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A re(in)statement of the labour theory of value

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1. Introduction

The labour theory of value is one of the most debated theories in the history of economics. One perspective, uniting neoclassical analysis, Sraffian approaches, and 'rational choice' Marxism interprets the labour theory of value as a theory of price determination, and a poor theory at that; while its study might be an interesting excursus into the history of economic thought, it has no role in modern economic analysis.[1] The typical Marxist response argues one way or another that the labour theory of value is *not* a proximate theory (and in some versions not even an approximate theory) of price determination, but is rather a qualitative account of exploitative class relations.

There is however another Marxist position, that the labour theory of value not only is an account of exploitative class relations but also, as part of that account, provides an understanding of prices which is clear, logically consistent, powerful and empirical. This was first published in English some dozen years ago,[2] but remains little known, and is rarely referenced in recent literature, primarily because its comprehension and acceptance requires the overturning of nearly ninety years of economic theorising in the Marxist tradition. In so doing, this new position shows that the traditional problems in the relations between values and prices, over which so much has been written, just evaporate. However, the deadweight of tradition makes these changes proposed to traditional theory very difficult to grasp. Ehrbar (1989, p. 7) speculates that this 'is why the response has often been that these were strategic changes, concocted to yield a desired result, which do not offer any new insights'. It must also be said that advocates of this new position have not helped their case by appearing only incompletely to escape from the traditional Marxist approach. Thus Duménil (1984) criticises Lipietz (1982) in just these terms. And Foley's exposition of the transformation problem (1986A, ch. 6) is easy to misinterpret, as Roemer (1990) proceeds to do. These examples attest to the extraordinary resilience of traditional modes of thought.

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[1] The danger of caricature is acute, as can be seen by trying to incorporate Sen (1978) in this perspective.

[2] It was arrived at independently and more or less simultaneously by Duménil in France and Foley in the US towards the end of the 1970s. The first English language publications were by Foley (1982) and by Lipietz (1982), the latter acknowledging its basis in earlier French work by Duménil (Lipietz, 1982, p. 74, n. 12). Subsequent publications in this tradition, although not all with the same emphases and nuances, include Duménil (1983–84, 1984), Duménil and Lévy (1987, 1989) and in Symposium (1988), Ehrbar and Glick (1986), Ehrbar (1989), Glick and Ehrbar (1987), and Foley (1983, 1986A, 1986B). In a different context, Devine (1989) argues for the same approach.

What follows is an exposition of this 'new' position.[1] The purpose of this paper is to show that it is possible to formulate a labour theory of value which is not subject to the logical objections so vigorously made by the neoclassical and Sraffian schools. What this theory has in common with recent literature[2] is its assertion that traditional ways of thinking about the relations between values and prices are (Ricardian) misconceptions; but what distinguishes it from that recent literature is its proposal that the labour theory of value is a logical and powerful way of understanding capitalism, both theoretically and empirically, whether or not prices are equilibrium prices. Disagreement with the labour theory of value has then to be based on something other than logical coherence.[3]

Questions of logical coherence have always been bound up with issues of method in Marxian economics, and at least three different positions can be distinguished. First, there is the epistemological question of the adequacy of the correspondence, or reflection, between the real object of knowledge and its representation in knowledge. Second, there is the ontological question of whether the real object is in some process of motion, in some process of 'becoming', such that its essential nature is determined epistemologically not simply through reflection of what is immediately given but through a reflection in thought of its immanence. And third, there is the question of how canons of formal logic can be used in such a dialectic. Schefold puts the difficulty neatly when he remarks that Marx's dialectical method 'exhibits a peculiar "aesthetic" fascination' but 'introduces a dilemma into the discussion about Marx because no accepted criterion exists to judge when a contradiction in *Capital* represents an adequate reflection of the contradictory object of cognition and when a contradiction represents a logical error' (Schefold 1989, p. 312).[4] This paper takes the following approach. To describe a contradiction is not necessarily to commit one. The Marxian approach does not invent contradictions and then arbitrarily project them on to the objects of cognition; it is not the process of cognition that is contradictory but the ontology itself of capitalist society.

There are three aspects to the theorisation of such contradictions. First, there is an attempt to reproduce in thought the real antagonisms of a class-divided society. These antagonisms are represented by oppositions between categories which both are separate from and presuppose each other. Examples include capitalist and worker, state and civil society, use-value and value, concrete labour and abstract labour, and commodity and money. Second, there is a developmental elaboration of these oppositions such that they tend to cut away at the basis on which they were constructed. Examples include the ideas that capitalism creates a proletariat which will be its own gravedigger; that state intervention in production in pursuit of accumulation tends to destroy the legitimation of private property; and that individual capitalists attempt to increase profitability through labour-saving innovations which expel from the production process the only agents capable of creating any profit at all. And third, there is the idea that underlying

[1] This paper is not concerned with the issue of whether the understanding proposed of the labour theory of value is really new, or whether it is a return to Marx after a century's detour. Duménil (1983–84) argues for the latter.

[2] This recent literature (the so-called 'abstract labour' approach) takes its inspiration from Rubin (1972) and Colletti (1973) and argues that the real process which renders labour abstract is the generalisation of exchange and not the process of the embodiment of labour in production.

[3] Thus Roemer (1990, p. 1728) suggests Foley's (1986A) account of how wage labour is exploited 'is *not credible*, because his key underlying postulate is *not credible*' (my emphasis). Whether underlying postulates should be credible raises difficult philosophical issues; underlying this paper is the belief that Foley is right and Roemer's indictment wrong.

[4] von Bortkiewicz makes the same point. See von Bortkiewicz (1952, p. 13) and the citation of von Bortkiewicz by Rosdolsky (1977, p. 119, n. 34).

essences generate mystifying forms of appearance, these latter being real rather than illusory, but as the same time systemically delusory as to their underlying essence or content. The best specific example is Marx's discussion of commodity fetishism (in Marx, 1976, ch. 1, section 4).[1]

More generally, a dialectical methodology attempts to capture in thought a world in motion; it attempts to do this by describing a world in which appearance is distinguished from essence, or form from content, such that the relation between the two is not arbitrary and extrinsic, but organic and intrinsic. A contradictory content produces its own form in such a way that form attains a partial independence which creates barriers to the further development of that content. Either the further development of the content is constrained, and a contradictory situation is sustained, or there is a forcible reconciliation of form to content, new forms appearing as barriers in their turn to the development of the underlying content. To the extent that this is successful, a theoretical description is provided of the development of capitalism through the evolution of the appearance-forms of its fundamental categories. If a reformulated labour theory of value is to claim a Marxian pedigree, then it must at least be not inconsistent with this general approach. The claim will be the stronger the more it exemplifies this general approach.

Section 2 briefly outlines the conventional literature. Section 3 considers value and price in the context of *Capital I*, and establishes two different definitions of the value of labour-power. Section 4 begins with an outline of value and price in the context of *Capital III*, and evaluates in this context the two definitions of the value of labour-power. On this basis, Section 5 outlines a coherent labour theory of value and contrasts it with the traditional understanding. Section 6 focuses more directly on prices, and then a conclusion suggests some advantages of re(in)stating the labour theory of value in this way.

