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The Transformation Problem: An Anti-Critique

Barry Finger

This article takes up the neo-Ricardian challenge to locate the logical flaws in the various 'correctives' offered to Marx's transformation problem from the time of Böhm-Bawerk and Bortkiewicz to Sraffa. I propose to show that the technological concept of the 'value' suggested by volume I of Capital is extensively modified in volume III to explain the concept of 'price' and once that is adequately established, the transformation problem properly understood becomes an issue of 'repricing'. Because repricing requires a change in the physical structure of production—of labour reallocation, the neo-Ricardian approach, which lacks any dynamic component, is inadequate to the task of explaining how the redistribution of surplus value takes place through the movement of capital. Moreover, the neo-Ricardian approach is shown to be inadequate both in establishing a uniform, average rate of profit and in establishing a unique average rate of profit. These conceptual flaws nullify the neo-Ricardian approach to the general question of price formation based on the labour theory of value because they break the conceptual linkages between labour-time, value, capital and money. Once these linkages are properly established, it can be shown that Marx's approach is internally consistent and empirically useable.

Keywords: Marx; Neo-Ricardian; Price; Value; Transformation Problem; Bortkiewicz

What had once been reassuringly offered by Sweezy\(^1\) as a 'simple' corrective to a relatively trivial and minor aspect of Marx's theory of prices has, over the decades, proven to have a remarkable resiliency. Every few decades since the publication of the third volume of Capital the controversy has been re-ignited, the ramifications have become more complex and far ranging and the contending conclusions more mutually exclusive. The neo-Ricardian followers of Sraffa have clearly established themselves, not as a breakaway tendency within the broader Marxist critique of political economy, but as a wholly separate school of economics that challenges economic orthodoxy on the basis of its own unique set of intellectual and analytical

tools. Steedman\(^2\) has expressed this in the most straightforward manner, jettisoning value analysis as superfluous and therefore irrelevant. This is of course a full circle back to Bortkiewicz' assertion that 'we are driven to reject Marx's derivation of price and profit from value and surplus value.'\(^3\)

It's true that there has always been a middle ground, beginning at least with Natalie Moszkowska\(^4\) that seeks to reconcile the various putative correctives to Marx's method with value theory, but these seem ever more forced and unconvincing. Alfredo Medio,\(^5\) for instance, asserts, and similar themes can be found in Sweezy, Winternitz,\(^6\) Shaikh,\(^7\) Gerstein,\(^8\) or Fine and Harris\(^9\) that 'the theory of value directs our attention both to the mechanism of capitalism itself and to the way in which capitalists maintain this basis. Not only are they maximizing their profits but they also strive to preserve the social framework which makes profits possible at all'. Would it be ungenerous to reformulate this defence of value theory in the following way? Marxists are constrained to retain the theory of value for its hortatory and agitational virtues in the absence of which the essential connection would be lost between the organization and purposes of capitalism and insurgent political action. Such concerns would, in the absence of a labour theory of value anchor, presumably encourage critical analysis to drift towards secondary and/or analytically thorny but politically trivial considerations. Armstrong, Glyn and Harrison\(^10\) conclude an attack on Steedman along these lines by defending value analysis as 'conceptually handable' for providing 'categories which most effectively illuminate the nature of capitalist social relations'. This is less a defence than a sort of intellectual blackmail. We are exhorted to believe in the theory of value in the state that Marx bequeathed it because, it is asserted, that belief itself, regardless of whether it is defensible on its own merits, provides the best political guide to action. To be charitable, this is a peculiarly un-Marxist defence of Marxism.

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\(^2\) Ian Steedman, *Marx After Sraffa* (London: New Left Books, 1977) p. 66. ‘There is not, in any significant sense, any “transformation problem” to be solved. Since value magnitudes are irrelevant to the proximate determination of the profit rate and of production prices, no issue of the relation between values and prices, or of that between profit and surplus value, ever arises. (Indeed such questions are essentially irrelevant even to the demonstration of the proposition that profits are positive if and only if surplus value is positive.)’


This defence is also unnecessary on various levels. The question is not really whether the labour theory of value needs proof. Marx’s answer to this remains unassailable:

[Even if there had been no chapter at all on ‘Value’ in my book, then the analysis of the real relations which I provide would contain the proof and evidence of the real relation of value. All the gossip about the necessity of proving the concept of value is based only on the most complete ignorance, as much of the problem under consideration as of the scientific method. Every child knows that that any nation which stopped work—I will not say for one year—but just for a couple of weeks, would die. And every child knows that the value of products corresponding to the various needs calls for various and quantitatively determined amounts of total social labour. It is self-evident that this necessity of the division of social labour in certain proportions is not at all negated by the specific form of social production, but can only alter its mode of appearance. Natural laws can never be negated. Only the form in which those laws are applied can be altered in historically different situations. And in the form in which this proportional division of labour asserts itself in a social situation and in which the connection of social labour asserts itself as a private exchange of the individual products of labour, is precisely the exchange-value of those products.]

On the other hand, proof, if formal proof of the labour theory of value is needed, has already been provided by Okishio, Morishima, and for that matter Steedman—not at the level of prices—but in the derived conclusion, analyzed in terms of physically specified conditions of production and real wages, that the rate of profit will be positive if and only if the rate of exploitation is positive. More than that is not required.

And—if that formal elaboration were all that was needed, the transformation ‘problem’ could have been laid to rest a long time ago. It is after all, difficult to gainsay Samuelson’s tart observation, that normalizing the Bortkiewicz equations in terms of Marx’s ‘erroneously’ deduced invariance conclusions (total price = total value or total profits = total surplus value), is a feckless exercise in erase and replace. That is, if we accept the neo-Ricardian method, we can hardly redeem Marx’s approach by triumphantly tacking on a norming postulate from an analysis mistakenly derived. Or worse—proclaim a profound victory for Marx’s method when seen as a first step in an iterative procedure (Shaikh, Garcia) of converting values to prices, which, in the end, simply leads by a more circuitous path to the familiar Bortkiewiczian results.

15 Miguel Garcia, ‘Karl Marx and the Formation of the Average Rate of Profit’, International Socialism, Summer 1979. To be fair, Garcia does keep constant the sum of values with the sum of prices and the total surplus values with total profits. In this sense it is closer to Peter’s method. See footnote 26 below.
The neo-Ricardians, for all their hard-nosed insistence that value analysis is a dispensable detour around that which is truly central—the physical datum of production—have had to jerry-rig their own heuristic mental devices such as a standard commodities/systems, fictitious monetary numeraire, negative values, etc., as means of illuminating economic sociology. These tools have been applied with great success against the neo-classical paradigm. But they have also generated elaborate, misleading and naïve economic interpretations that falsely call into question fundamental aspects of the Marxian critique of political economy and in the end fail to provide a theoretically coherent alternative explanation of money and price. It is in that spirit, that we propose to provide an immanent critique of the neo-Ricardian method, questioning its hidden assumptions and mathematical leaps, and to reconstruct Marx’s theory in a way that answers the accusations of inconsistency with which it has been charged.¹⁶

I

One of the most glaring examples of the neo-Ricardian challenge, from a political standpoint, is the contention that the organic composition of capital in the non-reproductive sectors of the economy does not contribute to the rate of profit. In this assertion, they are foursquare in the pre-Marxian classical tradition insisting that the rate of profit depends only on the conditions of production of those industries that contribute directly or indirectly to the production of wage-goods. Marx insisted, on the contrary, that the conditions of production in the reproductive sectors determined the rate of exploitation, but that both sectors together determined the social rate of profit; that the average rate of profit was just that, an average among the various economic branches, which, along with changes in productivity, regulated competitive prices.

For Bortkiewicz in contrast, the acceptance of the Ricardian conclusion also challenged the validity of Marx’s law of the falling tendency of the rate of profit. For the larger implication of this Ricardian conclusion would, if valid, break the connection, all other things being equal, between the rise in the social organic composition of capital—especially insofar as that rise was confined to the non-reproductive sphere—and a fall in the rate of profit.

