.[4] The population affected by declining GDP per capita in the countries in which they live has increased almost 12-fold from 71 million to 808 million. GDP per capita has declined since 1974 in Africa, since 1977 in the Middle East, and since 1980 in Latin America and the Caribbean. As a result of recent trends of declining GNP per capita throughout the Third World, economic inequality has now reached its highest point since such measures have been kept.

The shift between the 1960s and the 1980s is clear. In the 1960s, the majority of the population in market economies enjoyed either the GDP per capita of the industrialised countries or was closing the gap on the industrialised countries in terms of GDP per capita. By the 1980s, three-quarters of the population in the market economies has suffered either absolute decline in GDP per capita or a widening gap in GDP per capita compared to the industrialised countries. Officially, average per capita income in the industrialised countries is about 60 times that of the least developed, evidence that, using the mainstream's own categories, results in an atrocious track record for recent decades. This makes it even more amazing that discussion on disparity and inequality is less than in

the 1970s.

In order to have a better measure of 'human attainment', the UNDP created a Human Development Index (HDI) that also takes into consideration life expectancy and adult literacy. In order to consider how many countries' situations have worsened, one needs to look not only at several of these alternative measures, but also others related to health and education. Let us now turn to measures associated with trade between the 'developing' and 'developed' countries.

As mentioned above, Prebisch and Singer had highlighted the historical decline in terms of trade for 'developing' countries in relation to 'developed' countries.[5] The analysis of ECLA, though critical of neoclassical theory, was in many ways a conventional economics approach. There are limitations as to what one can infer from movements of terms of trade over time, since numerous factors other than those identified by theories of unequal exchange have their influence. In addition to the influence of factors such as exchange rates and monetary policy differences, there are also problems with using purchasing power parity as a basis for comparison.

15.5 DEVELOPING AN EMPIRICAL METHODOLOGY USING MARXIST CONCEPTS

Empirical data are not 'theory-free'; there are significant differences, for example, between a Keynesian and a Marxist perspective. The recent work of Shaikh and Tonak (1994) provides a clear example of the importance of such differences for empirical analysis. Throughout their work, for example, the distinctions that arise, as a result of considering productive and unproductive labour are critical for their results. We must ask ourselves the question, what are the differences in measuring transfers of value based on different perspectives? Although the discussion on unequal exchange by Emmanuel and others made reference to surplus value and its redistribution, if one must turn to terms of trade for empirical measurement purposes, what empirical results would allow us to distinguish the arguments made by Prebisch and of others from a Marxist approach?

It is incumbent upon those of us working with a Marxist approach to demonstrate the advantages of such a framework in analysing the current economic conjuncture in the world; can such an approach provide answers on concrete issues, addressing concrete policies, and promoting alternatives to the neoliberal model? What additional insights can a Marxist analysis provide, what phenomena can be examined, measured or analysed through a Marxist framework, that cannot be analysed using a conventional approach?

At this point, we will consider some of the empirical work done around

unequal exchange by the authors discussed earlier. Above, we saw Mandel (1978:345–6) argued that unequal exchange has grown in importance relative to colonial surplus profits as a mechanism of value transfer. The statistics upon which he bases this claim are data on Britain's foreign terms of trade from 1880 to 1914 compared to the annual income on foreign capital investments just before World War I. These are extremely rough estimates and, in the latter instance, are for a single year. In order empirically to validate his claim in terms of the relative importance of unequal exchange, notwithstanding the problems involved with using terms of trade, a much longer period for both sets of data would have to be studied. Samir Amin's (1974:53–9) estimates of unequal exchange are also extremely rough and made with rather strong assumptions with regard to increases in productivity, overall profitability, and so on. Such estimates may be suitable for getting a rough idea, but they are not serious attempts at measuring the magnitudes of such transfers of value. Another concern is Amin's claim that, in 1966, 75 per cent of Third World exports were from the ultra-modern sector. This should be looked at in more detail, since a breakdown by industries and by country may give a different impression. If one were to consider non-petroleum exporting countries, this percentage may go down significantly; nor is it clear whether Amin has included only high organic composition industries in the 'ultra-modern' sector. Although such attempts at providing broad empirical measures are desirable, there is a need to be more systematic and careful in our analysis. In attempting to measure any type of value transfer, there will be problems of compatibility and access to a range of data sources, and therefore, empirical research may be more fruitful by first analysing trade between two countries, or the operations of a multinational in a particular region or trading bloc.

Developing a methodology for measuring transfers of value between industries is quite difficult for a number of reasons. First, one must choose an operating hypothesis as to the time period relevant for the tendential equalisation of profit rates. Once a period is decided upon, then the choice of price and profit rate series, for all the different countries concerned, must be determined. This decision will depend on compatibility issues for data series collected by national statistical agencies using distinct methodologies. The selection of the specific data series and sources will depend on the degree of compatibilisation possible. As mentioned earlier, there are also a number of problems in defining which firms participate in an industry. Because of trade and investment restrictions at national levels, certain world industries only include a set of countries in terms of production, while a different set would correspond to consumption. Even if the data series could be identified and obtained, and made compatible through numerous *ad hoc* modifications, the importance of such transfers for the issue of 'underdevelopment' is subject to debate. In fact, such transfers have been occurring within 'First World' countries and regions since capital-

ism has been around.

Turning to transfers of value within industries, there may be fewer obstacles with regards to theoretical definitions. However, there are still many issues to be resolved, not least of which is data availability. One could start out by looking at a world industry composed of different national producers, and attempt to study price movements, to see if domestic prices in the relevant countries were consistent with international prices, and to identify factors that could explain this difference. An empirical analysis would ideally have access to information on the cost structures for the individual firms within the industry. There are also significant grey areas in defining which firms or countries are included in an international industry, since most countries have their own particular set of restrictions on investment and trade. However, analysis of tariff and trade restrictions could lead to some interesting analyses from a value-theoretic viewpoint. As mentioned above, a tariff is, in fact, a means by which a government is able to obtain a portion of the value transfer headed to the more efficient foreign firms, often multinationals, for itself. Because of the problems of data, a specific industry with few firms may provide the most fruitful opportunity for empirical analysis at present.

The third type of transfer considered was that of repatriation of profits. As mentioned above, royalties and rents or fees obtained by multinationals are included in repatriated profits. The first concern is whether the detailed firm data that are required are collected and available to the public, not kept secret because of privacy issues. In the case of the US, the Value-Line database would be the primary source of data; however, such detailed databases will not be available for many countries. Upon obtaining the data, substantial success can be expected for the measurement of these transfers. Again, one must simply do the necessary detective work of identifying the ways in which such profit transfers are hidden through accounting devices. Speaking of accounting devices, let us now turn to another means by which multinational corporations are able to hide transfers of value. Through the use of transfer pricing, multinationals are able to conceal profits as described by Mandel (1978:350) below:

> ... the surplus-profits derived from unequal exchange are often themselves only a disguised form of directly produced colonial surplus profits. This is the case when vertically integrated trusts export raw materials from the colonies to the metropolitan countries and then send back from the metropolitan countries to the semi-colonies the finished goods which have been produced with these raw materials. In addition, if a major international price differential for commodities produced by the same international company can be shown to exist between the semi-colonies and the metropolitan countries, there may well have been direct production of surplus profit in the semi-colony disguised as an export profit in the metropolitan state.