2. The traditional literature

The labour theory of value is generally understood to be a labour theory of price, an explanation of price ratios in terms of ratios of embodied labour, which found its first general exposition in the opening chapter of Ricardo's *Principles* (Ricardo, 1951). Ricardo's analysis showed that such an explanation is at best problematic because the temporal structure of labour inputs, as well as their total amount, must affect price; embodied labour ratios alone are not sufficient to determine price. The traditional Marxist response has been to follow Marx in his critique of Ricardo's methodology, a critique which focussed on the order in which the theoretical categories of capitalism are introduced. By introducing an equalised rate of profit and associated equilibrium prices at the outset of his analysis, rather than developing their necessity out of more fundamental underlying value determinants, Ricardo's approach necessarily problematises his theoretical account of price (*pace* Ricardo's refusal to concede this to Malthus), instead of developing his account in a way which both derives 'outward appearance' from 'inner essence' and opposes appearance or form to essence or content. But this developmental procedure of contradictory determination requires a clear and consistent distinction between value and price which is not present in Ricardo's work.

[1] Commodity fetishism is one aspect of the more general phenomenon which runs right through *Capital*, that the relations between the concrete-specific and the abstract-general are inverted, a real inversion whose reflection in theory generates complicity with the status quo rather than contributing to its emancipatory transformation. Colletti eloquently argues for this interpretation in his introduction to Marx (1975).

In contrast, Marx's labour theory of value *is* founded on a clear distinction between value and price. In *Capital I*, he assumed that prices were proportional to values. In *Capital III* he showed that commodities cannot be presumed to exchange at prices proportional to values. Rather commodities exchange at 'prices of production', formed by the sum of costs plus a profit mark-up, such that each firm earns the average rate of profit on its outlay. While value is produced according to the firm's employment of labour, and hence its outlay of variable capital, it is distributed between firms according to the total quantity of capital (constant plus variable) advanced by each firm, and hence each firm's employment of all inputs. So values are produced and then redistributed, and deviations of prices of production from values in money terms must sum to zero. Therefore, in the aggregate, prices of production are equal to values in money terms, and profits are equal to surplus-value in money terms, and in this aggregative sense the labour theory of value continues to hold.

But if labour-time determines price only in this aggregative sense, then prices of production for individual commodities will differ from the money equivalents of the labour embodied in them. Marx considered this relation between price of production and money-value[1] for the individual commodity to be systematic, determined by the relation between the composition of capital (the ratio of constant to variable capital) in the production process in question and that for the economy as a whole: if the former is greater (less) than the latter, then the price of production of this firm's commodity will be greater (less) than its money-value.

This account of the aggregate equalities of surplus-value and profit, and value and price, and of individual value-price deviations, is universally rejected by all accounts which follow the approach stemming from the work of von Bortkiewicz (1949, originally 1907; and 1952, originally 1906–07), dealing with the 'transformation' of values into prices. For since compositions of capital are ratios of constant to variable capital, evaluated in terms of money-values which Marx did not transform into prices of production, the account is inconsistent since produced means of production are sold at their price of production but presumed purchased at their money-value. A general account has to transform input values into prices of production as well as output values. Then the general rate of profit becomes an unknown, to be found simultaneously with prices in the solution to a set of simultaneous equations. In such a mathematical structure, there is only space for one normalisation equation, or 'invariance postulate', so that in general 'total value total price' invariance and 'total surplus-value total profit' invariance cannot both hold. But sacrificing either appears to problematise Marx's theory: either aggregate labour is not the sole determinant of aggregate price, or aggregate unpaid labour is not the sole determinant of aggregate profit.

In such circumstances, Marx's theory remains valid only for certain cases, all of which are highly special.[2] In summary, a huge literature has exhaustively analysed the 'transformation problem', and all that appears to remain of the labour theory of value is the 'fundamental Marxian theorem' (that the rate of profit is positive if and only if the rate of surplus-value is positive). This is a weak proposition, providing little theoretical relevance and no empirical relevance for value theory. As such, it is not adequate to the

[1] Throughout this paper, 'money-value' denotes 'value in money terms', or the price that obtains when prices are proportional to embodied labour times.

[2] See Seton (1957) for a discussion of the traditional three-department model, and Morishima (1973, chapter 7) for the n-sector case of linear dependence between industries and for where all means of production producing industries have the same composition of capital.

task Marx set himself of revealing 'the economic law of motion of modern society' (Marx, 1976, p. 92).

But writings on the labour theory of value summarised in the preceding paragraphs use a very particular version of the labour theory of value inherited from von Bortkiewicz and the tradition following him. The remainder of this paper is devoted to establishing the propositions that the von Bortkiewicz interpretation is wrong, and that a different account both is more coherent and provides a foundation upon which further analysis can build in order to investigate the overall adequacy of the Marxian account of capitalism.

3. Value and price in *Capital I*

3.1 General considerations of value and price

Consider a typical commodity, produced under capitalist relations of production. It has a value, defined as the socially necessary labour-time required to produce it. In the production process, living labour works on raw materials with various instruments of production, producing the commodity as output. Its value is the new value added by the expenditure of labour to the existing value of the raw materials and instruments of labour used up in the process. This value can be understood in two different ways; first, as an 'individual value', measured in terms of the production conditions represented by the particular technique in operation in the particular production process in question; and second as a 'social value' or 'market value', given by an averaging process across all techniques in operation in all production processes producing the commodity. These latter values are measured in terms of socially necessary time (standardising for different work intensities, productivity levels, skills and so forth).

In Marx's theory of value, socially necessary labour-time takes a money-form through the establishment of a universal equivalent as the money-commodity. He argued that, in an exchange relation between two commodities, one commodity could be considered as expressing its value in units of the other commodity. The value of each of the commodities was the same, by assumption, but only one commodity's value was expressed, and was only expressed relatively, in units of the other commodity. This latter commodity, in which the value of the other is expressed, acts as the equivalent form of the value of the first commodity. In his discussion of the 'peculiarities' of this equivalent form, Marx outlined the way in which use-value appears directly as value, concrete labour as abstract labour, and private labour as social labour. Generalising this discussion shows that the use-value of this equivalent form is to act as the universal equivalent form of value. The value of a commodity is thereby expressed as something different from, and external to, the bodily form of that commodity. It is expressed, that is, in units of the universal equivalent. This latter is the money-commodity, and expresses the value of any commodity as a sum of money, or in (money-)value-form.[1]

As well as its use-value of representing to all other commodities the abstract labour contained in them as an external relation, the money-commodity has an individual value (determined by the socially necessary labour-time required to produce it in a particular production process using a particular technique) and a market value (determined by an averaging process in the gold industry across all production processes and all

[1] For Marx's discussion, see the third section of the first chapter of *Capital I* (Marx, 1976, pp. 138–163). For correspondence between Marx and Engels on the most appropriate mode of exposition, see Volume 42 (pp. 381, 383 and 384) of the Marx–Engels *Collected Works* (1975, *et seq*).