Sweezy considered this criticism to be of little practical significance, dismissing it in his earliest treatment as trivial. He did so because, like Bortkiewicz, he consigned only that scant element of the total production to the non-reproductive sectors that constituted capitalist consumption, i.e., luxuries. But later economists, such as Michael Kidron¹⁷ would rework T.N. Vance’s¹⁸ theory of the permanent arms

¹⁶ Steedman, op. cit., p. 33. ‘First these solutions [the neo-Ricardian, BF] unlike that of Marx, are logically coherent. Second, that those who oppose such solutions never attempt any direct logical criticism of them.’ This essay is in large part an extended answer to this challenge.
economy to embrace the massive volume of waste production precisely on that basis to explain the prolonged post-war boom. ‘Seen from the angle of the system, that is of pure theory, arms production is the key, and seemingly permanent, offset to the “tendency of the rate of profit to fall”’ Sweezy, who rejected the theory of the falling rate of profit, held instead to an underconsumption theory of crises seeing in militarism an outlet for the absorption of a surplus indigestible within the confines of the internally generated market of the system itself. However, if Kidron and his co-thinkers were correct, then the Bortkiewiczian insight would be a powerful refutation of Marxian theory of the inherent long-term instability of capitalism.

To refresh, the Bortkiewiczian transformation procedure seeks a simultaneous transformation of input and output values into prices as follows. Denoting the deviation of prices from values in the scheme of three departments (department I representing the means of production, C; II the means of working class consumption, V; and III the non-reproductive sector, S) with x, y and z respectively, the following can be represented:

As the rate of profit, r, must be equal among sectors, we have three expressions for the rate of profit, one for each sector.

\[
1 + r = \frac{C_x}{c_1 + v_1 y} = \frac{V_y}{c_2 + v_2 y} = \frac{S_z}{c_3 + v_3 y}.
\]

(It should be noted that in this analysis the rate of profit is characterized as the ratio of unit profit per cost-price for each commodity type. The rate of profit this model works

<table>
<thead>
<tr>
<th>Values</th>
<th>Prices of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (c_1 + v_1 + s_1 = C)</td>
<td>(x_1 + y_2 + z_1 = xC)</td>
</tr>
<tr>
<td>II (c_2 + v_2 + s_2 = V)</td>
<td>(x_2 + y_2 + z_2 = yV)</td>
</tr>
<tr>
<td>III (c_3 + v_3 + s_3 + S)</td>
<td>(x_3 + y_3 + z_3 = zS)</td>
</tr>
</tbody>
</table>

19 See Shane H. Mage, ‘The ‘Law of the Falling Tendency of the Rate of Profit’: Its Place in the Marxian Theoretical System and Relevance to the US Economy’ (University Microfilms Inc. 1963), p. 236 fn. ‘Without entering upon a detailed analysis of the Bortkiewicz method, it should be noted that, though pretending to generality, it applies only under the impossible condition of the absence of fixed capital and equal periods of turnover for the variable and constant portions of the circulating capital. Although Hodgson introduces fixed capital into his variant of the Bortkiewiczian method, his derivation of the rate of profit still fails to distinguish between the variable capital advanced and variable capital annually turned over, between the stock of variable capital and the annual wage bill (Geoff Hodgson, ‘Marxian Epistemology and the Transformation Problem’, Economy and Society, 3.4 November 1974). As we shall see, he, in line with all other neo-Ricardians, also fails to distinguish the annual wage bill from the value of the annually consumed wage goods. These distinctions are particularly relevant in refuting the so-called Okishio theorem, which holds that innovations that raise the organic composition of capital are only introduced under circumstances that also raise the rate of profit. Okishio’s conclusions are derived in the context of a cost-price (capital flow) notion of the rate of profit, ignoring the possibility that the cost-price rate of profit may very well rise, while the rate of profit calculated on the total capital invested (stock basis) may at the same time fall given the increasing portion of fixed capital to total constant capital. Marx calculated his theory of the falling rate of profit, needless to say, on a stock basis and this is the only basis that is relevant to the discussion in support or opposition to his theory.
with is, in any case, therefore fundamentally distinct from the Marxian rate of profit. The denominator of the Marxian rate of profit is the stock of constant capital plus the relatively negligible amount of advanced wages. The circulating capital model employed by the neo-Ricardians, on the other hand, measures the constant and variable capital preserved in the annual product. In general, there is no simple relation between the two rates of profits. As such, there is no reason to assume that—absent any other logical weaknesses in the transformation algorithms—a satisfactory resolution of the problem, as the neo-Ricardian-tinged Marxists define it, can result from this procedure. But this is, in any case, a departure from the immediate issue under consideration.

Since \( z \) does not appear in the first two equations, we are able to solve the equation, find the solution for \( r \) and the relation between \( x \) and \( y \) without reference to the price value deviation for the non-reproductive sector, \( z \). From this the neo-Ricardians conclude that the conditions of production (specifically, the cost ratio of constant capital to variable capital) in the third department play no role in the determination of the general rate of profit. Recast in Sraffian terms, it asserted that changes solely in the technical composition of capital (the physical data of production) in the reproductive sectors can lead to modifications in the rate of profit; those in the non-reproductive do not. And, on closer inspection, this ‘proof’, such as it is, is seemingly mathematically unimpeachable.

But let us examine the implication of this proof more closely.\(^{20}\) If the ‘transformed rate of profit’ of the non-reproductive sector, \( r' \) equals the similarly ‘transformed rate of profit’ of the reproductive sector, \( r' \), then

\[
p'/v' = (e'/v' + 1) = p'/v': (e' + 1),
\]

where \( e' \) is the transformed organic composition of capital in the non-reproductive sphere \( (c'/v') \) and \( e' \) is the transformed organic composition of capital in the reproductive sector \( (c'/v') \); \( p' \) the non-reproductive transformed mass of profits, \( p' \) the transformed mass of profits in the reproductive sphere; and \( v' \) the transformed wage of the non-reproductive sphere, \( v' \) the transformed rate of profit in the reproductive sphere.

This means that every percentage increase (decrease) in \( e' \) that comes about from, for instance, diseconomies (economies) in the employment of constant capital in the non-reproductive sphere, unaccompanied by any change in the production conditions of the reproductive sector, induces a corresponding increase (decrease) in the profit-wage ratio which nullifies and cancels out the increase (decrease) in the organic composition of capital in the non-reproductive sphere. Stated otherwise, any

\(^{20}\) This section is derived and adapts the much neglected work of Georgio Stamatis, ‘Über Die Abhängigkeit Der Allgemeinen Profitrate von den Produktionsbedingungen im Unreproduktiven Sektor (Nicht-Basisektor)’, Beiträge Zur Kritik der neorcardiansischen Theorie’, Göttinger Beiträge zur Gesellschaftstheorie 4 (Göttingen: Verein zur Förderung gesellschaftstheoretischer Studien e. V., 1979). The rest of this essay takes the argument along a path that diverges from Stamatis, who, at least in the most recent essay I am able to locate (‘Zum Tranformationsproblem’, Zeitschraf Marxistische Ernerung, 6:21 March 1995), seems to agree with the neo-Ricardian insistence on the inconsistency of Marx’s method, but resists the conclusion that the transformation problem as ‘solved’ by the neo-Ricardians convincingly establishes a mathematical relationship between prices of production and values.
diseconomy (economy) in the employment of constant capital leads to the precise and only the precise offsetting increase (decrease) in the profit-wage ratio needed to leave the rate of profit perfectly unchanged.

Strangely, this rather startling conclusion rests on no compelling economic logic, and no such reasoning is, evidently, felt to be needed or elaborated in the literature. Of course, the tendency of the rate of profit to fall does not rest on diseconomies in the employment of constant capital, but on productivity enhancing investment that raise the organic composition of capital. The point, however, is that changes in the composition of capital, whatever the cause and in whatever industry it is located, affect the average rate of profit. We chose this manner of exposition solely to retain as a premise the conceptual apparatus of the neo-Ricardians, i.e., by maintaining the same physical structure of the reproductive sphere.

With respect to the chain of economic movements prompted by modifications to the composition of the non-reproductive sphere it is, perhaps, not totally inconceivable, that such further adjustments along the lines that the neo-Ricardians insist must happen, could, in fact, occur. But it is difficult to find a compelling economic justification as to why such changes must occur, should occur or might even be likely to occur. It is difficult, in other words, to discover why this could be anything other than a special case rather than an unavoidable consequence.