Although most large firms are required to produce Transfer Pricing Studies, these are not publicly available, but rather, are private documents which the IRS can access. It is only in the event of a court case that some of the pricing data are presented as evidence and then become accessible to the general public. Therefore, such empirical research would basically be restricted to those companies taken to court on the issue of tax evasion through transfer pricing.

The last transfer of value which we will consider for empirical measurement is that deriving from bank loans or 'Third World' debt. Again, most of these data should be available and, depending on the level of detail or accuracy, reasonable estimates are possible. For example, according to the IDB Annual Report, between 1974 and 1981 Latin America received a positive net transfer of US$100.7 billion; however, between 1982–1986 there has been a negative net transfer of US$121.1 billion (Roddick 1988:14). Measuring these transfers for individual countries should be fairly straightforward, although conversion of private to public debt in certain instances may not always be transparent.

This discussion of empirically measuring international transfers of value has been very preliminary. Each type of international value transfer requires much more thorough examination theoretically, empirically, and historically. Such a study should be conducted bearing in mind its relevance for understanding 'underdevelopment'.

15.6 CONCLUSIONS

In recent decades, we have seen a worsening economic situation faced by the majority of the 'Third World' countries and populations, and this is taking place as the disparity with the industrialised countries of the world has increased. As Marxists, we should not find this surprising, yet we must analyse and understand these historical processes better than we have in the past. This requires us to go back and look at earlier theories of unequal exchange, development, imperialism, and so on. For this reason we revisited the unequal exchange theories. As we came to see, much of the emphasis for Emmanuel, and at times Amin, was on exchange at the level of imports and exports, while Mandel looked more at several processes, and in particular the overall accumulation process worldwide.

The question posed by several authors is: what is the nature of the relationship between the transfers of value associated with unequal exchange and underdevelopment? There is a need to carry out more thorough historical analyses, not just presenting general, schematic versions of how multinationals or 'First World' governments control or 'exploit' the 'Third World'. We need to analyse what are the means by which underdevelopment is maintained and

what role each of the different transfers of value considered here plays. Secondly, we must study the relationship between each type of value transfer and the process of accumulation. Can these be generalised, are there instances where one type of transfer is less detrimental or preferred to another? By considering more specific concrete cases, the questions and issues for which such transfers are relevant become more defined. Lastly, we must assess the advantages of a Marxist approach in carrying out such analyses and providing an alternative to the dominant neoliberal ideology. This chapter is a preliminary examination of the theoretical basis of international transfers of value and is a first step in developing a methodology for measuring them empirically.

NOTES

1. I would like to acknowledge that my interest in this topic and several insights are due to having studied with Anwar Shaikh at the New School for Social Research, and his two seminal articles on foreign trade (Shaikh 1979, 1980a).
2. This is not to overlook the important contribution by Cheryl Payer on these institutions. However, her books on the IMF and World Bank were published in 1974 and 1982, respectively.
3. Where repatriation of profits is referred to, royalties and rents obtained by multinational firms are also included.
4. Much of this section and the statistics referred to are based on *Socialist Economic Bulletin* No. 3 and their sources of data are the United Nations, the IMF and the World Bank.
5. Prebisch analysed the period from 1870 to 1938, based on a 1949 UN Study.

16 Some Empirical Considerations for the Question of Transformation

Rebecca Kalmans

16.1 ABSTRACT

Based on the discussion in Volume III of *Capital* that total values equal total prices of production, one would expect to find that aggregate value and price rates of surplus value are the same or at least fluctuate within strict limits of each other and have the same trend, provided that their methods of estimation are consistent with Marx's theory. The following study is an empirical test. The specific focus of the research is the measurement of the aggregate rate of surplus value, in terms of *both* labour values and (purchaser) prices, in Japan and the United States from 1958 to 1980 using input–output data. (The rate in the manufacturing sector is also estimated for comparative purposes.) Aggregate rates of surplus value measured in prices were mirror images of the respective aggregate value rates, thereby lending support to Marx's argument.

16.2 THEORETICAL FOUNDATIONS

The rate of surplus value expresses the relation between the surplus labour time and necessary labour time, that is, between the unpaid and paid labour time expended in production. In Marx's own words, it is the ratio of surplus value to variable capital. Moreover, the rate of surplus value is a measure of the degree of exploitation of *productive* workers, since they alone produce surplus value for which no compensation is received.

The theoretical formulation of productive and unproductive labour in this study is based on an interpretation of Marx developed by Shaikh (1978) and Shaikh and Tonak (1994, Chapter 2). According to these authors, there are four main categories of social activities in all modes of production: production, distribution, social maintenance and personal consumption. Labour is expended on the former three activities only. The characteristic of being production labour, which creates or transforms socially useful objects, is a necessary condi-

tion, but not a sufficient one, for labour to be 'productive' within the capitalist mode of production.

Labour expended in production can assume various forms. For instance, the person who makes clothing for his or her own consumption produces use values. So does the petty commodity producer who sews at home, retains some of the product for himself or herself and regularly sells the remaining share. This individual, in fact, produces not only use values but also exchange values. The wage labourer who works in a textile factory may also sew clothes; in the process he or she produces surplus value for the capitalist owner as well. From the point of view of capital, the labour of the textile worker is 'productive', while the other types of production labour are not (Shaikh and Tonak 1994:29). Hence the defining characteristics of productive labour are that labour power must, first, be directly exchanged with capital and, second, produce a commodity embodying surplus value (Marx 1976a:644).

Alternatively, unproductive labour involves distribution, management of the production process, or maintenance/reproduction of the social order, for example police, military and the executive, legislative and judicial activities of the state. Unproductive labour is intrinsic to the production and reproduction of capital, in spite of the social cost incurred. Furthermore, unproductive workers can be exploited in the sense of performing surplus labour above and beyond that necessary for their reproduction from one period to the next; however, their surplus labour does not create surplus value.

The empirical measurement of productive and unproductive labour requires the preliminary step of dividing the input–output tables into production and non-production sectors. Production includes agriculture, manufacturing, construction, transportation, communication and utilities, personal services and social services. The non-production sectors encompass trade and real estate and rental. Also, business services and finance and insurance are treated as non-production royalty sectors since, from a marxian perspective, royalty payments like a patent or business fee paid for access to some particular type of process and interest paid for access to money and credit are both social claims on the flows of revenue and profit of the production sectors.

While the production sectors include both productive and unproductive labourers, all labourers in the non-production sectors are unproductive. Occupation-by-industry matrices facilitate the measurement of productive and unproductive labour. Workers in agricultural, transportation and communication, mining and production process occupations are productive for the reasons stated above. Also, this category includes professionals such as engineers, health workers, writers and teachers, and service occupations including hair stylists, cooks and dry cleaners. Unproductive workers, by contrast, consist of managers and directors as well as workers in the following categories: trade, real estate and rental, finance, insurance, security and defence, clerical

and other management support occupations, sales and professional and service occupations like accountants, lawyers and advertisers.

16.3 THE CALCULATION OF THE RATE OF SURPLUS VALUE

The rate of surplus value in Japan and the United States is measured for the economy as a whole and for the manufacturing sector. It is estimated in terms of both labour values and prices. The value rate of surplus value is equal to the ratio of surplus value *produced* to the value form of variable capital; on the other hand, the price rate of surplus value is equal to the ratio of surplus value *realised* to the money form of variable capital. The price rate, therefore, encompasses not only the value and surplus value produced domestically, or within a sector, but, also, transfers of value into and out of the economy, or of that sector. It reflects value flows between the economy and the rest of the world through international trade, the capitalist and semi-capitalist sectors and the private and public sectors.