techniques). This is exactly the same as for any other commodity, because the money-commodity *is* a commodity. Then dividing by the value of the money-commodity converts the market value of any commodity into its money-value. Ignoring for simplicity the distinction between individual value and market value, then if λ_i is the unit value of the ith commodity, and λ_{mc} the unit value of the money-commodity, the unit money-value of the ith commodity is p_i, given by

$$p_i = \frac{\lambda_i}{\lambda_{mc}}. \tag{1}$$

In *Capital I*, Marx called these money-values 'prices': they are exchange-values measured in terms of the money-commodity or universal equivalent. But if the form of value is both generated by and physically separated from its content in the way outlined above, then at one and the same time price and value are organically linked (as form is linked to content, growing out from it and determined by it) and can move in different directions by virtue of their physical separateness (and hence their different determinations). Consequently, as an empirical possibility, the value-form (price) might not measure value content (abstract labour as socially necessary labour-time) accurately: the price of a commodity might fluctuate around the ratio of its value to the value of the money-commodity. Thus Marx wrote,

Price is the money-name of the labour objectified in a commodity. Hence the expression of the equivalence of a commodity with the quantity of money whose name is that commodity's price is a tautology . . . The magnitude of the value of a commodity . . . expresses a necessary relation to social labour-time which is inherent in the process by which value is created. With the transformation of the magnitude of value into the price this necessary relation appears as the exchange-ratio between a single commodity and the money commodity which exists outside it. This relation, however, may express both the magnitude of value of the commodity and the greater or lesser quantity of money for which it can be sold under the given circumstances. The possibility, therefore, of a quantitative incongruity between price and magnitude of value, i.e. the possibility that the price may diverge from the magnitude of value, is inherent in the price-form itself. (Marx, 1976, pp. 195–6).

Nevertheless in his (*Capital I*) exposition of the theory of value and surplus-value, Marx assumed that prices unproblematically reflect values; that is, they are proportional,[1] with the constant of proportionality being the reciprocal of the value of the money-commodity. He expressed this in an assumption of equal exchange, or 'exchange of equivalents', the point being to isolate more starkly the determinants of exploitation and surplus-value. Thus he wrote that

If prices actually differ from values, we must first reduce the former to the latter, i.e. disregard this situation as an accidental one in order to observe the phenomenon of the formation of capital on the basis of the exchange of commodities in its purity, and to prevent our observations from being interfered with by disturbing incidental circumstances which are irrelevant to the actual course of the process. We know, moreover, that this reduction is not limited to the field of science. The continual oscillations in prices, their rise and fall, compensate each other, cancel each other out, and carry out their own reduction to an average price which is their internal regulator. This average price is the guiding light of the merchant or the manufacturer in every undertaking of a lengthy nature. (*Ibid.*, p. 269, n. 24)

[1] In modern formalisations of Marx's theory, relative prices are the same as relative values if and only if the labour input vector is an eigenvector of the relevant technology matrix, which is to say, if and only if compositions of capital are equal across all capitals.

In the world of *Capital I*, this average long-run price is identified with money-value, which is proportional to value.

3.2 The value and price of labour-power

Consider now the commodity 'labour-power'. The value of labour-power is defined, like that of all other commodities, as the socially necessary labour-time required to produce it. However, for labour-power this is not a simple formulation. For if people have non-market access to the means of subsistence, or if people own resources which enable them to produce commodities on their own account to exchange, *via* money, for means of subsistence, then labour-power will not be a commodity at all. So there must be some condition, or social relation, which separates the majority of people from the means of production, and which either forces people into the market to sell the only commodity they possess, their capacity to work, or labour-power, or forces them into non-market dependence upon those who do so sell.[1] The 'production' of labour-power as a commodity, then, means the reproduction of the capital-labour relation.

Against this background, since labour-power only exists as a capacity of human beings, then the production of labour-power requires a particular set of processes which reproduce and maintain human beings as workers. The maintenance of a worker

> requires a certain quantity of the means of subsistence. Therefore the labour-time necessary for the production of labour-power is the same as that necessary for the production of those means of subsistence . . . His means of subsistence must . . . be sufficient to maintain him in his normal state as a working individual. His natural needs, such as food, clothing, fuel and housing vary according to the climatic and other physical peculiarities of his country. On the other hand, the number and extent of his so-called necessary requirements, as also the manner in which they are satisfied, are themselves products of history, and depend therefore to a great extent on the level of civilisation attained by a country; in particular they depend on the conditions in which, and consequently on the habits and expectations with which, the class of free workers has been formed. In contrast, therefore, with the case of other commodities, the determination of the value of labour-power contains a historical and moral element. Nevertheless, in a given country at a given period, the average amount of the means of subsistence necessary for the worker is a known *datum*. (*Ibid.*, pp. 274–5).

After remarking that these means of subsistence 'must include the means necessary for the worker's replacements, i.e. his children', and that skilled labour requires training which 'costs an equivalent in commodities of a greater or lesser amount' forming 'a part of the total value spent producing it' (*ibid.*, pp. 275–6), Marx concluded that 'The value of labour-power can be resolved into the value of a definite quantity of the means of subsistence. It therefore varies with the value of the means of subsistence, i.e. with the quantity of labour-time required to produce them' (*ibid.*). And throughout *Capital I*, this definition is maintained.[2]

Accordingly, since labour-power is a commodity, sold in the market for its exchange-value, which in turn is spent on means of subsistence, then, *given equal exchange* (or prices proportional to values), the value of the subsistence commodity bundle must be *equivalent* to the value of labour-power, and can therefore be taken as measuring it. The

[1] Marx's discussion of the double freedom of the worker (the freedom to enter the market as the juridical equal of all other market participants, and the 'freedom' from the means of production) is in Marx (1976, pp. 270–74).

[2] See, for example, Marx (1976, pp. 436–7, 656, 659 and 661).

'individual value' of labour-power is measured by the particular bundle of commodities necessary to (re)produce some individual worker, while the 'market-value' of labour-power is the average of these bundles across all workers, or the total commodity bundle purchased by the working class divided by the number of workers.[1] This market value becomes a money-value when divided by the value of the money-commodity, and Marx calls the money-value of labour-power the 'price of labour-power'.

Now the price of labour-power is not the wage, or at least not straightforwardly so. Value and price of labour-power are the 'hidden background', the 'essential relation', whose 'forms of appearance are reproduced directly and spontaneously, as current and usual modes of thought'; these forms of appearance are 'the "value and price of labour" or wages' (*ibid.*, p. 682). The wage is thus the 'exoteric form' of the value and price of labour-power (*ibid.*, p. 701). The equivalent of the value of labour-power expressed in money, that is, its exchange-value, appears as the 'nominal wage', while the total means of subsistence into which this value is converted appears as the 'real wage' (*ibid.*, pp. 683, 702).[2]

3.3 Two definitions of the value of labour-power

This treatment of the value of labour-power in *Capital I* is not as straightforward as it appears. In the first place, while Marx appeared to treat the value of labour-power as determined like the value of any commodity, he in fact treated it quite differently. The value of any other commodity is determined by the socially necessary labour-time required to produce it. But labour-power is not a produced commodity in the same sense. It is a capacity or potentiality of people, and people are not (re)produced under capitalist relations of production. No capitalist production process is involved, no process of adding value to the means of production by living labour; neither do there exist different technologies of production in competition with one another which must be averaged to find a market value. Marx's approach was to define the value of labour-power in terms of the value of the commodities which the money-value of labour-power can purchase, or command. He did not do this for any other commodity.