What we should expect instead, and here we must depart from the neo-Ricardian framework, is for any change in the composition of capital which initially decreases the profitability of the non-reproductive sphere, to, in the first place, disproportionately repel investment away from it and towards the more profitable reproductive sector. A more rapid increase in the expansion of the reproductive sector should then culminate in a fall in reproductive prices and an increase in the non-reproductive prices, which leaves the new average rate of profit settling between the two extremes, that is between the initial bottom limit of the non-reproductive sphere’s initial fall and the maximum, that is, the previously existing general rate of profit that prevailed prior to the series of changes brought about by the diseconomies in sector III. That is, we should expect that the average rate of profit would decline, all other things being equal, after a rise in the composition of capital in the non-reproductive sector and that such movements confirm Marx’s analysis of the factors shaping the rate of profit against the theory of the neo-Ricardians.

We can illustrate the process in the following table:

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21 See for instance, Pierro Sraffa, Production of Commodities by Means of Commodities (Cambridge: Cambridge University Press 1960), pp. 7-8. ‘Luxury products which are not used, whether as instruments of production, or as articles of subsistence, in the production of others ... have no part in the determination of the system. Their role is purely passive. If an invention were to reduce by half the quantity of each of the means of production which are required to produce a unit of a production of a “luxury” commodity of this type, the commodity itself would be halved in price, but there would be no further consequences; the price relations of the other products and the rate of profit would remain unaffected’. This is simply a meaningless assertion; an analytical dodge. If the means of production were halved in price, this would have to result from some combination of a change in the productivity in department I, a change in wage rates and a change in demand schedules. This in turn would result in a disturbance in the relative rates of profit among sectors and a reshuffling of the distribution of capital among sectors. Sraffa’s conclusions only make sense because he has precluded such changes by design.
That is, prices and their movements can be *described* by economic reasoning based on the network of reciprocal supply-demand relationships, the movements of capital investment set in motion by differing profit rates and changes in labour productivity, the incessant shifts in relative weights of capital among sectors with different ratios of dead to living labour and its changing relation to that of paid to unpaid labour as it emerges across the economy.

The neo-Ricardian approach seeks to bypass a dynamic economic analysis and replace it with a set of static *prescribed* mathematical modelling propositions. This gives clean results, but it is based on hidden, simplifying propositions driven by the model itself. It backs into its conclusion and thus assumes that which it actually needs to prove. The fact that a rate of profit can be derived from the equations emanating from the reproductive sector most reasonably suggest that the resulting transformed rate of profit and exchange ratios refer solely to that sector. The procedure, therefore, would not be adequate for the derivation of a *general* rate of profit. But if it were conceded that no ‘general’ rate of profit can be determined because there are now more unknowns than equations, it would also have to be conceded that the pricing of the non-reproductive sector and its profit rate could no longer be simultaneously and uniquely derived. So if the model is to provide a ‘solution’ to the transformation problem, it must be *assumed* that the average rate of profit specific to the reproductive sector is carried over, at the same time, as the *general* rate of profit for the system as a whole.22 Otherwise,

<table>
<thead>
<tr>
<th>Non-Reproductive Sector</th>
<th>Reproductive Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% of total capital</td>
<td>75% of total capital</td>
</tr>
<tr>
<td>Profit rate 15%</td>
<td>Profit rate 15%</td>
</tr>
<tr>
<td>Increase in organic composition of capital</td>
<td>Unchanged organic composition of capital</td>
</tr>
<tr>
<td>Profit rate declines to 10%</td>
<td>Profit rate remains unchanged at 15%</td>
</tr>
<tr>
<td>Relative decline in capital accumulation</td>
<td>Relative increase in capital accumulation</td>
</tr>
<tr>
<td>Diminution of total social capital to 22%</td>
<td>Increase in total social capital to 78%</td>
</tr>
<tr>
<td>Weakened demand for labour power</td>
<td>Relative increase in demand for labour power</td>
</tr>
<tr>
<td>Supply lags behind demand at previous price</td>
<td>Supply exceeds demand at previous price</td>
</tr>
<tr>
<td>Prices rise</td>
<td>Prices fall</td>
</tr>
<tr>
<td>Profit rate tends to equalize at 13%</td>
<td>Profit rates tend to equalize at 13%</td>
</tr>
</tbody>
</table>

Table 2

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22 Hodgson (op. cit., p. 367) simply misses this simplifying assumption in his own defence of the Bortkiewicz corollary. He argues that ‘[t]he total capital outlay which appears in the denominator [of the average rate of profit—BF] consists of capital goods, and indirectly wage goods. Luxury goods, and armaments, do not appear as they are not used in production. Neither do they appear as costs in the numerator of the expression, nor as the surplus product in the wage and capital goods sectors. Hence the conditions of production in the arms and luxury goods sectors do not enter into the determination of the rate of profit.’ That is of course one possibility. The other, which has escaped his attention, is that the derived rate of profit does not apply to the non-reproductive sector, that the uniform rate of profit in the reproductive sector can coexist with a different rate of profit in the ‘luxury’ goods sector. If that were the case, capital would seek to migrate from less to more lucrative spheres of investment, changing the physical structure of the economy until a general rate of profit could emerge. But then the process of profit sharing has very different causal structure and cannot be derived simply from the material composition of the reproductive sector.
the model itself would be shown to be insufficient in establishing an economy-wide average rate of profit and the entire neo-Ricardian exercise in remapping the relation of value to price would have to be rejected as inadequate, indeed as an exercise in circular reasoning. Because, as we have argued above, that assumption cannot first be justified on the basis of economic reasoning, it must therefore and of necessity also be found wanting for a coherent mathematical footing.

The fatal weakness of this assumption aside, an equally essential difference resides in this. The neo-Ricardian concept of the rate of profit is purely passive. It is either exogenously determined or emerges as a result of a given real wage rate grafted on the physical bones of an economic structure. Its paradigm consists of a set of alternative economic islands, with identical production structures and varying distributional norms. It is not possible for an economy to morph from one island's characteristics to another. Instead, one can only compare alternative pricing structures as one would compare separate islands. So, for instance, if one wants to examine how a change in real wages effects pricing, a neo-Ricardian merely recalculates on the basis of this new data and mathematically 'conjures forth' a new island which mirrors the given physical structure, but reflects a given percentage change in real wages and the change in prices and profitability corresponding to it. This 'transformation' takes place in an

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23 Consider Sweezy's (op. cit., p. 121) numerical example.

<table>
<thead>
<tr>
<th>Value Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant capital</td>
</tr>
<tr>
<td>Dept. I 225</td>
</tr>
<tr>
<td>Dept. II 100</td>
</tr>
<tr>
<td>Dept III 50</td>
</tr>
<tr>
<td>Totals 375</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant capital</td>
</tr>
<tr>
<td>Dept I 288</td>
</tr>
<tr>
<td>Dept II 128</td>
</tr>
<tr>
<td>Dept III 64</td>
</tr>
<tr>
<td>Totals 480</td>
</tr>
</tbody>
</table>

Clearly, any number can be inserted into Department III’s profit without interrupting the equilibrium of purchase and sale. Of course if one assumes that the rate of profit is uniform and that the sums of profits equals the sum of surplus values, no economic proposition is either being proved or demonstrated by the fact that a set of exchange ratios and prices can be selected to conform to these assumptions.

