Sraffa, Capitalist Production and Labor Values: A Comment

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Abstract
In his *Critical Sociology* essay on Piero Sraffa's *Production of Commodities by Means of Commodities*, William Jefferies aims to rescue Marx's labor value analysis by demonstrating the purported inadequacy of the Sraffa model. Jefferies's argument is untenable, however; for it rests upon a thoroughly confused caricature of Sraffa's analytical framework. The present comment argues that, far from undermining Marx, Sraffa provides a way to place Marx's project on solid foundations.

> Economic controversy is generally a thankless task. You cannot hope to make an impression on your opponent. Yet he is the only reader on whose attention you can count.
> (FY Edgeworth, 1898: 234)

> Intellectuals are like the Mafia: they only kill their own. (Woody Allen)

Introduction

The labor theory of value is, for radical economists, the gift that keeps on giving – an inexhaustible generator of needless controversy. The year 2017 marks both the 200th anniversary of the earliest systematic treatment of the doctrine by David Ricardo (1951a [1821]; 1st edition 1817), and the sesquicentennial of Karl Marx's reformulation of it in Volume I of *Capital* (1967a [1867]). By now the formal analytical relations among labor values, long-period prices of production and the profit rate have been thoroughly dissected, and the central technical problems have been resolved. What remain are exegetical debates about how best to interpret Ricardo and Marx, and the epistemological question of whether Marxian labor values are indispensable to a full understanding of the social and economic processes that define capitalism.

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For the past four decades, Piero Sraffa's *Production of Commodities by Means of Commodities* (1960) has often been at the center of these polemics. Precisely why this book has become a bête noire to defenders of Marx's value theory is a complex story that awaits untangling by intellectual historians. No mention of the labor theory of value is to be found in Sraffa's book, and his brief remarks on Marx in the book's Appendix D on 'References to the Literature' are neither hostile nor controversial. Sraffa (1960: v) identifies his own theoretical perspective with that of 'the old classical economists from Adam Smith to Ricardo', much as Marx (1967b [1873]: 16–17) acknowledged Ricardo as a forerunner. In Chapter VI, Sraffa shows that long-period prices of production can be decomposed into dated quantities of labor time, and his argument makes clear that, outside the special cases in which the profit rate is zero or all sectors have identical capital structures, prices will not coincide with labor values. But both Ricardo and Marx were well aware of this, so the argument cannot be construed as an attack on their theoretical systems.

A good deal of Marxian antagonism toward Sraffa appears to have been provoked by Ian Steedman's *Marx after Sraffa* (1977), which takes the theoretical framework of *Production of Commodities* as the starting point for a withering critique of Marx's analysis of prices and the profit rate. Steedman's caustic rhetoric was counterproductive, for it suggested to many readers that an intrinsic antagonism must exist between the Marxian and Sraffian outlooks.

Yet within the Sraffian literature, the two theoretical frameworks are for the most part viewed as mutually reinforcing developments of the classical surplus approach to the theory of value and distribution (see Eatwell, 1974, 1975; Garegnani, 1981, 1984; Mongiovi, 2002; Pasinetti, 1977; Petri, 2015). On this view, Sraffa's work buttresses Marx's economics by demonstrating that the fundamental elements of Marx's approach to the theory of capitalist production can be robustly grounded. These fundamental elements are: the crucial role of class conflict in determining the distribution of income; the interdependence of exchange value and distribution; the absence of any mechanism which guarantees a tendency to the full employment of labor; indeed, the active tendency of capitalism to generate and maintain a reserve army of unemployed workers; the rejection of Say's Law; and the concomitant recognition that crises are endemic to the system. Most Sraffian economists regard the Marxian theory as essentially sound, and even Steedman concludes *Marx after Sraffa* with an often-overlooked passage reminding his readers that many key elements of Marx's account of capitalism remain valid notwithstanding the deficiencies of the labor theory of value.[1]

The Sraffian position is well-summarized by the Marxian economist Ronald Meek, in his Introduction to the second edition of his *Studies in the Labour Theory of Value*. The Sraffa system, Meek (1973: xlii) writes, is not only 'just as well suited [as Marx's formulation] to the application of a "logical-historical" method of approach,' but also captures 'the basic idea which Marx was trying to express in his labour theory – the idea that prices and incomes are ultimately determined by relations of production – more clearly and effectively than Marx's own procedure did.' Many Marxists will have none of this, however. Starting from the premise that the labor theory of value is a defining and hence non-negotiable element of Marx's theoretical framework, these would-be defenders of his scientific legacy insist that the Sraffian view is actively misleading, both as an interpretation of Marx and as an account of how capitalism works.[2]

A case in point is William Jefferies's essay on 'Piero Sraffa and the Production of Commodities by Means of Magic' (2017). Scuttling Sraffa's model, Jefferies believes, will open up some space for the labor theory of value to play a meaningful role in the analysis of capitalism. But Jefferies's case against the Sraffa model is shot-through with errors and misconceptions. He misunderstands the basic logic of the model, and appears to be confused about the analytical function of a numeraire. Furthermore, though Jefferies insists that the labor theory of value is an essential tool of socioeconomic analysis, he neglects to articulate any clear rationale for the indispensability of Marxian

labor values: he never tells us why or how they are useful, let alone necessary. His essay, far from casting light on the complex mechanisms that regulate value, distribution and accumulation in a capitalist economy, instead sows confusion.[3]

The Commensurability Problem

Let's begin with a significant point that Jefferies gets right. He notes early in his paper that in a multisector economy the calculation of the system-level profit rate as a ratio of the surplus product to the capital advanced requires us to express the components of that ratio in commensurate terms. As Jefferies also notes, Ricardo and Marx adopted the so-called labor theory of value (neither of them ever used the term) as a way of rendering outputs, inputs and wage goods commensurable in order to calculate and explain the profit rate. So far, so good. What Jefferies doesn't grasp is that Sraffa provides a more robust solution to the commensurability problem that the labor theory of value was designed to address.