This point must be emphasised. On the one hand, all other commodities measure their values, given equal exchange, in terms of their money-equivalent, and not in terms of the value of what this equivalent can subsequently purchase in the market, *although, given equal exchange, they could be so defined.* On the other hand, labour-power measures its value in terms of the value its money-form can purchase, and not, more simply, in terms of its money-equivalent, *although, given equal exchange, it could be so defined.* Given an equal exchange of values in the C–M–C circuit 'labour-power–wage–subsistence commodity bundle', the value of labour-power per hour of labour (*VLP*) can be indifferently measured in terms either of the wage rate w

$$VLP = w\lambda_{mc}, \tag{2}$$

[1] So what is *a posteriori* bought by the working class is what is *a priori* required to be bought by the working class. Such Hegelian-type reasoning runs right through *Capital*. See in a different context Foley (1986A, p. 135).

[2] That the value and price of labour-power appears as the price of labour, or the wage, is an important part of Marx's theory of ideology (a theory of the inversions of the essential relations by their forms of appearance, appearances which are necessary rather than contingent); but in terms of the analytics of his theory of value, nothing is lost by treating the wage as the price of labour-power (which it really is), rather than as the price of labour (which it really appears to be).

or in terms of the subsistence bundle of commodities purchased with the wage, so that if $\boldsymbol{b}$ is the vector of 'subsistence' commodities, λ is the vector of values, and L is the total number of hours worked in the economy,

$$VLP = \frac{\lambda \boldsymbol{b}}{L}. \tag{2'}$$

In the absence of equal exchange, equations (2) and (2′) can only hold by chance.

4. On values, and prices of production in *Capital III*

4.1 General considerations of value and price

In general, the price of a commodity will differ from its money-value. The 'price of production' is the form of money-value in circulation which allows the maintenance of an equalised rate of profit across all capitals. It is therefore an equilibrium price in the sense that if all commodities exchange at their prices of production, capital does not flow between different economic activities in search of higher profits. Thus Marx called the price of production 'the long term ... condition of supply, the condition for the reproduction of commodities, in each particular sphere of production' (Marx, 1981, p. 300).

As a long-run supply price, it is given by costs of production marked up by the uniform economy-wide rate of profit. Marx further distinguished 'price of production' from 'market price', this latter being what is observed at any particular time in the market, determined by prevailing demand and supply conditions. Since he argued that competitive forces will typically ensure that the price of production acts as a centre of gravity for the market price, he ignored such divergences:

> In actual fact, demand and supply never coincide, or, if they do so, it is only by chance and not to be taken into account for scientific purposes; it should be considered as not having happened. Why then does political economy assume that they do coincide? In order to treat the phenomena it deals with in their law-like form, the form that corresponds to their concept, i.e. to consider them independently of the appearance produced by the movement of demand and supply. (*Ibid.*, p. 291)

Focusing on an equalised rate of profit is not then to impose a teleology of equilibrium upon the processes of capital mobility. Rather, it is to assert that the general tendency towards equalisation of profit rates is more important in the first instance than tendencies which work in the opposite direction, because an equalised rate of profit is the 'form' which corresponds to the 'concept' of capitals in competition as individuated fragments of capital in general. What all capitals have in common is the property of self-expansion, or 'valorisation', and it is simplest to assume that their rates of self-expansion are the same (the profit rate). With this established analytically, determinations generating differentiated profit rates can be understood in a framework of 'rising from the abstract to the concrete' as 'the way in which thought appropriates the concrete, reproduces it as the concrete in mind', the concrete being understood as 'the concentration of many determinations, hence unity of the diverse' (Marx, 1973, p. 101). And a corresponding argument can be made concerning the relation between market price and price of production: the rate of profit is equalised through the establishment of prices of production, or of forms of value appropriate to individuated competing capitals; determinations generating market prices differing from prices of production can be understood likewise as a 'concretisation' of the analysis.

4.2 The value and price of labour-power in a world of unequal exchange

Consider again the C–M–C circuit 'labour-power–wage–subsistence commodity bundle'. Given equal exchange, the value of the commodity labour-power is expressed directly in the equivalent form of the wage, which is equation (2), and indirectly, *via* the intervention of money, in the value of the subsistence commodity bundle, which is equation (2′). If exchange is unequal, there is no necessity for either of these equations to hold.

Following von Bortkiewicz, the standard treatment for the last eighty-five years ignores equation (2) but continues to hold to equation (2′), regarding the value of labour-power as the value of the subsistence commodity bundle. For since the subsistence commodity bundle is defined by the use-values necessary to produce and reproduce labour-power as a commodity, changes in how use-values are valued, from a valuation in terms of socially necessary labour-time to a valuation in terms of prices of production, cannot alter its composition. In effect, the real wage is held constant in the transition, or 'transformation', from a world of equal exchange to a world of unequal exchange. Accordingly, when rates of profit are equalised, if the money wage is to purchase the subsistence commodity bundle, and the prices of commodities in this bundle differ from their money-values, then the money wage in turn must differ from the money-value of labour-power.

But then the value of labour-power does not in fact determine the wage. It is fairly clear that Marx believed it did, just as he believed that for any commodity the socially necessary labour-time required for its production 'ultimately' determined its price of production.[1] But the standard treatments of the determination of prices of production in the von Bortkiewicz tradition show that in general this is not true. Marx's proposition, concerning the way in which the value-price deviation for a particular commodity is related to the difference between the composition of capital in its own production process and the economy-wide composition of capital, does not in general hold. The reason is straightforward; as soon as value–price deviations are allowed in the input structure of the economy, such deviations will have very complicated effects.[2] Hence if the value of labour-power is determined by the value of the subsistence commodity bundle, and if the price of labour-power or the wage has to be sufficient to purchase this commodity bundle, and if unequal exchange ensures that there is no simple relation between value and price for any commodity, then it cannot be argued that the value of labour-power determines the wage in any simple manner, and it certainly cannot be argued that the wage in any sense measures the value of labour-power. All that can be said is that the value of labour-power in terms of socially necessary labour-time and the wage in terms of money are different ways of expressing the same bundle of use-values.

But this is quite problematic. For equation (2′) treats the elements of variable capital as a bundle of (labour-feeding) commodities and so, implicitly, regards labour-power as a produced commodity, like any other commodity, with its own 'technology' of production described by the subsistence commodity bundle. Just as the technology of production of the elements of constant capital does not change as the values of these

[1] See, for example, Marx (1976, p. 269) and Marx (1981, pp. 277, 280, 428). That matters of interpretation are perhaps not so simple can be seen from Marx's recognition that ' the average daily wage is certainly always equal to the value product of the number of hours that the worker must work in order to produce his necessary means of subsistence; but this number of hours is itself distorted by the fact that the production prices of the necessary means of subsistence diverge from their values' (Marx, 1981, p. 261).