24 See Joan Robinson, *What Are the Questions? And Other Essays* (Armonk, NY: M.E. Sharpe, 1980), p. 190. 'Run the rate of profit through every conceivable value from zero to the maximum, with the corresponding share of wages, in net output falling from unity to zero, and observe how the pattern of prices behaves. In historical time, of course, it would not be possible to have the same physical composition of output and widely different shares of wages and profits . . . . The calculation is a movement only in logical time.' That is, in the logical framework Sraffa created to analyze price movements. Sraffa is quite clear as to what his working hypothesis is (op. cit, p. v). 'No changes in output and . . . no changes in the proportions in which different means of production are used by any industry are considered, so that no question arises as to the variation or constancy of returns. The investigation is concerned exclusively with such properties of an economic system as do not depend on changes in the scale of production or in the proportions of “factors”. This assumption is clearly akin to that employed by Bortkiewicz in the familiar three-department reproductive schemata. Rather than prices emerging from the intersection of supply and demand schedules, supply and demand self-modify to support prescribed prices.'
economic black box in which all the relevant supply-demand modifications necessary to support such re-pricing simply exists by assumption and requires no further economic explanation. The Marxian rate of profit, on the other hand, is a distributional relationship between capitalists, which, through the pricing mechanism, becomes an animating factor in the process of production and accumulation. It is the competitive signal regulating the constant influx of capital to spheres where the promise of return is relatively great and the withdrawal of capital from those spheres where the rate of profit proves inferior. Where the neo-Ricardians see a static economic structure and ask how prices fluctuate in response to changes in distributional norms, the Marxists ask how the system of allocated labour is regulated under capitalism; or alternatively, how the division of labour among various spheres of production is assigned, disturbed and re-shaped in response to changes in technique/productivity, investment, and inter and intra-class distributions of output alike. The average rate of profit is conceived in Marxian terms as a tendency never quite realized, not as data,\(^\text{26}\)

\(^{25}\) Hans Peter, *Grundprobleme der theoretischen Nationalökononie* (Stuttgart: Verlag von W. Kohlhammer 1933), pp. 137–138, had long pointed out that the Bortkiewiczian formula reflects a comparison between these various islands, but cannot be understood as describing a process. To do so would require the impossible task of taking into account the proper changes in demand needed to re-price commodities both as inputs and outputs while leaving the material structure untouched. 'Wir haben also nur die Relationen im Zustande des Gleichgewichtes untersucht. Das is erlaubt, da die ''Umrechnung'' keinen Prozess beschreibt, sondern nur einen Vergleich vollzieht. So ware es insbesondere sinnlos und systemwidrig, die Masszahnderungen bei diesem ''Ubergang'' von der Wert- zur Preisrechnung in irgendeine Beziehung zu Nachfragefunctionen zu bringen'.

\(^{26}\) The Bortkiewiczian algorithm establishes a series of exchange ratios. Since the rate of profit is a relation derived from these ratios it is an absolute number, regardless of the method of norming. This has given rise to the misconception that the transformation 'solution' always gives rise to the same 'price' rate of profit and this rate of profit must, of necessity, differ from that of Marx. Since Moszkowska, Winternitz, Gerstein, and Shaikh simply apply varying treatments of the basic Bortkiewicz method, it is not surprising that these all give the same 'price' rate of profit. But as Hans Peter ('Zur Geschichte, Theorie und Anwendung der Kreislaufbetrachtung', *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* Bd. 89 (1953) and *Mathematische Strukturllehre des Wirtschaftskreislauges*, Verlag (Otto Schwartz and Co., 1954)) showed by using column multipliers rather than row multipliers, it is also possible to start with a three-department reproductive scheme and hold not only the rate of profit constant between schemes but also the sum of values and prices and the sum of profits and surplus-values while repricing (transforming) 'inputs'. (One can only wonder if, instead of Bortkiewicz, Peter's contribution had been the basis for 'correcting' Marx, the intense interest in the whole issue may have simply dissolved long ago. Nevertheless, all the objections raised against Bortkiewicz here also apply to Peter). David Laibman ('Values and Prices of Production: The Political Economy of the Transformation Problem', *Science and Society*, XXXVII:4 Winter 1973–74) by holding the rate of exploitation constant between the two schemes, derives a 'price' rate of profit, different both from Marx and from Bortkiewicz. Similarly, Ronald Meek ('Some Notes on the "Transformation Problem"', *Economic Journal*, March 1956) —by holding the ratio of net output to wages constant, would presumably derive a still different rate of profit. There is thus no uniquely determined 'solution' to the rate of profit and Laibman is unjustified, in my opinion, in arguing that the invariance of the rate of exploitation (and the rate of profit implicitly associated with it) can be privileged because it presumably rests on sociological experience. For, as Hans Peter puts it (*Mathematische Strukturllehre*, op. cit., p. 109) 'die Konstruktion des Mehrwertschemas die Hypothese darstellt; das Profitratenschema ist das zu erklarnde Object' [The construction of the schemata of surplus–value is the hypothesis, the profit rate schemata is the object to be explained]. The critical literature is therefore utterly incoherent. No variant accomplishes Marx’s purpose of explaining how labour-time is capitalistically distributed through the pricing system, since any given distribution of social labour-time is seemingly compatible with an infinite array of prices and, more importantly, rates of profits.
and its equalization process is important for understanding the flow of capital and, in Hilferding’s words:

the mode of operation of the law of value as a law of movement. The law of value does not control directly each individual act of exchange but only the totality of exchanges, of which the individual exchange act is simply a part conditioned by the whole. From another aspect individual inequality of profits is important for the distribution of the total profit, for accumulation and concentration, and finally for the development of combinations, mergers, cartels and trusts.27

Workers, through struggle, cannot directly ‘determine’ real wages. They can raise their money wages, which in turn affects the profitability of enterprises in varying degrees depending on the capital composition of the firms in question. This launches a competitive struggle for profit, which only reestablishes a new profit equilibrium through reshaping the entire structure of the economy. This reconfiguration entails the introduction of new more productive technologies—previously unprofitable at lower money wage rates—the differential rather than proportional accumulation of capital among the various sectors of the economy, modifications in the supply and demand relationships for individual commodity markets and changes in the pricing structures. In the end, the interplay of price changes and productivity growth along with the rise of money wages determines the division of the social product, sets the real wage rate and establishes the rate of profit as these emerge from the new pricing structure.

IIa

We can also examine the ‘transformation’ process, as conceived, by the neo-Ricardian Marxists from another angle. We have tried in the first section above to demonstrate the logical inconsistency and analytical insufficiency of the Bortkiewiczian method in deriving both a general rate of profit and prices of production as the neo-Ricardian Marxists themselves frame the problem. In this section, we set aside the conclusions drawn above and ask whether it is possible to establish, by means of a well-chosen norming principle, a relation between neo-Ricardian prices and that which the neo-Ricardian Marxists hold to be Marxian ‘values’. Seton demurred that ‘there does not seem to be an objective basis for choosing any particular invariance postulate in preference to all the others, and to that extent the transformation problem may be said to fall short of complete determinacy’ (emphasis in original).28 Yet the ability to establish a linkage, however imperfect, between the two systems through any ‘invariance postulate’ would, it might be argued, be a weak victory—but a victory nonetheless—for those who seek to merge the two approaches. That is perhaps why so much ink has been spilled in defence of various, and, usually, mutually exclusive propositions.

The logical connection, as the neo-Ricardians see it, between the value and the price structure is this. ‘Values’ themselves are determined by the relationship between production conditions, physical capital consumed in the production process combined with the labour-time inputs. If additional information concerning the value of labour-power is specified, then the rate of surplus-value and the value rate(s) of profit can be determined. Values are absolute numbers and are measured in labour times. As absolute numbers they are implicitly exchange ratios.

Labour time inputs and the consumed means of production, by themselves, argue the neo-Ricardians, do not provide sufficient information to determine production prices. Two additional pieces of information are needed: either an exogenously given real wage with an assumed equal rate of profit or an exogenously given rate of profit rate and a unitary real wage. Prices exist first as exchange ratios, which are then normalized in terms of a fictitious monetary unit into absolute numbers. The neo-Ricardian rate of profit can be calculated from the exchange ratios themselves, and are independent of how these exchange ratios are normed. The neo-Ricardian procedure by this reasoning inverts what the neo-Ricardians hold as the Marxian structure.

Values (i.e., ‘labour time units’) and prices are therefore expressed in non-homogeneous units. (Except in the trivial exception in which the rate of profit is equal to zero. Then and only then are values and prices expressed in absolute numbers, are equal to one another and expressed in labour time units.) If, for instance, the normalization principle, following Bortkiewicz, is used, then commodity prices are determined by their exchange ratios against the collective luxury good, whose value/price ratio is set equal to 1. Under these circumstances the price of any other commodity is in effect normalized in terms of the simple, abstract labour embodied in the units of the aggregate luxury commodity against which it is exchanged. By assumption, the profit total expressed in price units equals the sum of surplus values expressed in labour-time units. Still whatever Bortkiewicz believed to be illustrated by this selection, the identity of surplus values with profits disappears once the assumption of simple reproduction is dropped. Under these circumstances the surplus product is a mixed aggregate of commodities from departments I and II as well as luxury goods. Because the departments producing means of production and wage goods do not necessarily have organic compositions that equal that of department III, the conditional identity that Bortkiewicz hoped to show would no longer hold.