The measurement of both the value and price rates of surplus value entails, first, the calculation of *marxian* value added and, afterward, that of variable capital. Surplus value is, then, derived by subtracting the latter measure from the former.

Value Rate of Surplus Value

With regard to the value rate, marxian value added (va) is equal to total productive employment of the production sectors (npp). This is an elaboration of Morishima and Seton (1961) in which the value of national product is shown to equal total employment. We have,

$$va = npp \tag{16.1}$$

Variable capital (v) is the product of

$$v = \lambda^{*}bpp \tag{16.2}$$

where λ^{*} is a row vector of labour value/producer price ratios and bpp is a column vector of the bundle of production outputs consumed by productive workers. The notation * represents the monetary form of marxian value categories.

First, consider the estimation of λ. For Marx the substance of value is (abstract) labour time. This has an approximate relation to socially necessary

labour time, which in turn bears a relationship to the average labour time expended in the production of a commodity. In the general case, the value of a unit of output equals the labour directly employed in the *j*th sector plus the value of a unit of constant circulating capital, or intermediate inputs, plus the value transferred from the constant fixed capital. In vector notation, this is equivalent to

$$\lambda = l(\mathrm{I} - (\mathrm{A} + \mathrm{D}))^{-1} \tag{16.3}$$

where λ is a row vector of labour values. l is a row vector of direct labour requirements per unit of output. A, the matrix of circulating constant capital inputs per unit of output, is an $n \times n$ matrix whose elements a_{ij} represent the amount of commodity i required to produce one unit of commodity j. D, the matrix of fixed constant capital inputs per unit of output, is an $n \times n$ matrix whose elements d_{ij} represent the portion of the stock of capital that wears out in the production process of one unit of commodity j. I is the identity matrix.

The data are in physical quantities in the above equation. When the data are given in prices, as in the input–output tables used in the empirical study, it is still possible to compute the value of a commodity (Shaikh 1984, Appendix B; Shaikh and Tonak 1994:78–88). But it is the value of one yen (dollar) of output j (at producers' price). That is, the estimated unit value λ^* represents the labour value/producer price ratio. Now, the empirical equation for labour values is

$$\lambda^* = l^*(\mathrm{I} - (\mathrm{A}^* + \mathrm{D}^*))^{-1} \tag{16.4}$$

where l^* is reformulated as a row vector of direct labour required to produce one yen (dollar) of output; the elements of the A^* matrix represent the amount of commodity i used to produce a yen's (dollar's) worth of output of the jth production industry; and the elements of the D^* matrix represent the fixed constant capital inputs used up per yen (dollar) of commodity j.

Ideally, the direct labour requirements should be adjusted for skill differentials; however, comparable data for Japan and the United States are unavailable. Relative wage coefficients are sometimes used as a proxy for skill adjusted labour coefficients. However, as Shaikh and Tonak (1994:158–9) maintain, the use of wage coefficients is problematic in countries, like Japan, in which workers in the agricultural sector are underpaid relative to their skill level. The substitution of wage coefficients for skill coefficients would probably underestimate the labour values of consumption goods and variable capital in this country. Labour coefficients are, therefore, left unadjusted for skill differentials.

Still focusing on variable capital, certain standard assumptions are made to

estimate the production outputs consumed by production workers. One assumption is that a worker's wage basket is the same across sectors. This implies that consumption patterns do not differ significantly among workers in different sectors. Another assumption is that workers spend their money wages largely on personal consumption, which is often justified on empirical grounds because it seems that savings of middle-aged workers are offset by dissavings of young, retired and unemployed workers (Shaikh 1978). This is consistent with substantial variations in the average savings rate among countries, which could reflect the savings behaviour of non-workers.

Based on the above assumptions, let us divide the consumption column (con) into consumption bundles of production outputs (bp) and non-production outputs (bnp) and proceed to estimate bpp, representing the productive consumption of production workers. To obtain bpp, it is necessary to multiply bp by R, the ratio of the employee compensation of productive workers to total consumption,

$$bpp = bp'R \tag{16.5}$$

Variable capital is, in turn, equal to

$$v = \lambda^* \cdot bpp$$

Surplus value (s) is arrived at by subtracting variable capital from value added, or

$$s = npp - (\lambda^* \cdot bpp) \tag{16.6}$$

The measurement of the value rate of surplus value in an individual production sector such as manufacturing (m) follows the same procedure as above with the exception that variable capital is restricted to the consumption bundles of productive workers in the manufacturing sector. In this case,

$$v_m = \lambda^* \cdot bpp_m \tag{16.7}$$

Price Rate of Surplus Value

Proceeding to the price rate of surplus value, its measurement is based on an approach formulated by Shaikh (1975), elaborated by Khanjian (1988) and developed in detail in Shaikh and Tonak (1994, Chapter 4). Consider, first, the estimation of marxian value added realised which is equivalent to the value of the net product (the necessary and surplus products) produced by productive workers, or to the total variable capital and surplus value. This category en-

compasses the production sector's conventional value added net of depreciation or net national product, which includes among other elements employee compensation, profits and other profit-type income, indirect taxes, current subsidies and (in Japan only) consumption-outside-households like business travel, entertainment and gifts.[1]

Marxian value added also incorporates the gross output of the trade sector, that is, the wholesale and retail trade, eating and drinking places, distributive transportation, government trading enterprises and the rental of produced commodities such as business equipment, buildings and cars.[2] The total output of the trade sector is included in marxian value added, because the cost of circulating commodities, including the commercial capitalists' profits, is supported out of the fund of surplus value produced by productive workers.

In addition, marxian value added has as a component the payments made by capitalists in the production sector to the royalty sectors, that is, finance and insurance and business services. The royalty payments, which appear in conventional input–output tables as costs of products purchased from these sectors, are, as specified earlier, forms of social claims on a portion of the revenue and profits originating in production. From a marxian point of view, they are, therefore, components of surplus value and must appear in the measure of marxian value added. Marxian value added realised, therefore, includes

$$VA^* = NNP_p + RY_p + GOTT \tag{16.8}$$

where VA^* is marxian value added, NNP_p is the net national product of the production sectors, RY_p are the royalty payments made by capitalists in the production sectors and GOTT is the gross output of the total trade sector.

The next step of the calculation of the rate of surplus value is the measurement of variable capital (V^*), which is equal to the employee compensation of productive labourers, comprising both wages and wage supplements, minus their royalty payments such as interest payments, insurance payments, business and legal fees, and so on (which appear in standard input–output tables in the cell at the intersection of the royalty sectors' rows and the consumption column). These are deducted, since, from a marxian point of view, consumers' royalty payments, like those of producers, are treated as transfers of value that originate in the production sectors. Accordingly, we have

$$V^* = W_p - RYc_p \tag{16.9}$$

where W_p is productive workers' employee compensation and RYc_p is their (consumer) royalty payments.