[2] Foley (1982, p. 43) talks of such deviations as 'cascading' through the input-output matrix of the economy.

elements are transformed into prices of production, so too for the technology of production of the commodity labour-power.[1] But this is wrong. Labour-power is not a produced commodity; it is a commodified aspect of human beings, and human beings are not produced in any valorisation process. It might be suggestive for some purposes to consider that labour process which (re)produces people, but the relations involved are not class ones, there is no private property in the means of (re)production from which non-possessors can be excluded, the labour involved is not wage labour, and (re)production is neither production for sale nor production for profit. Consequently, there are no input-output data to consider which have any meaning in terms of the market; indeed, it is doubtful that such data can sensibly be quantified at all since there is no commensuration across different (re)production processes through commodity prices in product markets or through the wage in the labour market.[2]

This has an immediate implication. The only reason for unequal exchange, that is, differences between prices and money-values, lies in capitalism's tendential equalisation of different sectoral rates of profit arising out of production processes with unequal compositions of capital. These differences must affect every produced commodity. But they *cannot* exist for labour-power. Accordingly, to regard labour-power as a commodity whose money value requires transformation into a price of production, and whose input cost structure likewise requires transformation, is doubly misconceived: first, because labour-power is not a commodity which is produced; and second, because there is no average rate of profit to be earned in the (re)production of people, indeed no value and surplus-value involved at all. To consider otherwise loses the distinction between labour and labour-power, in effect treating capitalism as a slave mode of production.

It might be argued that what is at issue is the equivalent of the value of labour-power, and that this equivalent is a set of produced commodities whose production involves different compositions of capital, having to earn in equilibrium the economy-wide rate of profit, and whose output values (and input values) therefore require transformation into prices of production. But this argument is incoherent, because it depends upon an equal exchange (between the value of labour-power as variable capital and its value-equivalent in consumption commodities) which is shown by the requirements of the equalisation of the rate of profit precisely not to exist.

Accordingly, if compositions of capital are unequal, unless unequal exchange is the norm, values cannot be redistributed to form prices of production which equalise the rate of profit. And if unequal exchange is the norm, the value of labour-power cannot be considered as the value of a set of commodities. *Retaining equation (2′) in a world of unequal exchange is just a mistake.* But since the only reason for unequal exchange is the requirement that the equalisation of the rate of profit makes of prices, and since there is no profit to be earned in the production of labour-power because it is not a produced commodity but a commodified human capacity, and because human beings are not (re)produced under capitalist relations, then there is no reason in general to presume

[1] Thus the standard input-output matrix is augmented by the labour-feeding coefficients in standard mathematical treatments, and so the elements of constant and variable capital are treated in identical manner.

[2] There are resonances here with the domestic labour debate (Himmelweit and Mohun, 1977). Note also that Harvey (1983) argues that since there is no labour process in the 'production' of the value of labour-power, Marx's theory of the value of labour-power determines its value not by a process of value-creating labour adding value to the means of production (as in any other produced commodity) but by a process of simply adding up the values of the relevant consumed means of production. Again the value of labour-power is not treated by Marx as analogous to the values of other commodities.

unequal exchange when labour-power is sold for a wage. That is, there is no reason not to retain some form of equation (2): *the wage is the equivalent form of value of the commodity labour-power whether or not there is unequal exchange in other commodity transactions*. On this basis, the labour theory of value can now be reformulated.

5. The fundamentals of the labour theory of value

5.1 *What is the labour theory of value?*

The method of historical materialism is based on an essentialist ontology of human labour; purposive cooperative labour alters the environment within which such labour occurs, and this alteration in turn alters the producers themselves. The value-form of the product of labour is as old as the process of exchange; the commodification of labour-power is a much more recent process. As soon as commodity exchange comes to embrace the purchase and sale of labour-power, then value and value-form, or money relations, become the dominating relations of society.

On this basis, what is produced is produced by the total quantity of living labour (on the simplifying assumption that all labour is productive). This aggregate is abstract, social labour, and defines the total new value produced. This is also, definitionally, the value of net output. Hence[1]

$$L = \boldsymbol{lx} = \boldsymbol{\lambda y}. \tag{3}$$

Here $\boldsymbol{l}$ is the labour directly required per unit of output, measured in hours of socially necessary labour-time, $\boldsymbol{x}$ is gross output, $\boldsymbol{y}$ is net output, and $\boldsymbol{\lambda}$ is the labour embodied per unit of commodity output, measured in hours of socially necessary labour-time. This labour aggregate is total value added (added, that is, to the cost of the means of production in all production processes, however this cost is defined), and since production is prior to distribution, it is invariant to any method of its distribution. Hence in the spirit of equation (1):

$$\boldsymbol{\lambda y} = \boldsymbol{py}\lambda_{\mathrm{m}}, \tag{4}$$

where $\boldsymbol{p}$ is a vector of prices, and λ_{m} is defined as the coefficient which enables a translation between prices into labour-times. Foley (1986, p. 15) calls λ_{m} the value of money, and its reciprocal the monetary expression of value. Despite the similarity in their form, equations (1) and (4) are quite different. Clearly λ_{m} and λ_{mc} will be the same if price is proportional to value for every commodity. This will not in general be the case, whence λ_{mc} is of little interest. By contrast, λ_{m} is defined by equation (4) as a fundamental constituent of the labour theory of value: net product in price terms is proportional to net product in money-value terms; in other words, total value added is invariant.

In particular, it does not matter whether prices are *Capital I* money-values, *Capital III* prices of production, or market prices; equation (4) holds however prices are formed. That is, *equation (4) is a definition, a conservation principle at the aggregate level of capitalist*

[1] Vectors denoting quantities are column vectors; vectors denoting prices, values and labour inputs are row vectors; and vectors and matrices are all in bold face to distinguish them from scalars.

society; it is not simply a mathematical normalisation.[1] To say that total value added is invariant is to say that what is produced is invariant to any subsequent method of its distribution. This distribution is a distribution of labour-times across the individual commodities aggregated as net product, and it is effected by prices. This is the fundamental meaning of 'price'; price is a representation of a portion of society's total labour-time allocated to a particular commodity.[2] In this sense, prices are forms of value, of abstract labour. Of course, since individual commodities are the outcome of production processes in which labour-time is expended, then the way in which a price system distributes labour-times might well mean that the labour-time so distributed to a particular commodity is different from the socially necessary labour-time required to produce it. If this turns out to the case, then the price system redistributes labour-times. But this does not alter the understanding of what a price is.

Equation (4) defines the value of money. Replacing the value of the money-commodity in equation (2) with the value of money yields the wage as the money-form of the value of labour-power

$$VLP = w\lambda_m, \tag{5}$$

and hence immediately from the definition of λ_m in equation (4) and substituting from equation (3),

$$w\lambda_m = \frac{wlx}{py} \tag{6}$$

or the value of labour-power is the share of wages in net output. This defines the value of labour-power in terms of a share of aggregate money value added.[3] Rather than the concrete labour embodied in commodities workers consume, the value of labour-power is a proportion of abstract labour performed. As the object of class struggle, it is conceded to workers in the form of wages in exchange for a unit of labour-power bought by capitalists. This division of abstract labour, or of money value added, defines the rate of surplus-value for the economy as a whole, *ipso facto* determined by class struggle between workers and capitalists.