It is perhaps worth noting, that Bortkiewicz and Sweezy select a ‘money’ commodity whose value/price is set equal to one, but—unlike Marx—chose a commodity whose organic composition of capital is not equivalent to the organic composition of social capital as a whole. Whereas Marx argues that deviations from the social average are one of the causes for prices/value deviations, Bortkiewicz inadvertently interweaves price/value deviations with nominal price changes caused by that deviation. Had he identified at least with the spirit of Marx’s ‘transformation’ he might have chosen a money commodity whose price/value equals 1 because its capital composition mirrors that of social capital. In that case, and only in that case, total profits would equal the sum of surplus values and total values would equal total prices in the case of simple reproduction.
Following Medio—who builds on Sraffian foundations—the unit of account, $w$, is determined by the Standard system in which the weighted average of constant to variable capital mirrors that of the entire economy in value terms and this holds not only for the output of the $w$-sector, but for the inputs of that sector as well as their inputs without limit. Here the price/value ratio of the standard commodity is set equal to 1, whatever the rate of profit, and remains so as long as the essential data of production remains unchanged. Prices implicitly represent the units of abstract labour embodied in a unit of the standard product against which they trade. This is a variant of the Bortkiewicz method that adheres more closely to Marx’s intention. In the Sraffian context, there is no accumulation, only a change inter-class distribution of the net product. But again, once expanded reproduction takes place, this method would only hold with the unlikely proposition that the conditions which define the standard commodity remain unchanged, i.e., if expanded reproduction is value proportional.

If, following the method of Winternitz, Moszkowska, Shaikh and Gerstein the normalization principle employed consists of setting the price/value ratio of the total gross product equal to 1, each commodity price would similarly represents the amount of simple, abstract labour embodied in the units of the social gross product against which each commodity is exchanged. And, similarly, the sum total of prices expressed in units of the aggregate gross product would equal the sum total of values measured in labour-time units. But unless the capital compositions of departments II and III, in the case of simple reproduction, are equal to that of the social average, the new values thrown into circulation no longer equal the total prices of the net product. Of course, the same objection raised here also applies to the Bortkiewicz/Sweezy procedure. For in those cases in which the price of the net product exceeds that of its value, and profits also exceed surplus value, the obvious question arises as to whether constant capital is itself the source of the additional profits in circulation for the system as a whole. Thus the identity that this algorithm purports to illustrate equally effaces the distinct contributions of dead and living labour to the generation of value so crucial to the Marxian understanding of capitalism.29

There are, of course, numerous other possibilities. These are discussed simply because they are the most familiar. Yet once the mathematical dust has settled, the choice of normalization units has no larger economic meaning. It has nothing to do with the explaining how real money, which is society’s numeraire, is derived from and rooted in the law of value; nor how that relationship, once elaborated, becomes the

29 Shaikh (op. cit., p. 131) seems to recognize this on one level only to mystify it on another. 'In any real situation … the actual adjustment process would involve changes in both the unit prices and the quantities sold; any actual inflow of capital would lower price through the expansion of supply; conversely, any lowering of price in response to the threat of competition would increase the amount sold. … But what we are interested in here is the pure change of form involved in equalization of profit rates. And this, for a given mass of commodities, is an adjustment process which leaves the total sum of money prices unchanged.' Again, Shaikh contorts his analysis because on one level he acknowledges that any given mass of commodities can only exchange, all other things remaining the same, at one combination of market clearing prices. Yet he insists that the transformation problem is one of performing the very hocus pocus that posits an infinite array of economic islands. This transformation problem is a repricing issue, not merely a 'change in form.'
basis for capital. Money is an economic numeraire, but all systems generated numeraires as we deal with in neo-Ricardian analysis are not money. They are not in the Marxist sense a measure of values, though they perform a function of standardizing prices. But even here these are special prices. They are prices that clearly have no parametric function, which, as will be shown below, means there is no basis within the neo-Ricardian framework to explain the mechanics of competition or the transfer of value that arises from competitive accumulation.

Such normalization choices as selected by Marx’s would-be defenders, whatever their subjective intent, are devoid of economic significance; a deferential devotion to Marxism akin to a religious obligation, whereby the presupposed connection between value and price of production are only symbolically upheld through the equation of apples to oranges. The mathematics of this can be straightforward enough, though more often than not it entails a wizardry that, as we have argued, is often unencumbered by any parallel insights into the economic distinctions that are introduced. For what are these ‘units’ of the social product, the standard system or the aggregate non-reproductive sector to which the price/value relations are normed? They are incomprehensible and unimaginable outside the world of mathematical equations, because they are internally generated accounting units that simply have no real world analogue. They are not the result of any conceivable social process. Moreover, the identities that are actually shown to be upheld are Marxistically senseless since they only illustrate any one aspect of the Marxian system to the extent that they also negate other aspects of the actual relationships between prices and values they are intended to defend. Yet, the purpose of Marx’s critique of political economy is to clarify the actual social relations that give rise and regulate the apparent lawless movements of the market. It aims to investigate and elaborate the categories of political economy in logically distilled and ideal form whereby the actual relations of production, exchange and distribution take shape on the basis of capitalist commodity production. It purpose is not, one might argue, to create a meta-reality with laws that operate through conceptual factotums and symbols unique to itself; nor to explain the hypothetical prices of a statically theorized world, whether in terms of simple reproduction or Sraffian linear analysis.

To state it otherwise, Marxism does not aim—under the assumption of an unchanging material substructure—to rotate the kaleidoscopic cylinder of interclass distributional relations in order to examine the resulting changes in exchange ratios that emerge under the new conditions of equilibrium. That process may take on a particular relevance with reference to the critique of neo-classical economics alone with its aggregate production function, which operates within the same meta-reality. Price movements are of interest to Marx, in stark contrast, because reproduction, accumulation, and ultimately the disequilibria of crises are dependent on value relations expressed in terms of exchange values that both derive and deviate from labour-time values. If Ricardians ask about the effect of changes in real wages on prices, Marxists ask how changes in monetary wages differentially affect accumulation by disturbing the pricing mechanism of equal profitability and how capital responds through the introduction of new technologies, the substitution of intermediary
products and raw materials, etc., the redistribution of social labour, the revolutionizing out
the labour process and the social division of labour until the restoration of profit equilibrium
is restored at a new level. In short, Marxian analysis is focused on the accumulation process—the
precise issue that the neo-Ricardians consciously excise from the outset.

An hour of simple, average labour—labour of average skill and intensity—is the basic
quantitative unit of measure of abstract labour in the Marxian system. Insofar as a given
annual value-product is the monetary expression of the sum total of productive labour-
time expended, an implicit link is forged between the monetary unit and its labour-
time content. It is the capitalistically generated exchange process that necessarily forges
this link. Through this identity any economic activity evaluated in price terms is readily
convertible into labour time units. It is this simple, average—undifferentiated—labour
whose quantitative equality in the exchange process permits the transformation of
qualitatively different use-values to be marketed in set proportions at any moment
within an ever changing production-structure. Money is the means of payment, the
universal equivalent form of value, which bridges the gap between purchase and sale.
Production processes are assessed in prices before means of production and labour
power are combined and commodities are similarly appraised in monetary prices
before they are marketed. The assumption of the exchange of labour time equivalents is
undertaken as a heuristic method\textsuperscript{30} of deriving the phenomenal form of value, money,
from the general exchange of commodity equivalents. In this way price can be
established as ‘value in the form of money’. That is, any particular commodity is merely
a given sum of accumulated values, of money—and therefore of capital—in any state of
its continuous metamorphosis through the various phases of production, exchange and
realization. It is the provisional assumption of the operability of Say Law\textsuperscript{31} expressed
through the medium of reproduction schemata, that the self-expansion of values is
preserved through the aggregate circuits of social capital. This allows, as we hope to
show below, Marx to consistently assert the invariability postulates of the transforma-
tion process at the level of the system as a whole.