Finally, to complete the calculation of the rate of surplus value, surplus value (S^*) is estimated as

The Rate of Surplus Value in Japan

Table 16.1 Labour Value and Price Rates of Surplus Value in Japan

	1960	1965	1970	1975	1980
			Aggregate		
$e_J = (S/V)_J$	1.87	1.92	2.19	1.98	2.16
$e^*_J = (S^*/V^*)_J$	1.87	1.83	2.21	1.83	2.03
$((e - e^*)/e)_J$	0.0%	4.7%	– 0.9%	7.6%	6.1%
			Manufacturing		
$(e_m)_J \circ (S_m/V_m)_J$	1.75	1.96	2.11	2.07	2.11
$(e^*_m)_J \circ (S^*_m/V^*_m)_J$	3.24	3.12	3.42	3.01	3.38
$((e_m - e^*_m)/e_m))_J$	– 85.1%	– 59.2%	– 62.0%	– 45.4%	– 0.2%

Table 16.1 shows the Japanese value and price rates of surplus value in the economy as a whole and in the manufacturing sector. The rate of surplus value in Japan ranged from about 180 per cent to 220 per cent, leaving aside the manufacturing price rate to which we will return briefly. Also, the rate of surplus value had an upward trend during the 1960–1980 period in Japan.

It is intriguing that the aggregate rate of surplus value decreased, in value and price terms, during the 1970–1975 conjuncture when Japan was in a deep recession. One plausible explanation is that Japanese workers scored a 33 per cent increase in basic wages in 1974, on the basis of windfall profits created by 'crazy prices' following the 1973 OPEC price hikes. According to Uchino (1978), this occurred at a time when management was in an unusually vulnerable position due to widespread public criticism of the corruption of large corporations. The gain in nominal wages, coming on the heels of a significant 24 per cent increase in 1973, fed into a rise in real wages that outstripped increases in productivity (Kalmans 1993:114–17). Hence the rate of surplus value fell, since productivity and real wages are its primary influences. By 1980, however, this measure was already on the rebound.

Still focusing on Table 16.1, the magnitude of deviation of the aggregate price rate from the value rate was quite small. The difference between the aggregate price and value rates of surplus value is a measure of the effect of price–value deviations, which were, therefore, negligible in Japan. Specifically, the deviations ranged from 0 per cent to 7 per cent in either direction.

A different picture emerges with regard to the relationship between the value and price rates of surplus value in the manufacturing sector. The price rate was consistently higher than the value rate, reflecting price-value differences of about 45 per cent to 60 per cent from 1965 to 1980, and as high as 85 per cent in 1960.

These deviations were substantial but not surprising for Japan.

The divergence between value and price rates of surplus value in the manufacturing sector suggests a complex circuit of value transfers among sectors of the private economy, and between the public and private sectors, as well as international transfers of value among nations. For example, in the process of the formation of the general rate of profit, value is transferred from sectors such as agriculture that have low organic compositions of capital to others like manufacturing that have higher organic compositions (Marx 1967b:173–99). Okishio (1959:8–9), Izumi (1983:13–14) and Okishio and Nakatani (1985:8–9) argue that value transfers from agriculture to industry are significant in Japan due to the relatively low level of capitalist development in the former sector. The results of this study support their view.

In addition, transfers of value occur via foreign trade. Shaikh (1980b:49–50) argues that the *net* transfer will be the sum of an efficiency effect within the same industry internationally and a transformation effect between industries. One would expect, for instance, producers in Japanese industries such as automobiles, electronics, heavy machinery, optical instruments, drugs and medicine, iron and steel (particularly blast furnaces and open and electric furnaces) to be high efficiency producers from an international perspective and these industries to have relatively high organic compositions of capital. It is thus plausible that there is an inward net international transfer of value into these leading manufacturing industries. This might account for the high realised rates of surplus value in the Japanese manufacturing sector.

The Rate of Surplus Value in the United States

Table 16.2 Labour Value and Price Rates of Surplus Value in the United States

	1958	1963	1967	1972	1977
			Aggregate		
$e_{US} = (S/V)_{US}$	2.37	2.39	2.56	2.65	2.66
$e^*_{US} = (S^*/V^*)_{US}$	2.23	2.22	2.39	2.41	2.43
$((e - e^*)/e)_{US}$	5.9%	7.1%	6.6%	9.1%	8.1%
			Manufacturing		
$(e_m)_{US} = (S_m/V_m)_{US}$	1.85	1.90	2.39	2.48	2.49
$(e^*_m)_{US} = (S^*_m/V^*_m)_{US}$	2.65	2.65	2.98	3.18	3.31
$((e_m - e^*_m)/e_m)_{US}$	– 43.2%	– 39.5%	– 24.7%	– 28.2%	– 32.9%

The aggregate and manufacturing rates of surplus value are shown in value and price terms in Table 16.2. As in Japan, both the value and price rates of surplus

value had increasing trends, signifying a rising rate of exploitation of productive workers.

Note that the aggregate value rate of surplus value in Japan was consistently lower than the US rate from 1958 to 1980, indicating that productive workers were *more* exploited in the United States (Kalmans 1993, 1997). Also, the value rate of surplus value in US manufacturing was higher than its Japanese counterpart, with the exception of the 1965 value rate in the manufacturing sector in Japan, which was a mere four percentage points above the 1963 US measure. We will return to consider the manufacturing price rates briefly.

With respect to aggregate price–value deviations, they were once again minor for the economy as a whole, ranging from 6 per cent to 9 per cent.[3] The aggregate price rate of surplus value was a sound index of both the level and trend of the aggregate value rate in the United States. However, the relationship between the levels of the two measures was even stronger in Japan.

In the manufacturing sector, the levels of the price and value rates were once again quite disparate. The price rate of surplus value was higher than the value rate by about 25 per cent to 43 per cent, but the magnitude of the deviation was nonetheless much smaller than in Japanese manufacturing. One plausible explanation is that the contrast between the level of capitalisation in the agricultural and industrial sectors was not as pronounced in the United States. Accordingly, transfers of value from agriculture to manufacturing would not be as significant as in Japan. It follows that the generally higher price rate in Japanese manufacturing in comparison to US manufacturing seems to reflect the relatively larger transfers of value from the agricultural sector.[4] An area of future research is the empirical measurement of these inter-industry value transfers to examine whether this is, indeed, empirically true.

Still another intriguing question left unanswered in the present chapter is why there is such a large discrepancy between the price and value rates of surplus value in US manufacturing. One possible explanation, suggested by Shaikh, is that the former is artificially low because the direct labour coefficients are unadjusted for skills. This would probably overestimate the labour value of manufacturing consumption goods and hence variable capital. As a test, the 1958 value rate of surplus value in manufacturing was adjusted for skills, using wage coefficients as a proxy for skill adjusted labour coefficients. The adjusted rate was 2.082 compared to the original rate of 1.851. Hence the difference between the price and value rates of surplus value was reduced from about 43 per cent to 27 per cent. This is an issue to be considered further in a subsequent paper.

16.5 SUMMARY

This study finds that, for the economy as a whole, not only were the trends of the price and value rates similar, but the price rate of surplus value deviated from the value rate by 6 per cent to 10 per cent in the United States, and the deviations were generally smaller, 0 per cent to 7 per cent, in Japan. This indicates that aggregate price–value deviations were minor in both countries, as Marx's theory anticipates. However, a different picture emerges for the manufacturing sector. The manufacturing price and value rates of surplus value diverge substantially, although their trends tend to be alike. The former result comes as no surprise, since prices tend to deviate from labour values on a sectoral level, due to net transfers of value into and out of a sector that occur during the process of capitalist competition.