This has a particularly important implication. Net output, however evaluated by prices, is divisible into aggregate wages and aggregate profits; net output as an aggregate of labour-times is divisible into aggregate necessary labour and aggregate surplus labour, and as a money-value sum into aggregate variable capital and aggregate surplus-value. By the labour definition of value, aggregate wages and profits (both multiplied by the value of money) are equal to aggregate variable capital and surplus-value. But it follows immediately from the definition of the value of labour-power, as the money-wage multiplied by the value of money, that aggregate variable capital (the value of labour-power multiplied by the total amount of labour-power purchased) is equal to total wages

[1] Seton (1957) uses normalisation and invariance synonymously. Mirowski (1988, chs. 1, 6, and 8 pp. 149–154) argues in a different context that such identification is not so straightforward.

[2] Thus Duménil (1984) emphasises, 'The amount of labour time expended in a given period is the value of a given bundle of commodities. *A price system expresses the reallocation of these hours of productive labour time to this bundle of commodities*' (Duménil, 1984, pp. 341–2, emphasis in original).

[3] It might be objected that this is now quite unorthodox: there is nothing in *Capital I* which defines the value of labour-power as a share in this manner. But in that world of equal exchange, equations (4) and (5) are just particular instances of equation (1), and that Marx did not recognise this is neither here nor there.

multiplied by the value of money. Hence total surplus-value is equal to total profits multiplied by the value of money. *Profits in the aggregate are an exact measure of unpaid labour in the aggregate.*

This is immediate from (6) since

$$1 - w\lambda_m = \frac{py - wlx}{py} = \frac{\Pi}{py},$$

where Π is aggregate profits, and so

$$\frac{1 - w\lambda_m}{w\lambda_m} = \frac{\Pi}{wlx} = \frac{\Pi}{W},$$

where W is aggregate wages. But by definition of aggregate surplus-value S and aggregate variable capital V,

$$\frac{L\,(1 - w\lambda_m)}{Lw\lambda_m} = \frac{S}{V} = e,$$

where e is the rate of exploitation, and hence

$$\frac{1 - w\lambda_m}{w\lambda_m} = \frac{S}{V} = e = \frac{\Pi}{W}, \tag{7}$$

and

$$S = \Pi\lambda_m\,. \tag{8}$$

Just as net value added is invariant to any distribution of that labour-time by prices, so too are aggregate wages and aggregate profits. The class distribution of aggregate net value added is invariant to any price system's distribution of labour-time across commodities. Hence movements in the rate of surplus-value, which is just the aggregate profit-wage ratio, can be analysed independently of how a particular price system so distributes labour-times across commodities.[1] The class distribution of aggregate abstract labour is in this sense prior to its commodity distribution.[2]

In summary, equations (3), (4) and (5) define the labour theory of value. It is an aggregative theory in which total labour performed defines the value of net output; the value of net output and aggregate value added in money terms define the value of money; and the value of money and the money wage define the value of labour-power. A price system is then a method of distributing aggregate labour-time expended across individual commodities. Hence prices are always, whether as *Capital I* money-values or as *Capital III* prices of production, representations or forms of value, of abstract labour.

[1] One corollary of this derivation of 'the' rate of surplus-value is that, *a fortiori*, there is no need to presume an equality of rates of surplus-value across different production processes.

[2] This provides a rationale for what is otherwise quite mysterious given the assumption of equal exchange, which is the treatment of the wage and the value of labour-power in Part Seven of *Capital I*; Marx could consider how accumulation alters the class distribution of net value added because that distribution is independent of any assumption about how prices are formed.

5.2 Differences with the traditional approach

The interpretation outlined in the last section is radically different from the dominant tradition inherited from von Bortkiewicz and highlights the contrast between different interpretations of the labour theory of value. In the von Bortkiewicz tradition, the theory of value is *an embodied labour theory* wherein Marx is read through Ricardian spectacles. No significance is given to money forms: with the replacement of the gold standard by fiat money and by credit, commodity-money is displaced from circulation, and money becomes in embodied labour accounts of value an irrelevance to theoretical explanation. Instead, the 'value system' is considered to determine embodied labour ratios, and the 'price system' ratios of exchange in the market. The relationship between the two is the subject matter of the 'transformation problem', with the issue of normalisation central to its interpretation.

The money form of value is then fudged. Either the way in which values become sums of money requires a more concrete analysis at a lower level of abstraction than does the determination of values themselves: capitalist competition conceptually modifies the values appropriate to the analysis of capital in general so that a general rate of profit can be accounted for; these modified values are prices of production, and, because they remain values despite their nomenclature, they are denominated in hours of socially necessary labour-time. Or the tradition more literally following von Bortkiewicz assumes that there is indeed a value of money which converts abstract labour into money-values, but this is presumed constant, and the transformation problem concerns the transformation of these money-values into prices of production. Either way, money is irrelevant.

Further, treating the value of labour-power as the value of the subsistence commodity bundle in situations of both equal and unequal exchange identifies a labour definition of value with a particular approach to the distribution of labour-times by a price system (that of equal exchange) for which there is no warrant. That is, the von Bortkiewicz tradition depends upon an equal exchange (between the value of labour-power as variable capital, a sum of money-value, and its value-equivalent in consumption commodities) which cannot in general exist. It thus confuses an embodied labour definition of value with a particular (equal exchange) distribution of value by a price system, and, identifying the former with the latter, confuses the value of labour-power as a bundle of consumer goods, and eliminates the distinction between variable capital *qua* capital and the wage in the hands of the worker as a sum of revenue.

A different interpretation of the labour theory is proposed here,[1] *an abstract labour theory*, in which the Ricardian perspective is overturned, and the issue of the form of value rendered central to the theory rather than separated into a different epistemological 'level' of analysis. Market processes of exchange commensurate commodities, and hence *a posteriori* commensurate the labour-times objectified in their production. Abstraction from concrete labours occurs as heterogeneous commodities are valued in units of homogeneous money. Value is then labour-time as it appears as money. In this account, the value of money and the value of the money-commodity are conceptually distinct. The value of the money-commodity is the socially necessary labour-time objectified in the production of one unit of the money-commodity. The value of money is the relation between the total social labour-time expended and the money value of the product created in that labour-time. If and only if a price system distributes labour-times across the commodities comprising net output exactly in proportion to the labour-times

[1] Influenced by Rubin (1972) and Colletti (1973). See also footnote 2, p. 392 above.

embodied in their production processes, will the value of money be the same as the value of the money-commodity, for equation (1) then applies indifferently to each and every value-price relation. But in general, the value of money is not the same as the labour embodied in the production of the money-commodity. This exactly parallels the formulation that the labour-time allocated to a commodity by its price is not in general the same as the labour embodied in the production of that commodity. While money is a representation of a generalised command over social labour, and as such is a form of value, it is not thereby immediately the actual labour-time embodied in some specific commodity. This provides a basis for an approach to the de-commodification of money and its replacement by symbols of itself in the form of paper and credit.[1]