\textbf{IIb}

It is fascinating that the neo-Ricardian defenders and critics of Marx alike so rarely
inquire into the mechanism in which prices deviate from values and, insofar as they
do provide an answer it is entirely superficial and inadequate. Sweezy for instance—and
he is emblematic—asserts that prices deviate from values because the organic
composition of capital is ‘not the same in all industries’. Similarly Moszkowska writes,
‘If the composition of capital in all spheres of production were the same, then surplus

\textsuperscript{30} Marx develops the concept of money from its familiar form in terms of gold, such that the standard of
price is simply a fixed weight of that metal. But this derivation is heuristic and historic; it is not meant to suggest
that capitalism requires a commodity money. Equally, the fact that the standard of price can be linked to a fixed
quantity of gold, does not mean that the fractional banking system is unable through the extension of credit and
through changing the turnover time of money, to modify and alter the de facto exchange ratio of monetary units
with the amount of labour-time such units nominally represent.

value would coincide with profit and the value of a commodity would coincide with its price.\textsuperscript{32} This, however, is only one aspect of the conditions for such exchange and it is precisely that which is missing that is crucial. For in order that commodities exchange at value, not only must the organic compositions of capital be equal throughout the economy, but the distribution of capital among the various spheres of production must be adequate, given the reciprocal supply and demand relations, to realize the entirety of the labour expended directly in each branch; that is, to confirm that the entire expenditure of labour is \textit{socially necessary} throughout. There must, in other words, exist a profit equilibrium among the various branches of production. This additional assumption needs therefore to be imputed to Marx, so that value for value exchange \textit{on the basis of equal profitability} can be employed in a manner that disentangles the derivation of money and labour exploitation from the bramble of secondary, complicating and distracting real world circumstances.

When both these assumptions are held together, and only when they are held in tandem, a number of conceptual identities, potentially misleading because they are entirely contingent upon this theoretical simplification, can be made. It is only within this context that variable capital, the value of labour power, and the value of workers’ wage goods necessarily coincide; as does the value of constant capital with the value of the means of production. It is only under these assumptions that:

\[ \text{Rate of exploitation} = \frac{\text{value of the net product} - \text{value of wage goods}}{\text{Value of wage goods}} \]
\[ = \frac{\text{Value of net product} - \text{value of labour power}}{\text{Value of labour power}} \]
\[ = \frac{\text{surplus value}}{\text{variable capital}} \]

\[ \text{Rate of profit} = \frac{\text{value of net product} - \text{value of wage goods}}{\text{value of means of production} + \text{value of wage goods}} \]
\[ = \frac{\text{Value of net product} - \text{value of labour power}}{\text{Value of means of production} + \text{value of labour power}} \]
\[ = \frac{\text{Surplus value}}{\text{constant} + \text{variable capital}} \]

\[ \text{Organic composition of capital} = \frac{\text{value of the means of production}}{\text{value of wage goods}} \]
\[ = \frac{\text{value of means of production}}{\text{value of labour power}} \]
\[ = \frac{\text{constant capital}}{\text{variable capital}} \]

\textsuperscript{32} Moszkowska, op. cit., p. 2. See also Borkiewicz, op. cit., pp. 219–220.
Once stripped of these assumptions, the ‘value of wage goods’ and the ‘means of production’ have no further basis in reality. The ‘value’ of commodities, understood as pricing data, cannot be conceptualized once this simplifying context is discarded, because the macro-allocation of social labour time no longer supports the exchange of ‘embodied labour’ equivalencies. Constant and variable capital, on the other hand, represent quantities of money—of pounds, dollars, euros, etc.—which, as we have seen, are implicitly quanta of abstract labour-times, and therefore of values, because they circulate the products of society’s expenditure of labour and remain so regardless of which level of theoretical abstraction the regulating principle of commodity exchange is formulated. It is for that reason, and not because he identifies constant capital with the ‘value of the means of production’ nor variable with the ‘value of wage goods’ in any more than a conditional sense, that Marx characterizes the amount of capital expended in the production of a commodity unit—its cost-price—as an expenditure of value. Consequently, cost-price is always an expenditure of value whether or not the means of production and workers’ provisions can be priced proportional to ‘embodied labour times’. The last term highlighted above represents the general expression for the italicized expressions and holds true whatever the pricing criteria. The other terms are provisional and have no meaning and no reality under capitalist commodity production in which the axis of gravity oscillates around prices of production.

Stated otherwise, there is no other feedback mechanism in capitalism other than the profitability. Consequently, there is no other means for validating the expenditure of labour in any given branch of production, indeed in any given unit of production, as socially necessary other than its ability to generate profits commensurate with its portion in the totality of capital invested. But because capitals generally differ from

34 And as for the ‘value of labour power’ it is determined not by the ‘value of the wage goods’—which is itself meaningless in this context—but by the time expended to create the exchange value needed to purchase the means of consumption at whatever their aggregate price.
35 Unfortunately, the entire corpus of theoretical literature is littered with the equation of value with embodied labour time, in turn again equated with a simplifying formula introduced early in the analysis by Marx, viz., of a socially necessary labour time required under the generally prevailing conditions of production to produce another unit of the same commodity. This gives rise to the entirely erroneous generalization that socially necessary labour-time is objectively given as a technological datum. The entire neo-Ricardian conceptual apparatus is founded on this. But this neglects the use-value aspect of commodity production. (See, in particular, Rosdolsky, *Zur Entstehungsgeschichte des Marxschen "Kapital"*, Vol. I (EVA 1974), pp. 98–124.) Marx elaborates: ‘if the use-value of particular commodities depends on whether they satisfy a particular need then the use-value of the mass of the social product depends on whether it satisfied the quantitatively definite social need for each particular kind of product in an adequate manner, and whether the labour is therefore proportionally distributed among the different spheres in keeping with these social needs, which are quantitatively circumscribed. . . . The social need, that is, the use-value on a social scale, appears here as determining factors for the amount of total social labour-time which is expended in various specific spheres of production. . . . This quantitative limit to the quota of social labour-time available for the various particular spheres of production is but a more developed expression of the law of value in general, although the necessary labour-time assumes a different meaning here (op. cit., pp. 635–636).

The market itself signals whether capitalistically generated needs are adequately met through a pricing system that rewards or withholds an average rate of profitability to the various units of production. The ‘technological
one another in their composition, the test of social necessity cannot in general coincide with the realization of the entire expenditure of productive labour as revenue in the sector in which that labour is performed. This presents an apparent paradox. For if we were to construct a numerical example as in section I above, illustrating in the manner of Bortkiewicz or Sweezy, a three-part reproduction scheme in which the capitals of each department are assigned different organic compositions of capital, and where the entire labour expended in each branch were to be realized by happenstance in the sales prices, this division of labour would lead to a profit disequilibrium. That commodities appear to be exchangeable in accordance with embodied labour times is capitalistically meaningless. The macro-allocation of labour among the three branches of production would be unstable. From a profitability standpoint, too much social capital relative to demand would be invested in those branches with compositions of capital that exceed the average; too little in those with below average compositions. Insofar therefore as the attainment of an ‘average rate of profit’ is the measure of social necessity, a measure that confronts the agents of production as a standard external to themselves, the capitalist economy only establishes equilibrium when unequal masses of labour activated by equal masses of capital can be equalized with one another. When the market prohibits this, it signals that the existing allocation of labour is not distributed in the necessary proportions across the economy; that the labour expended, even if performed under average conditions of technique and intensity prevailing in each industry, cannot fully count as ‘socially necessary’ in any capitalistically significant sense.