APPENDIX: SOURCES

Japan

Input–output tables

The empirical measurement of the rate of surplus value in Japan is carried out using 33-sector link input–output tables, based on the official Japanese tables published by the Management and Co-ordination Agency (MCA), formerly the Administrative Management Agency. Specifically, the 1960, 1965 and 1970 tables are aggregations of the flow tables in the *1960–1965–1970 Link Input–Output Tables*. The 1975 and 1980 flow tables are replications of the *1975 Input–Output Tables* and the *1980 Input–Output Tables*.

The tables are aggregated to 36 sectors by Uno (1984). These tables are further reduced to 33 sectors in this chapter. Then, numerous adjustments were performed on the Japanese flow tables to make them methodologically compatible with those of the US, which had previously been adjusted to conform more to marxian measures. See Kalmans (1993, Appendices A, B and C) for more details.

Total and productive employment

Total employment figures are based on MCA supplementary tables published along with the input–output accounts. They include data on regular, temporary, day and self-employed labour. Productive labour estimates, additionally, use occupation-by-industry matrices compiled by Uno (1989), which are, in turn, aggregations of Japanese Population Census data adjusted to include the self-employed.

Total and productive compensation

The MCA input–output accounts include a table on employee compensation, which is compatible with the value added sector of the input–output tables. The employee compensation tables are aggregated and adjusted to correspond to the alterations performed on the input-output tables.

The earnings and supplements of regular productive workers are obtained from the employee compensation tables, based on the assumption that the average earnings of regular and temporary and day productive workers approximate those of non-supervisory unproductive workers. It is assumed that temporary and day workers do not receive benefits regularly. While some of the larger companies might offer temporary and day workers certain wage supplements, this is not the general case. With regard to self-employed workers, in all industries except agriculture the wage equivalent is estimated to be equal to the average combined wage of regular and temporary and day workers, plus wage supplements. The earnings of self-employed farmers in the agricultural sector are derived from the *Employment Status Survey*.

United States

Input–output tables

The US input–output tables are based on the benchmark tables published by the Bureau of Economic Analysis (BEA). They have been adjusted for methodological consistency by Juillard (1988) and Cooney (1989) and, additionally, aggregated to 34 sectors.

Total and productive employment

Total employment measures are obtained from employment compatible with output measures from the 1967, 1972 and 1977 input–output accounts. These data are presented by Coughlin (1978), Crane (1982) and Yuskavage (1985), respectively, and modified by Khanjian (1988) to reverse the force account construction adjustment. Employment measures for 1958 and 1963 are taken from Khanjian and altered to include the self-employed, using National Income and Product Accounts data.

Productive labour estimates for the United States utilise occupation-by-industry matrices that are published as special reports of the 1960, 1970 and 1980 Population Censuses. Wolff and Howell (1987) adjust the tables for consistency of occupational classification and compatibility with the BEA input–output accounts. Occupation-by-industry matrices are interpolated for the years of the input–output benchmark studies.

Total and productive compensation

Total compensation comes from the identical sources as total employment.

The average annual compensation of a productive worker is obtained for each industry, using Khanjian's data. Afterward, these sums are multiplied by the estimates of productive workers (including self-employed workers) obtained from the occupation-by-industry tables.

NOTES

1. Consumption-outside-households is subtracted from the value added sector of the Japanese input-output tables, since these expenditures are not recorded in value added in the US accounts.
2. Rental activities are treated as integral to the trade sector, since they are simply a piecemeal way of selling commodities. In the conventional US input–output tables, the real estate sector includes both building rents and ground rents. (Ground rents are not accounted for in the Japanese input–output tables.) The gross output of the trade sector (GOTT) includes the real estate sector in this study; therefore, it is biased upward by the amount of ground rents. However, this does not affect the results of the study significantly.
3. However minor the deviations, the price rate was consistently below the value rate. Shaikh has suggested that this reflects the fact that, in the United States, trade margins on the sales of consumer goods were higher than those on the average bundle of goods in net output (Khanjian 1988:109–13). It would be interesting to see if the same explanation can be applied to those years when the aggregate price rate falls below the value rate in Japan.
4. The temporary fall in the 1975 Japanese manufacturing price rate of surplus value below the 1972 US rate reflected the real wage increases won by workers in Japan.

17 Devalorisation, Crises, and Capital Accumulation in the Late 19th Century US

Michael Perelman

17.1 INTRODUCTION

Marx's notion of the tendency for the rate of profit to fall remains one of the most controversial elements of his work.

Marx is partially to blame for the controversy, since he failed to arrange all of his relevant analysis in a single coherent statement. Instead, he left scattered suggestions throughout his works, which, upon later investigation, generally turn out to be remarkably consistent.

A number of studies have shown that a sequence of revaluations of constant capital can explain Marx's theory of a falling rate of profit (Perelman 1987, Kliman 1988). Specifically, Marx's theory suggests that untrammelled competition has a natural tendency to force the development of large-scale, capital-intensive firms, which then have to dissipate their capital by frequently replacing their plant and equipment before they have recovered their investment.

I will use the history of the late 19th century US economy to illustrate how a devalorisation crisis can occur. I will then discuss the evolution of competition in the US, showing that the recent globalisation of the economy has put capital under renewed competitive pressure of the kind that drives Marx's theory of a devalorisation-driven falling rate of profit. Finally, I will attempt to apply this analysis to gain some understanding of the current economic situation.

In the process, I will indicate a number of lessons that we can draw from this episode. First and foremost, it suggests why value theory must take account of the manner in which competition and technical change lead to devalorisation of capital. It also suggests that we reverse the direction of causation in discussing the rate of profit. Instead of a depression or a recession causing the drop in the rate of profit, the falling rate of profit can set off the depression or recession.

I will also indicate how this episode throws considerable light on the nature of economic theory. Specifically, in the wake of this devalorisation, the lead-

ing economists in the US proposed that markets naturally tend to self-destruct. To prevent this outcome they advocated a system of trusts, cartels and monopolies, at the same time as they wrote textbooks to teach their students that perfectly competitive economies are the best of all possible worlds.

Historical Evidence

In the post-Civil War period, the US economy entered the stage of capital-intensive production, first in the railroads, with steel and other basic industries not far behind. For example, between 1869–89, the average factory doubled in size and capital invested per manufacturing worker grew from $700 to $2000 (O'Brien 1988, Jensen 1993:834). Over-investment became common, especially in railroads.

In the 1880s, railroads built almost 74,000 miles of lines. They 'hastily threw up lines that were not needed, through miles and miles of wilderness, merely to insure that another railroad would not claim the territory first' (Faulkner 1959:145).

In the face of over-investment, competitive forces rapidly drove prices down toward marginal costs. The railroads reported revenue per ton-mile falling from 1.88 cents in 1870 to 1.22 cents in 1880. In 1890, it had reached 0.94 cents. By 1900, it had fallen to 0.73 (Kolko 1965:7).

As prices fell to near marginal costs, railroads had no more chance of paying off their huge capital costs than the airlines have today with current competitive conditions. Railroad bankruptcies spread throughout the economy. When a second round of railroad bankruptcies began in 1893, steel companies followed with 32 bankruptcies in the first six months of the year. Stock market and bank crashes were not far behind (Faulkner 1959:145).

Within this competitive environment, firms cut costs by installing the best available technology. The adoption of a revolutionary new technology by a competitor forces owners of outdated plant and equipment either to attempt to meet the competition by dropping their prices while continuing to use their existing plant and equipment, or passively withdrawing from production, or, finally, adopting improved technologies that would decrease prices.