Moreover, in von Bortkiewicz-inspired approaches with their focus on a subsistence commodity bundle, there is no consumption choice because the real wage is given. With a price system that distributes abstract labour such that equal exchange prevails, the exact equivalent of the money wage is of course the value of the commodity bundle that the worker consumes. But outside this particular and special case, with any other price system there is unequal exchange and the value of labour-power is not in general the same as the concrete labour embodied in the commodities purchased by the typical member of the working class.[2] This resolves one obvious difficulty with the von Bortkiewicz treatment of the value of labour-power as the value of a subsistence bundle of commodities: remuneration in capitalism is not typically in terms of a real wage bundle. It is a sum of money which is the object of class struggle, and which the monetisation of the use-value of labour must exceed if profit is to be made at all. It is still true that access to means of subsistence defines the terrain over which workers seek to gain command in class struggle. Yet if workers are not paid in kind, with a fixed bundle of commodities, but in money, which is then spent according as they perceive their (socially constructed) needs, there is no need to presume that all workers consume the same, identical bundle of goods, or indeed consume all of their wages. Obviously, the wage must be sufficient to maintain workers as workers; but while this limits the set of possible consumption bundles, it does not restrict the membership of that set to just one bundle.

The reason that the von Bortkiewicz-inspired interpretation is so common is that Marx's account in *Capital I* positively encourages it; his focus is on the individual production process in order to explain how capital produces surplus-value, and on the individual production process as a repetitive process in order to explain how surplus-value becomes capital. Moreover, because of the assumption of equivalent exchange, the value of the money-commodity and the value of money are the same, and the value of the subsistence bundle of commodities is the same as the value that the money-wage can 'command' in the market. Yet the two interpretations of value theory are not the same, despite the elision of formal difference by the proportionality assumption, and it is this confusion between the two interpretations that leads to the problems of interpretation of Marx's treatment of the value of labour-power and the wage.

To conclude, in the von Bortkiewicz tradition, there are amounts of embodied labour which have to be transformed into prices of production, the aggregate invariances are then shown in general to be not deducible from this procedure, and the labour theory of

[1] This is explored by Foley (1983).

[2] Foley (1982) argues this as a virtue, for it emphasises the mediating role of money, and is not reducible to that dominant strand within the von Bortkiewicz tradition which identifies capitalist exploitation as the existence of a physical surplus over and above necessary consumption, for such reduction fails to identify the specificity of capitalism as an exploitative society.

value falls. By contrast, the abstract labour approach identifies aggregate net product as the total value produced by (productive) labour, treats its money-form (and money-forms more generally) as central to the explanation of capitalism, understands prices as the means whereby this aggregate value is distributed and hence as forms of value, and depends on no particular assumption about the exchange of equivalents or non-equivalents. It thus *begins* with an appropriate definition of aggregate invariance, determined by the meaning of the labour theory of value, and defines invariance as invariance to *any* distribution of value by a price system. There is thus no transformation of (money-)values into prices.[1]

6. Prices and the labour theory of value

Clearly there is an infinite number of conceivable price systems compatible with this understanding of value theory, each price system being a different redistribution of labour-times, and each price a representation of abstract labour, or a form of value. Two such price systems are particularly important in the Marxian tradition, the first allowing a sharp focus on the production of value under capitalist relations, and the second allowing a focus on its competitive distribution.

6.1 Price proportional to values

Consider first a price system in which there is equal or equivalent exchange: all prices are directly money-values, and hence, for each commodity, price is proportional to the socially necessary labour-time required for its production. Then the proportionality relations in equations (4) and (5) apply to every individual commodity, and so

$$p_i = \frac{\lambda_i}{\lambda_m}. \tag{1'}$$

Since λ_m is determined by equations (3) and (4), prices are determined as soon as the vector of values λ is determined. And λ is determined by the value added by labour to the value of the means of production:

$$\lambda = \lambda \mathbf{A} + l, \tag{9}$$

where $\mathbf{A}$ is the non-negative square matrix of input-output coefficients, assumed indecomposable and productive. Since in this simple case a solution for values and hence prices as money-values exists if $[\mathbf{I} - \mathbf{A}]^{-1}$ exists, then[2]

$$\lambda = l[\mathbf{I} - \mathbf{A}]^{-1}. \tag{10}$$

When prices are determined as money-values, there is no redistribution of labour-times, because prices measure labour-times that are identical to socially necessary labour-times

[1] Curiously, Samuelson's use of an 'eraser' (Samuelson, 1971, p. 421) is, in the interpretation proposed here, quite correct; what is a defect in the von Bortkiewicz tradition (which Samuelson follows) is here a virtue.

[2] Since labour adds the equivalent of its own value, which is the value of labour-power $w\lambda_m$ determined by equations (3), (4) and (5), and adds a surplus-value $ew\lambda_m$ determined by the rate of exploitation defined in equation (7), then equation (9) can be written as $\lambda = \lambda\mathbf{A} + (1 + e)w\lambda_m l$. If $[\mathbf{I} - \mathbf{A}]^{-1}$ exists, then

$$\frac{1}{1+e}\lambda = w\lambda_m l[\mathbf{I} - \mathbf{A}]^{-1}.$$

of production. Consequently, when commodities are bought and sold for sums of money, these sums of money must represent equal, or equivalent, amounts of value. If exchange is exchange of equivalents in this manner, then money-value can only be expanded by the monetisation of surplus labour. Thus this principle of price formation enables a very clear focus on, first, how value is produced by capital in the labour process and, second, how value is accumulated as capital over time. It enables, that is, an explanation of why and how the exploitation of labour by capital takes a money form. And it proposes an account of why and how this exploitation is hidden from its participants by the money-form in an account of commodity fetishism and its characteristic inversions.

6.2 Prices of production

Consider now a different price system in which prices are formed as those sums of money-value which when added to the cost of the means of production ensure that each capitalist earns the economy-wide general rate of profit. Then the price equations are given by[1]

$$\boldsymbol{p} = [\boldsymbol{p}\mathbf{A} + w\boldsymbol{l}](1 + r), \tag{11}$$

where $\boldsymbol{p}$ are prices of production and r is the (equalised) rate of profit. These equations can be rearranged as

$$\boldsymbol{p} = (1 + r)w\boldsymbol{l}[\mathbf{I} - \mathbf{A}(1 + r]^{-1}. \tag{12}$$

Expanding the inverse matrix (provided it exists) in a power series shows that $\boldsymbol{p}$ is a continuous positive increasing function of w and r, as long as r is less than the maximum rate of profit sustainable by the technology matrix $\mathbf{A}$. Using the value of labour-power given in equation (6),

$$\frac{1}{w\lambda_{\mathrm{m}}} = \frac{\boldsymbol{py}}{w\boldsymbol{lx}} = \frac{\boldsymbol{p}[\mathbf{I} - \mathbf{A}]\boldsymbol{x}}{w\boldsymbol{lx}},$$

where $\boldsymbol{x}$ is the vector of gross outputs. Substituting for $\boldsymbol{p}$ from (12),

$$\frac{1}{w\lambda_{\mathrm{m}}} = \frac{(1 + r)\, \boldsymbol{l}\, [\mathbf{I} - \mathbf{A}\, (1 + r)]^{-1}\, [\mathbf{I} - \mathbf{A}]\boldsymbol{x}}{\boldsymbol{lx}}.$$

This scalar equation relates the value of labour-power to r, for given $\boldsymbol{x}$. When $r = 0$, the value of labour-power is unity; since the right-hand side is an increasing function of r, then there is a unique r corresponding to any value of labour-power less than or equal to one. Then equation (12) determines prices.