This point is increasingly lost among Marx’s critics. They operate in a duality that they ascribe falsely to the Marxian method. Steedman argues that the uniform ‘rate of profit’ is a concept used in analyzing a capitalist economy at the ‘level of prices’, not at the ‘level of values’, and the tendency to the uniformity of profit rates as between industries is enforced by the mobility of money capital.36 Prices of production, for Marx, are not an alternative measure of a commodity’s social weight. They are the only measure commensurate with commodity production performed under capitalist conditions. Conversely, there are no ‘simple prices’ or prices proportional to ‘embodied labour times’ lurking as shadows behind prices of production that might otherwise signify the ‘real’ substance and measure of commodities that must be transformed. The necessity of attaining equilibrium between supply and effective demand asserts itself through the continuous offset of disproportionalities made possible by the withdrawal or accumulation of capital.
among the various sectors of the economy signalled exclusively by the deviation of profitability from the prevailing norm. The average rate of profit is the sole regulator appropriate to the system and as such directs the division of labour in a manner fundamentally different from that which would otherwise prevail under simple commodity production regulated by the unmediated equality of labour-times in exchange. That is why all means of ‘transforming’ a pricing scheme based on a distribution of labour hypothesized to support the purchase and sale of commodities at prices commensurate with ‘embodied labour times’, into one in which prices incorporate an average rate of profit is fundamentally misconceived. That which is held constant—the physical (re)production structure (Bortkiewicz/Sraffa)—is precisely the data that is manipulated by the movements of capital in response to pricing signals which reflect a profit disequilibrium. The various neo-Ricardian transformational algorithms thereby cloak a fundamentally flawed and conceptually illogical trend of economic reasoning behind a swirl of perfectly unassailable mathematical equations.

This may seem patently obvious were it not for the fact that neo-Ricardians seem to hold fast to the apparently mesmerizing belief that Marx simultaneously, and contradictorily, held the economy to a hybrid pricing system whereby input prices are measured in ‘embodied labour times’ and output prices are represented by ‘prices of production’ recalculated directly from these ‘values’. Yet this charge of hybridization can be turned against Marx’s critics with far more justification. It is, on the contrary, inconceivable that the allocation of capital among the various branches of the economy, the choices of technologies and the distribution of social labour—in short, the entire production structure of capital—should respond and cohere as if answerable to the call for labour-time equivalency in exchange, while the commodities that issue forth from this economic constellation would be priced according to the law of equal profitability. This misguided formulation is an intellectual circle that, as we have tried to show, cannot be squared.

The entire neo-Ricardian theoretical enterprise rests, at root, on a widespread confusion as to what Marx meant by ‘socially necessary’ labour. ‘Socially necessary’ labour is that distribution of social labour required to establish an equilibrium of production and consumption of each branch’s output through prices that realize the general rate of profit. Labour that is performed under average conditions of technique and intensity in each branch may indeed be technologically necessary expenditures of labour, and, as such, a telling measure of the relative productive power of labour within each sphere. This is one dimension of socially necessary labour and an element in explaining profit differentials within each branch of production based on divergences from this average. But it is inadequate, by itself, in explaining how the law of value makes itself felt across the division of labour to ensure that the proportionate quantity of labour is expended to satisfy social needs including, above all, the capitalistically generated need for equal profitability.

The neo-Ricardian critics of Marx flatten the multidimensional operation of the law of value by distilling socially necessary labour into one aspect of the concept—its
technological component. ‘Socially necessary’ labour is, for the neo-Ricardians, that labour that is expended under average conditions and reflects the average productive power associated with each sphere. It is most readily understood as the reciprocal of net labour productivity. But this understanding conflates two quite distinct, though conceptually related, usages of the term ‘value’. Value as the reciprocal of net labour productivity has an immanent measure in terms of time. Value measured indirectly in terms of price is an exchange value and expresses itself in monetary units. Exchange values—whatever their characteristics—are determined by the intersection of supply and demand schedules. The embodied labour-time measurement of a commodity is independent of the macro allocation of labour across the manifold spheres of economic activity. It is therefore compatible with an endless array of price expressions depending on the rate of exploitation and existing supply and demand relationships.

Exchange value, which is the proper subject of the so-called ‘transformation problem’ is, in stark contrast, intimately connected to how that the totality of social labour is expended and takes into account how social demand for the various outlays of labour is addressed. Exchange value is always expressed in price form and the theoretical leap from one price form, in which the entirety of surplus-value is realized, to a modified price form—including prices of production, in which an average rate of profit is realized—can be compatible with the same expenditure of labour-time per use-value unit for the array produced. It is not, in general, that is when the compositions of capital differ, it is generally not also compatible with the same distribution of social labour across the production array. To take a gross illustration: it may be the case that two hours of labour time is required to produce a pair of shoes. And this may be the case whether 10 per cent of society’s labour time is dedicated to shoe production or .0001 per cent. It would be absurd, on the other hand, to assume that both apportionments of social labour could be marketed at the same price or realize the same proportion of profit relative to investment. It is the incessant adjustment of the social division of labour which both modifies prices and redistributes surplus-values. There is thus a fundamental difference between exchange value, and ‘embodied labour,’ and that difference is crucial to the understanding of the price form. The relationship between the operation of the law of value and the price form in Volume III of Capital cannot therefore be derived from any given physical structure of the economy, any more than it can be teased from any individual exchange transaction. It is understood only through the various conceptual connections whereby money and capital are derived from the totality of exchanges regulated by the emerging average rate of profit. This in turn presupposes an adaptation of that which Marx so painstakingly set out to demonstrate in Volume I: that value, profit and capital are socially derived expressions measured in homogeneous quantities of abstract labour-time crystallized in the monetary unit. In this way Marx has established the relationship between the labour-process, which is the bedrock of any given society, with the exchange process typical of capitalism, wherein the accumulation of capital is the means for the appropriation of surplus labour.
That is also why ‘the possibility of quantitative incongruity between price and magnitude of value [in terms of its immanent measure—BF], or the deviation of the former from the latter, is inherent in the price-form itself. This is no defect, but on the contrary, admirable adapts the price-form to a mode of production whose inherent laws impose themselves only as the means of apparently lawless irregularities that compensate one another’.\textsuperscript{37} Failure to understand this is tantamount to abandoning any explanation as to how price can deviate from exchange value and how surplus value can be transferred from one sector to another. Marx states that one of the charges levelled against Ricardo—and is equally applicable against the neo-Ricardians—is his inability to convincingly answer ‘the question how on the basis of exchange-value a market-price differing from this exchange-value comes into being, or rather, how the law of exchange-value asserts itself only in its antithesis’.\textsuperscript{38} This formulation represents an early framing of the entire transformation question.

The methodological deficiency of the neo-Ricardians rests squarely in their impatient insistence on moving directly from embodied labour time to price through an interrogation of the labour process. They recognize that Marx did not believe that the exchange process mirrored the labour process, but insist that his method of reconciling the two is inadequate and unnecessary. We have tried to show that it is their distorted understanding of Marx’s method, which is itself inadequate. It is money, which—as the point of departure insofar as it is the embodiment of value—allows the basic social (class) relationships of society to be expressed as exchange relationships. From there Marx argues that it is the movement of capital—as money, means of production (material and human) and commodities—and the incessant redistribution of social labour in the pursuit of profit maximization that allocates surplus value by establishing market clearing prices with particular characteristics. Out of this movement of interactive price formation the rate of exploitation is settled and, though it is unknown and of no direct interest to capitalists, remains theoretically indispensable to the understanding of the accumulation process and its limits.

The neo-Ricardians make no real effort in uniting the exchange process to the labour process, except \textit{ex post facto} insofar as a numeraire is needed to normalize exchange ratios into prices. The various numeraires, as we have argued, relate the monetary unit to labour time in an incoherent manner that the neo-Ricardians neither seem to recognize nor justify. It suffices for their purposes only that one or another of Marx’s invariance postulates are fulfilled through the choice of that unit. There is in effect no exchange process, only an appropriation process. There is no movement of capital, no redistribution of social labour. Any production structure can support any rate of profit, insofar as that rate of profit is confined solely to the reproductive branches of the economy, and so long as appropriate changes in real wages are affected. This is not so much a solution to the transformation problem, than an assertion that no solution is possible within the framework conceived by Marx.


Once this is acknowledged the entire Sweezy-Bortkiewicz methodology must be rejected from the outset because the terms in which it is cast are themselves misconceived.

To see the origins of this misconception, we must re-examine the Bortkiewicz-Sweezy procedure more carefully. They construct a system of simple reproduction as in section I and ‘transform’ values into prices of production in a manner ascribed to Marx, where $p$, the rate of profit, is defined as $S/(C+V)$.