In order to survive, many firms installed still newer technology to lower their costs to meet the challenge of their rivals. With the rapid succession of new technologies, prices plummeted. For example, the Bessemer process reduced the price of steel rails by 88 pe cent from the early 1870s to the late 1880s; electrolytic refining reduced aluminium prices by 96 per cent; and synthetic blue dye production costs fell by 95 per cent from the 1870s to 1886 (Jensen 1993:835). On a macroeconomic level, the general price index fell from a high of 129 in 1864 to a low of 71 in 1894, where it remained until 1896. The wholesale price of pig iron fell by about two-thirds, and refined petroleum

by over 90 per cent (Kirkland 1964:7).

In this deflationary environment, installed capital generally depreciated well before firms could amortise their investments. Perhaps the most extreme example was the decision of Andrew Carnegie to raze a new factory before it was even completed because he heard of a new, even more efficient method of production. Because firms had to abandon equipment before it had paid for itself, profits fell and the economy spent a good deal of time in recession. Indeed, 14 of the 25 years between 1873 and 1897 were years of depression or recession.

Despite the numerous years of depression and recession, over this entire period the US experienced healthy GNP growth, alongside widespread devalorisation and bankruptcy. This mix of conditions seemed so anomalous that Rendigs Fels, a specialist in business cycles, dismissed Schumpeter's contention that the depression of the 1870s was as severe as that of the 1920s (Fels 1959:108, Schumpeter 1939:337).

Economists of the time saw nothing strange in the contemporary economic situation. In their eyes, strong competitive pressures naturally led to the emergence of poverty and unemployment alongside healthy growth of the national product.

Given the intensity of competition, economists, corporate leaders, and politicians agreed with Marx that the tendency for the rate of profit to fall would destroy competitive capitalism, clearing the way for socialism. Although these conservative elites conceded that competitive markets were unsustainable, they argued that a system of trusts, cartels and monopolies could bring order to capitalism. Leading economists, such as John Bates Clark and Arthur Hadley, formed the American Economic Association to promote this anti-competitive perspective (see Perelman 1994, 1996).

At this point, J. P. Morgan and other titans of finance capital rationalised industry in the US. As Alfred Chandler has shown, this reorganisation allowed for enough efficiency that wages and profits grew, even though finance capital siphoned off huge rewards.

17.2 SQUEEZING LABOUR

During the initial expansion following the Civil War, competition was not particularly intense. Wages had risen by over 60 per cent per cent between 1860 and 1874. Once competitive pressures mounted with the onset of the crisis, wages fell by more than 24 per cent between 1874 and 1881. Wages then rose again, but not by much. For example, in 1890, wages were only 12 per cent above their 1874 low (US Senate 1893).

Real wages seem to have peaked in 1860 at $457. By 1872, they had sunk to $416. From there, real wages remained relatively steady until 1881, then

began to rise until 1892. During the next two years, real wages fell to $484. Thereafter they rose, reaching $563 in 1899 (Lebergott 1964:528).

Although real wages showed a modest upward trend, productivity growth was enormous. In 1860, the index of employment requirements per unit of output stood at 153. By 1900, the index had shrunk to 89. So we can conclude that workers as a whole received a small share in the increase in productivity.

The modest increase in wages was not shared evenly. Few strikes at the time ended in compromise; workers tended either to win or lose. While many industrial workers behaved militantly, bravely challenging wage cuts, not all were successful. Strikes ordered by a labour organisation, strikes with fewer female workers, strikes prior to Haymarket, strikes in the building trades and shoe industries and strikes involving a larger percentage of the workforce were more likely to succeed (Card and Olson 1995). While some workers improved their situation through collective action, the majority, lacking the benefits of organisation, enjoyed few, if any, benefits of the technological advances at the time.

17.3 MODERN PARALLELS

The parallels between the 19th-century economy and our own time are striking. The aftermath of the Civil War provided the conditions for an enormous expansion of production and productivity, much like World War II. Once capacity expanded, so too did competition. In effect, we are seeing today the recreation of the national competition of the 19th century on an international scale. Again, we witness a period of rapid technological innovation alongside strong competitive pressures.

Unlike the 19th century, profits are still relatively high. Here the difference is political rather than economic. Strong social protests characterised the late 19th century. Militant labour combined with populism to hold capital in check. In contrast, progressive forces have recently been in retreat.

The corporate sector, freed of all social restraint, is reducing the full impact of competition and the threat of radical devalorisation by reducing wages and benefits, while enjoying lower taxes and reduced regulation. In the process, any illusion of a social contract has disappeared. Corporations are now allowed to do what either law or custom forbade before. For example, modern profit-oriented corporations are replacing less mercenary organisations.

For example, medical corporations shave costs by cutting corners, which puts patients at risk. True, the last generation of medical providers did often tend to over-apply some services, but such abuses pale in comparison with what is occurring today.

Insurance companies, which used to enroll most potential customers, now seek out the most risk-free and reject the rest. More commonly, corporations

have been trying to shore up their profits by cutting back on employee compensation, but this tactic offers only a temporary respite from the pressures of falling profits.

Even by the standards of neoclassical economics, the effects of these practices reflect a pure extraction on the part of capital rather than a social contribution on the part of industry. Bill Tabb accurately labels this stage of capitalist development as 'vampire capitalism' 'to convey a strategy of growth through [regressive] redistribution' (Tabb 1992:81).

In the earlier period, corporations sought relief from competitive pressures through trusts, cartels and monopolies. Today, they seek intellectual property protection. If we were to eliminate the effect of the growing impact of increased so-called intellectual property rights and the loosening of social restraints on corporate behaviour, I suspect that we would see a substantial decline in profits.

17.4 HELP FROM ABROAD?

While globalisation has increased competition, it has also reduced competitive pressures by opening up new markets. Most of these so-called emerging markets presently offer markets for major capitalist enterprises while providing cheap labour platforms, without creating a substantial competitive threat. In addition, their comparatively weak political position (with the exception of China) has allowed the government of the US to pressure them frequently to adopt policies favourable to major US corporations. As a result, the emerging markets, in contrast to some of the successful East Asian economies, have helped to lift the rate of profit.

The limits of this source of relief are obvious. What raises profit rates is the flow of new markets rather than the stock of existing markets. No new major areas are presently available. For that reason, we see leading executives of major US corporations salivating at the prospect of gaining access to the small island of Cuba, despite the strong ideological objections of the government of the US.

With the end of their opportunities for relief in sight, business will probably turn to more cut-throat competition in the relatively near future, thereby creating chaotic conditions comparable to those which were typical of the late 19th century.

During the earlier period, labour acted militantly. Today it has not yet come up with a coherent strategy to confront global capital.

In the earlier period, labour was more mobile than capital. Although corporations used immigrant workers to undercut the existing labour force, after a while the immigrants tended to identify with the causes of their predecessors,

requiring still another wave of immigrants. Capital mobility has so far proven far more effective in fragmenting the global labour force. Even within the borders of a single country, the mere threat of capital mobility has succeeded in setting workers in one factory against other workers employed in another factory owned by the same company within the US.

Thus, although the intensification of global competition exerts a direct downward pressure on profits, by reducing labour's bargaining power, globalisation also works to lift profits – at least in the short run. Once wages reach a point where workers cease to concede any more ground to capital, the negative effect will make itself felt. In addition, as economies compete by cutting wages and social spending, capital may be laying the groundwork for a serious crisis of underconsumption.