This now clearly involves a redistribution of labour-times, for individual prices will not in general be proportional to labour values, exchange will be unequal exchange, or exchange of non-equivalents, and exploitation will be hidden behind the symmetry of treatment of all inputs. Precisely for this reason, it is difficult to focus on exploitation as the extraction of unpaid surplus labour. But it is a price system appropriate to the analysis

[1] Some care is needed here. The $\boldsymbol{l}$ vector in (11) is labour hours purchased; the $\boldsymbol{l}$ vector in (9) is labour hours performed. To ensure the two are the same, either some explicit assumption to that effect is required, as in Foley (1982), or some conversion factor such as Lipietz's tensor of exploitation (Lipietz, 1982). The argument in the text follows Foley (1982, p. 46, n. 8).

of capitalist competition, at least in the first instance as the tendential equalisation of the rate of profit is assumed realised. And one can also consider how different compositions of capital affect the formation of price and hence the difference between the labour-time allocated to a commodity by the price system and the socially necessary labour-time required for its production.

7. Conclusions

This paper has been concerned with the proposition that if value theory is to be other than metaphysical it must provide some meaningful account of the relation between values and prices. Based on a rejection of the dominant analysis of this relation which is derived from von Bortkiewicz, it has sought to outline the basis for a different conceptualisation of Marxian economics.

Now a circulating capital model with no joint production, either as the pure case or as fixed capital, bears little relation to any real capitalist economy. In previous analytical work (Morishima, 1973; Steedman, 1977), even granting some sense to the 'transformation problem', the incorporation of (genuine) joint production and choice of technique to a von Bortkiewicz-derived understanding of Marxian value theory is sufficient to require the abandonment of the labour theory of value. This is not the case with the interpretation proposed in this paper. The labour theory of value is defined by the propositions underlying equations (2)–(4): something is produced, it is produced by labour, the aggregate quantity of labour hours worked is determinate, the value of money is thereby defined, the value of labour-power is the wage multiplied by the value of money, all profits are consequently unpaid surplus labour, and the rate of exploitation is well defined. Joint production and choice of technique have no relevance to any of these propositions. The labour theory of value is thus structured by the macroeconomic invariances of total value added and its division into wages and profits, and is thereby rendered both consistent and operationalisable[1] in a way that is not possible in the von Bortkiewicz tradition.

As soon as principles of price formation are established to distribute the labour hours of the net output which has been produced across the individual commodity outputs, then matters of joint production and choice of technique do become relevant. If prices are formed according to equations (1) and (5), then a solution is required for the value equations

$$\lambda \mathbf{B} = \lambda \mathbf{A} + (1 + e) w \lambda_m l. \tag{13}$$

It is well known that if the number of activities is greater than the number of commodities, then (13) will in general have no solution. But Duménil and Lévy (1987, 1989) have shown how by distinguishing between individual values and market values (derived by an averaging process either across individual values or across individual technologies) sufficient conditions exist for a positive solution to (13) when it is rewritten in terms of market values.[2] And if prices are formed as prices of production according to

$$\boldsymbol{p}\mathbf{B} = [\boldsymbol{p}\mathbf{A} + wl](1 + r), \tag{14}$$

then issues of joint production and choice of technique raise nothing for Marxian

[1] This is not quite so straightforward in practice, for the separation of productive from unproductive labour in official statistical sources is difficult.

[2] See also Ehrbar (1989).

economics that is not already raised for Sraffian economics (and on the latter see Schefold, 1988 and Symposium, 1988).

This raises the issue of why it is worth bothering with Marxian value theory at all, if all empirical issues can be dealt with in the Sraffian framework. The simple answer is that the framework proposed in this paper allows of all that a Sraffian approach can accomplish, and much more. By focussing sharply on the difference between total value produced and the prices which distribute it to individual commodities, a theoretical space is created for differentiating the determination of what is produced from the determination of its distribution. This is important in a number of ways. First, it enables a precise account of exploitation in the production process, and provides for a more coherent basis for the analysis of the labour process than is possible through an exclusive focus on price determination. Second, macroeconomic distributive shares can be considered independently of any price system. Third, the coupling of a macroeconomic theory of value invariance with a microeconomic theory of price determination suggests an analysis of unequal exchange which cannot be accomplished through an exclusive focus on the laws of price determination.[1] Fourth, the contrast between the content of value and its form, between embodied labour and abstract labour, gives rise to the characteristic inversions of the value-form which serve to ground the theory of ideology. And fifth, the distinction suggests a contradictory process, in the sense that a content in motion, or value-in-process, confronts a price-form whose relative fixity constitutes a barrier to the further development of its underlying content, a barrier whose dialectical supersession only posits further contradictions between essence and appearance.[2]

Further discussion of these issues is beyond the scope of this paper. But what has been provided is a framework which can accommodate them, a Marxian economics which provides both the space which allows the contradiction between value and value-form room to move[3] and the boundaries which constrain that movement. In sum, total labour-time performed, net output[4] and hence the value of money, the value of labour-power and the wage rate, and hence aggregate wages, aggregate profits and the rate of exploitation, are all invariant to any specification of the distribution of aggregate value added by a price system; they are all invariant to any principles of price formation. This is the core of the labour theory of value. It is not dependent upon any price system; hence it does not depend upon an equal exchange of values assumption. Neither does it depend upon any equalisation of the rate of profit. Nor does it depend upon any specification of workers' consumption, for exploitation is treated prior to consumption. What it does do is to make precise the notions that only living labour produces, that all profits are entirely and exclusively attributable to unpaid labour, and that prices are representations of abstract labour. Nothing more, but nothing less, is required of a labour theory of value.

[1] Far from being a post-Marxian discovery of a devastating problem, in the theory of value and price proposed in this paper the unequal exchange arising from the difference between labour embodied in production, and abstract labour assigned as price, is part of the richness and potential of the theory. Unequal exchange in this manner can be analysed directly for either individual commodities or aggregates of commodities using the procedures outlined in Parys (1982) following Pasinetti (1973). See also Pasinetti (1990).

[2] Cf. Marx (1973, pp. 401–423), and Nicolaus' Introduction pp. 24–44. This is to go far beyond the Sraffian framework.

[3] Cf. Marx (1976, p. 198).

[4] Since total labour-time expended is total value added, or the value of net output, then Marx's total value-total price equality must be defined in net rather than gross terms; otherwise there are obvious double-counting problems. Lipietz (1982) and Duménil (1983–4) provide further discussion.

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