They then conclude in effect that, except in the most trivial of cases, the identity of purchase and sale cannot simultaneously hold in both systems because there has been a corresponding rise in prices over values for those departments whose organic composition of capital is above the average offset elsewhere by a fall in prices below values in departments with below average compositions. Since $P_1$ may not equal $w_1$, it may also not equal $C$, with similar results to be expected with respect to departments II and III, depending on how the organic compositions of capital in any sector deviates from the average. But this is unacceptable to Marx’s critics because the conditions for the reproduction of capital are disturbed. ‘It is clear,’ insists Sweezy, ‘that price calculation according to what may appropriately be called the Bortkiewicz method . . . produces no disturbance in the equilibrium of simple reproduction.’ For that reason, the Bortkiewicz method along with any of the other related variants must purportedly be introduced for consistency. Once that is done it can easily be shown, and the result is quite familiar to any with merely a passing acquaintance with the subject, that with the achievement of market clearing ‘prices of production’, no longer need any of Marx’s invariance postulates all hold simultaneously. That is, total prices need no longer equal the sum of values, profits totals need not equal the aggregate surplus value, rates of profits may no longer be equal, rates of exploitation may no longer equate and the compositions of capital no longer need conform in the two systems.

But where is the justification for this insistence on the simultaneous fulfilment of both sets of equations as a condition for simple (or expanded) reproduction? All that is capitalistically required is for the system of prices to be able to complete the circuit of exchange while realizing an average rate of profit. This means that there must be a suitable allocation of labour to support the redistribution of surplus value in accordance with the need for uniform profitability across the economy. Nothing more and nothing less. So long as this is the case, the use-values necessary for simple

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<tr>
<td><strong>Simple reproduction in value</strong></td>
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<tr>
<td>I $c_1 + v_1 + s_1 = w_1$</td>
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<tr>
<td>II $c_2 + v_2 + s_2 = w_2$</td>
</tr>
<tr>
<td>III $c_3 + v_3 + s_3 = w_3$</td>
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<tr>
<td>C $V$</td>
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39 | Sweezy, op. cit., p. 120.
or expanded reproduction find their place in next round in their required combinations. As we have argued, there is no reason—and Marx never stated otherwise—why the division of labour needed to bring about this result must be—or should be—compatible with any other outcome, such as market clearing prices which are also proportional to ‘embodied’ labour-times.

In the illustration above, there is no reason for \( w_1 \) to equal \( C \); for \( w_2 \) to equal \( V \); or for \( w_3 \) to equal \( S \). \( w_1, w_2 \) and \( w_3 \) are simply ‘market values’. They are not market clearing prices. They are, instead, mental constructs indicating the actual allotment of social labour among the branches of production. They indicate the source and, given the rate of exploitation, the quantity of exchange value which is available to be projected onto the market for redistribution through the pricing mechanism. As long as the means of production are purchased at their average price, their purchase price represents ‘socially necessary labour’ and the quantity of money exchanged for them embodies the expenditure of that given quantity of value, of labour-time, which money at that point represents. With variable capital—wages—the matter is even more straightforward. Wages are a direct outlay of money in exchange for a specified amount of labour time. In this way, the working time of every individual unit of production is seen as a fraction of the total productive working time of society. And profit is not merely a mark-up over costs, but an add-on that originates in the labour process and is bounded by the collective working day.

Between the two schemes, there is a third—that of market prices.

\[
\begin{align*}
I. \ c_1 + v_1 + p_1 &= a_1 \\
II. \ c_2 + v_2 + p_3 &= a_2 \\
III. \ c_3 + c_3 + p_3 &= a_3 \\
C + V + P &= A
\end{align*}
\]

When these prices, though market clearing, fail to elicit a uniform rate of return on investment (for any \( a_i < P_0 \)), it is a signal for capitals to move from less profitable spheres of production to more lucrative branches. Though market clearing, such prices are transitory and signal the need for a reshuffling of the social division of labour. They too stand in a definite relationship to the market values from which these exchange values originated. And in a larger context and after suitable modification, Marx’s reconciliation of prices with the law of value provides an adequate grounding not only for competitive prices, but for monopolistic deviations as well, as Hilferding well demonstrated.

Marx is clear that when prices, whether they be seen as prices of production or market prices, deviate from market values, there is always the potential for error if the cost price of a commodity is confused with the (market) value of the means of production and, for that matter, of the means of consumption, directly or indirectly consumed in the production of it.\(^{40}\)

Marx’s caveat has given rise to a great deal of controversy in which various levels of abstraction in the use of ‘value’ are thrown willy-nilly into the mix. The neo-Ricardians of all stripes, including those Marxists who have adapted this method of inquiry, not to mention Marx’s critics, have interpreted this statement of theoretical clarity as its polar opposite—a confession of abject confusion and uncertainty. But, what is forgotten is that it is the pricing system that is the object to be explained; and the construction of the value/surplus-value scheme that is the hypothesis which approaches this surface reality through successive levels of concretization. Marx’s critics have stood this on its head by their failure to trace the evolving levels of abstraction from commodities to exchange value to labour time to money to capital.

Of course there are numerous statements in Volume III of *Capital* that lend themselves and reinforce this ambiguity. But Marx explains in the manner most consistent with the thrust of his analysis that ‘when a capitalist sells his commodities at their price of production, therefore, he recovers money in proportion to the value of the capital consumed in production and secures profit in proportion to his advanced capital as an aliquot part in the total social capital’. Marx has by means of this statement repudiated the now prevalent neo-Ricardian (mis)interpretation that held Marx to the view that money is to be recovered in proportion to the labour-time embodied in the means of production and articles of consumption plus a proportionate quantity of surplus value related to the labour time embodied in these commodities.

At the same time and more to the point, since Marx could not anticipate the future criticisms of the neo-Ricardians, Marx was distinguishing his presentation from that of his near contemporaries, the classical economists, who collapsed ‘natural prices’ (prices of production) into market values, and, could by means of this misconstruction, also equate price directly with embodied labour and who, therefore, actually did hold to that contradiction. Marx, on the contrary, equated ‘embodied labour times’ neither to market values nor to prices of production, nor to market (clearing) prices. Read through the eyes of the audience that Marx was actually addressing, many of these seemingly awkward formulations dissolve. For as we have seen, value for value (meaning embodied labour time for embodied labour time) exchange erects the very contingencies, whereby constant capital is equated with the value of the means of production and variable capital to that of wage goods, that dissolve once this assumption is discarded.

Marx’s larger point is that the labour-time embodied in individual commodities is in practice neither known nor knowable through the act of exchange. It is never immanent and in and of itself is of little importance. Rather, it only makes itself palpable indirectly through the marketing process insofar as changes in labour productivity affect the movement of prices by invoking a modification in the distribution of social labour in response to profit signals. Prices, on the other hand, are based on market-supported mark-ups to the costs of production measured in

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41 Ibid., p. 159 (emphasis added).
money. This seemingly has nothing whatsoever to do with the law of value. The classical economists ‘solved’ the problem by eliding the distinction between value and natural price; while their successors such as Mills recognized this vexing issue, but, being unable to develop the conceptual linkages needed reconcile the law of value with prices, began the long process of discarding and repudiating the theory of value, and—to Marx’s mind—also abandoning any chance at contributing to the systematic understanding of the exploitive and historically finite character of modern society. This abandonment paved the way in distancing political economy from its scientific origins and redirecting it towards the path of ideological apologetics.

Clearly the modern day neo-Ricardians have not travelled the path of ideological reconciliation with capitalism. Nor on purely political grounds should that be expected insofar as their paradigm staunchly upholds the essential exploitative nature of capitalism. Rethinking and reworking Marx’s theory, expanding it to grasp new aspects in the development of capitalism, is admirable and such attempt should be taken seriously and respectfully. But such claims need not and should not ever be accepted unquestionably. The neo-Ricardians, from Bortkiewicz, on acknowledge the mainstream criticism of Böhm-Bawark and others that there is an essential and unbridgeable contradiction between Volumes one and three of *Capital*. If this is the case, the Marxian critique of political economy is revealed in itself to be inconsistent. The neo-Ricardians have attempted to rescue the Marxian project by demonstrating that the oppositional nature of Marxian politics does not rest on *Capital* and that other, more consistent, means of approaching economic problems could be derived by revisiting the classical lexicon. I have tried to show here that their efforts are themselves logically flawed and based on fundamental misunderstanding and misreading of Marx’s method and analysis.