17.5 A FURTHER DIMENSION OF MARX'S VISION

Marx went well beyond the vision of the early US economists, recognising a deeper contradiction inherent in the growth of capital-intensive technology. He understood that the diminished relative importance of direct labour in the production process had major consequences for the nature of capitalism. He proposed:

> To the degree that labour time – the mere quantity of labour – is posited by capital as the sole determinant element, to that degree does direct labour disappear as the determinant principle of production ... and [it] is reduced both quantitatively ... and qualitatively, as an, of course, indispensable but subordinate moment, compared to general scientific labour, technological application of natural sciences, on the one side, and to the general productive force arising from social combination .... Capital thus works towards its own dissolution as the form dominating production. (Marx 1973b:700)

Consider the context of this passage. What we call the labour theory of value is not so much a theory of value, but rather a description of how the capitalist system as a whole operates. Rather than calculating a social optimum, capitalism, in effect, allows a multitude of individual capitalists or firms to calculate a number of local, profit-maximising optima – or, as Hayek wrote, 'Competition ... means decentralised planning by many separate persons' (Hayek 1945:521).

In principle, each capitalist works to minimise overall costs. In practice, capitalist management has historically focused on minimising direct labour costs. Where labour works with few capital goods, this arrangement can allow for relatively efficient production and a rapid accumulation of capital.

Once capitalism progresses to a point where individual labour becomes a modest expense relative to the costs of capital, the traditional incentives of capitalism become counterproductive. For example, imagine a worker who is in charge of operating a multimillion dollar machine. Cutting wages from $10 to $9 per hour would represent a trivial saving. Even paying $100 per hour would not place a great burden on the company.

A rational firm would be better advised to make sure that the worker appreciates the responsibility of caring for the capital goods. Productivity and efficiency depend on developing general scientific labour, as Marx noted above. Of course, to make labour a full partner in the production process runs counter to the class structure of capitalism.

Finally, Marx alluded to the importance of 'social combination' as opposed to Hayek's vision of decentralisation. The modern business press is finally beginning to catch up with Marx's ancient comments, when it praises the efficiencies of the Japanese system of inter-firm organisation, in a belated recognition that purely market mediated exchange relations have severe limitations (Lazonick and West 1995). Economic theory has yet to advance even that far.

Marx's remarks raise a more practical question. How could capitalists justify their role in society once recognition of the importance of the concepts of social combination and universal labour become common? Marx was certain that the capitalists of the future were bound to become just as superfluous as the feudal lord of the past.

17.6 UNIVERSAL LABOUR

Marx's passage cited above strikes another familiar chord, referring to 'general scientific labour'. Under modern conditions of production, workers' productivity more and more depends on an increasing level of skill, but Marx was pointing to an even more interesting phenomenon with his reference to general scientific labour. There, he seemed to be alluding to something more than a higher demand for, say, mathematical abilities on the job. I read him to be suggesting that workers themselves would be making a genuine scientific contribution to the techniques of production.

These contributions may be specific to the site or, after a while, it may enter into the general practices of the entire industry, or it may even find applications in other industries. Neoclassical economists touch on this subject with their theory of learning-by-doing, but they do not take this notion very far.

To the extent that workers actually engage in the development of new techniques, their labour becomes what Marx called universal labour, the work of discovery, which once accomplished eventually becomes public knowledge (Marx 1963:353).

The creation of public knowledge works against the grain of a capitalist economy because those who hire producers of universal labour are usually unable to appropriate more than a fraction of the value of that work. In Marx's words (1963:353):

> The product of mental labour – science – always stands far below its value, because the labour-time needed to reproduce it has no relation at all to the labour-time required for its original production. For example, a schoolboy can learn the binomial theorem in an hour.

To the extent that firms are able to appropriate the scientific achievements of workers as their 'intellectual capital', economic development will be retarded. As a result, the proprietary nature of the production process would be counter-productive. A socialist system of social relations would be better suited to harnessing such scientific labour.

More importantly, as Marx (1976a:508) saw, the labour embodied in the products of universal labour is immediately devalued once they become public knowledge: 'Once discovered, the law of the deflection of a magnetic needle in the field of an electric current, or the law of the magnetisation of iron by electricity, cost absolutely nothing'. As a result, even neoclassical economists acknowledge that capitalist firms systematically under-invest in universal labour.

Let us return to Marx's (1981:198–99) thoughts on universal labour:

> [I]t is only the experience of the combined worker that discovers and demonstrates how inventions made can most simply be developed, how to overcome the practical frictions that arise in putting the theory into practice ...We must distinguish here, incidentally, between universal labour and communal labour. They ... merge into one another, but they are each different as well. Universal labour is all scientific work, all discovery and invention.

17.7 *UNIVERSAL LABOUR AND THE DISRUPTION OF THE PRICE SYSTEM*

Capital limits the potential of universal labour by promoting a mania for cutting taxes and suggesting that education be privatised and treated like any other commodity. Conversely, universal labour seriously threatens the rule of capital by compromising the relevance of the pricing system. First of all, universal labour causes the cost of reproducing commodities to fall below what it would otherwise be. As a result, it devalues existing products, especially in new industries. As Marx (1981:199) noted:

> much greater costs ... are always involved in an enterprise based on new inventions, compared with later establishments that rise up on its ruins .... The extent of this is so great that the pioneering entrepreneurs generally go bankrupt, and it is only their successors who flourish, thanks to the possession of cheaper buildings, machinery etc. Thus it is the most worthless and wretched kind of money-capitalists that draw the greatest profit from all the new developments of the universal labour of the human spirit and the social application by combined labour.

For most goods with a short life-cycle, the effect of moderately falling costs of reproduction does not make a great deal of difference; however, for long-lived capital goods, a prolonged period of falling costs of reproduction make historical values irrelevant. Computers represent an obvious example. In this industry, historical costs are a matter of amusement rather than a serious guide to underlying values. When radical revaluations become commonplace, they can destroy the coherence of the price system.

17.8 *BUSINESS WEEK* DISCOVERS MARX

Until recently, Marx's thoughts on universal labour had a distinctly visionary ring; however, the structure of capitalism has been changing rapidly enough for reality to be catching up with Marx's vision. Today, Marx's insights, if not his words, have a contemporary ring. We can find them echoing in the pages of *Business Week* or the *Harvard Business Review*, which observed that the ratio of direct labour costs to total costs in the US is about half as large as it was in the middle of the 19th century (see Miller and Vollman 1985:143). According to a *Business Week* report, automation has reduced labour costs to around 8 per cent to 12 per cent of total production costs for the average plant. The share of direct labour costs is even smaller in many industries. In electronics, the third largest industry in the US, which is also the fastest growing US industry, labour costs are only half as much as the average (Port 1988).

Certainly, the flight of capital-intensive industries to low-wage countries, as well as outsourcing, have made the process proceed faster than it otherwise would have. Even so, the long-run reduction in direct labour costs remains an indisputable and perhaps inevitable fact.

Modern business practices are also beginning to catch up with Marx. Beckman Instruments of Cedar Grove, California does not even bother to treat labour as a separate cost category, including it instead as part of overhead. 'It's such a small item on the expense sheet', notes Thomas C. Sternad, central operations controller (Port 1988).

The key to cost savings for such industries is to spread fixed costs over a large output by running expensive fixed capital goods as close to capacity as possible. In this sense, a *Business Week* report echoes another famous passage from Marx, concluding 'Time is manufacturers' most precious commodity' (Port 1988:104).

One senior manager observed:

> We've been brought up to manage in a world where burden ratios [the ratio of overhead costs to direct labour costs] are 100 per cent to 200 per cent or so. But now some of our plants are running with burden ratios over 1000 per cent. We don't even know what that means. [Cited in Miller and Vollman 1985:142]

Computer software represents the quintessential case of a product with a trivial marginal cost. In this industry, almost all production costs are concentrated in the development phase.

17.9 THE NECESSARY EVOLUTION OF CAPITALIST LABOUR–MANAGEMENT RELATIONS

Marx understood that the strategy of minimising direct labour costs was ideally suited to an immature level of technology that allowed capitalists to prosper by sweating surplus value from masses of untrained labour.

New technologies allow direct labour costs to become an increasingly small part of overall costs, while constant capital looms ever larger in the production process. In the process, the average worker becomes responsible for more and more materials and equipment.

Under this new arrangement, work often requires teams of employees, coordinating their efforts to control a complex process. As the production process becomes more sophisticated, management becomes increasingly dependent on the scientific expertise of the workforce. Contemporary capitalists frequently lack the ability to evaluate the contributions of individual workers.

Some enlightened capitalists have recognised the need for a more co-operative relationship with labour, but such attempts rarely succeed because management usually resists ceding authority to labour (see, for example, Zuboff 1988). In effect, then, capitalist social relations stand in the way of society taking full advantage of our modern technological potential. Or, as Marx noted above, 'Capital thus works towards its own dissolution as the form dominating production'.

17.10 PRICING AND THE MARKET SYSTEM

Unlike the business press, conventional price theory still depicts strong competitive pressures forcing prices to move toward marginal costs, while altogether ignoring the implications of this alleged phenomenon. Where fixed costs predominate, both competitive markets and the theory of competitive markets become inappropriate, even by the standards of neoclassical economics. Specifically, if markets are competitive and the pressure of competition forces prices to approach marginal costs, a crisis will erupt.

In general, when a typical modern manufacturing industry is running at full capacity, the marginal costs for producing an extra unit of output are minimal, little different from the case of duplicating computer software. If competition were to work as economic theory proposes – to drive prices down to the cost of production plus a small mark-up to allow for some profit on marginal costs – competitive firms would have little left to cover their large fixed costs.

With prices approaching marginal costs, most manufacturing firms would soon fall into bankruptcy, just as surely as software companies whose product was freely duplicated. Only a huge mark-up on marginal costs can allow a firm with high fixed costs to cover the latter. In short, strict adherence to the pricing behaviour that conventional economic theory predicts would eventually lead to the bankruptcy of competitive, capital-intensive firms and would devastate the economy. In effect, then, the evolution of modern production methods, by shrinking the relative importance of direct labour costs, undermines the logic of the price system, making the economic theory of the price system irrelevant in a rational economy.

Marx, as well as more modern economists such as John Bates Clark and Alfred Marshall, was keenly aware of this pervasive contradiction within capitalist economies. Unlike Marx, who took pleasure in trumpeting contradictions, more respectable economists followed a duplicitous practice. In writing their textbooks, they buried their misgivings about competitive forces. Instead, they defended the *status quo* by supposedly proving the optimality of the price system.

In contrast, when writing about policy matters, even the most prominent of conventional economists promoted legal and political changes to permit firms to take measures to blunt the force of competition. Many, such as Clark, strenuously argued for trusts, cartels and monopolies as appropriate measures to prevent prices from approaching marginal costs.

No wonder John Maynard Keynes (1939:49) once remarked:

> Indeed, it is rare for anyone but an economist [He might have added the qualification, in a principles text] to suppose that price is predominantly governed by marginal costs. Most business men are surprised by the sugges-

> tion that it is a close calculation of short-period marginal costs or marginal revenue which dominates their price policies. They maintain that such a policy would rapidly land in bankruptcy anyone who practised it.

Today, Keynes' words are true more than ever.

Appendix: IWGVT Scholarship Guidelines

PREAMBLE

We are convinced that the *de facto* function of mainstream selection procedures is to exclude. Mainstream selection criteria are subjective and therefore discriminate against theories and arguments which the reviewers and editors hold in disfavour. Conversely, the following guidelines put forth some objective criteria to which, as we have learned and as we teach, good scholarship should conform.

It is common in academic discourse for proponents of one perspective to exclude, ignore, and deny legitimacy to opposing perspectives. Against this, the aim of the guidelines is to achieve a style of debate in which different perspectives engage with one another. We seek to foster a dialogue which is pluralist, because no interpretation of a theory, and no presentation of the facts, will be ruled out *a priori*, but also critical, because proponents of various perspectives will need to confront the alternatives.

INFORM READERS OF THE ALTERNATIVES

An argument is not well-grounded unless the extant alternatives have been addressed. This means that all points of view are legitimate until proved otherwise. Engage and cite the views of others involved in debating the issues you are addressing, and treat them as equals acting in good faith. If you want other people to attend to what you are saying, then attend to what they are saying.

DON'T DENY LEGITIMACY TO ALTERNATIVE VIEWS

The aim of debate is clarity, not demolition. Avoid turns of phrase such as 'absurd', 'ridiculous', or 'impossible' to deny the legitimacy of opposing views, or phrases like 'as is widely known' or 'of course' to prove your own views are undeniable.

IDENTIFY THE CONCEPTUAL BASIS OF 'FACTS'

Economic data are not undisputed facts of nature but the result of a theoretical interpretation which should be explicit. 'The real output of the UK economy in 1994 was £570,722m' is a false claim. 'Output as measured by the UK NIPAs, deflated using the HMSO GDP deflator, was £570,722m' specifies the conceptual framework that produced the claim, and lets the reader trace the assertion back to its source.

DISTINGUISH ORIGINAL TEXTS FROM SUBSEQUENT INTERPRETATIONS

You must distinguish clearly between an original text and subsequent interpretation. John Maynard Keynes did not say that equilibrium in the goods and money markets is given by the intersection of the IS and LM curves. This is Hicks' interpretation of Keynes. Karl Marx did not say that value is a vertically-integrated labour coefficient: this is the interpretation of Marx proposed by Linear Production Theory.

ARGUE FROM EVIDENCE

Both statements about the world and interpretations of texts must be supported by empirical evidence, from the world or from the text, respectively. Appeals either to authority or to popular wisdom do not constitute evidence. Avoid *ad hominem* reasoning: don't try to substantiate or refute an argument by reference to any characteristic of the person presenting it.

DISTINGUISH BETWEEN INTERNAL INCONSISTENCY, INTERPRETIVE DIFFICULTIES, AND DISAGREEMENT

If you justify your approach by asserting that opposing views are inconsistent, you are declaring they cannot possibly be right and you hence exclude them from discussion. If you have only demonstrated the inconsistency of your own reading of these views, then your proof is false because you have not exhausted the alternatives; but you have closed down the dialogue. If you want to say a view is inconsistent, provide evidence that it cannot be interpreted otherwise. Unless you can do this, instead say that you have difficulty making sense of the argument, or that you disagree with it, as the case may be.

CHARACTERISE SCHOOLS OF THOUGHT IN THE PREFERRED MANNER

Do not use a characterisation for the purpose of dismissal. In debate, refer to other schools of thought by the name they prefer (for example, 'surplus approach' in preference to 'neo-Ricardian') unless you are including them in a wider grouping with no recognised name. In the latter case, try to provide an accurate, descriptive term.

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