To see the nature of the commensurability problem in its elemental form, we may consider an economy that utilizes only circulating capital; that is to say, the produced means of production, along with the wage goods on which workers subsist, are assumed to be entirely used up over the course of the annual production cycle. We shall also assume that wages are advanced at the beginning of the production period. According to the classical economists and Marx, the profits that accrue to the owners of capital are the monetary expression of the surplus output generated by the economy's productive activity.[4] Let us denote the gross output of the economy by Q; and let M represent the non-wage material inputs expended in the production of Q. We shall denote the real wage bundle paid per unit of labor by w, and L shall indicate the amount of labor employed over the production period, so that wL represents the wage goods consumed by the workers who collaborated in the production of Q. The surplus output which forms the basis of profits is the difference between gross output and the commodities consumed in producing that output, i.e. the surplus is equal to $Q - (M + wL)$. The profit rate is the ratio of this surplus to the capital invested in production, the latter in this pure circulating-capital economy being $M + wL$; thus:

$$r = \frac{Q - (M + wL)}{(M + wL)} \tag{1}$$

The difficulty is that under normal circumstances the components of this ratio are not scalars but vectors: Q, M and wL are baskets of various commodities in different proportions – outputs, produced means of production, and wage goods. Vectors may be added to or subtracted from one another; but the division of one vector by another is not a meaningful or legitimate mathematical operation. Hence Q, M and wL need to be expressed in homogeneous units so that the numerator and denominator of equation (1) can be rendered as scalars.

Ricardo, in his initial effort to explain the profit rate, hypothesized that in the agricultural sector, the output, the material inputs and the real wages of labor consist largely of the same commodity, grain. On this assumption, the agricultural profit rate could be calculated as the ratio of two physically homogeneous quantities: the agricultural surplus and the capital invested in that sector (i.e. the seed corn planted at the start of the growing season plus the corn advanced as wages to workers). If the agricultural profit rate is regulated by the physical requirements of production in that sector, then that profit rate would in effect be fixed so long as those conditions of production, including the subsistence requirements of workers, don't change. The profit rates in other sectors would therefore have to accommodate themselves to the agricultural profit rate; deviations of

sectoral rates of return from the agricultural profit rate would trigger intersectoral capital flows that in turn cause market prices to adjust in the directions necessary to bring those rates of return into line with the agricultural profit rate.

Since in a long-period context neither the real wage nor the profit rate can be negative, we can derive from equation (1) the maximum values for the wage rate and the profit rate: $r_{max} = (Q - M)/M$; $w_{max} = (Q - M)/L$. Given Q, M and L, as w falls from its maximum possible value (i.e. the wage consistent with $r = 0$), the profit rate rises, and vice versa.

Sraffa (1960: 8) defines a basic commodity as one that enters directly or indirectly into the production of all the commodities in the system. The economy of Ricardo's corn model contains but a single basic commodity, grain. It is an admittedly unrealistic case, but it is nevertheless useful in exposing two fundamental aspects of capitalist production. First, the technical conditions of production establish the limits within which the profit rate and the real wage must lie. And second, there is a trade-off between w and r, that is to say, *an opposition of class interest*s, and the technical conditions of production define the properties of that trade-off. These insights are key elements of the theoretical outlooks of both Ricardo and Marx. Ricardo was able to bring them to light via the corn model, but he soon had to confront the question of whether the corn-model logic carries over to situations in which there exist more than one basic commodity.

Under some prompting from Malthus, Ricardo was compelled to acknowledge that the material inputs that enter into agricultural production, and the wage goods that agricultural workers consume, include other commodities besides corn. Hence, the system-level profit rate cannot be satisfactorily explained as a ratio of quantities of grain. When he came to write the *Principles*, Ricardo realized that the components of equation (1) ought to be expressed in terms of the long-period equilibrium prices of the commodities that comprise the social product, the physical means of production and the wage bundle. This raised a knotty problem. Since the time of Adam Smith, it had been well understood that long-period prices depend on the profit rate; for normal profits are part of the cost of producing a good and bringing it to market. Thus Ricardo needed to determine prices before he could determine the profit rate; but he needed to know the profit rate before he could determine prices. In other words, prices and income distribution are interdependent; they cannot be determined separately from one another.

Ricardo got round this problem by supposing that the relative prices of commodities are roughly proportional to the amounts of labor that enter into their production. He understood this solution to be imperfect, since commodities do not in fact exchange in proportion to the amounts of labor required to produce them. A change in the real wage will affect the prices of different goods in different ways and in different degrees. When wages rise, commodities produced by methods that are more labor-intensive than the method used to produce the good adopted as the standard of value will rise in price relative to the standard; the prices of goods produced by techniques that are less labor-intensive than the process by which the standard of value is produced will fall. But if a change in distribution alters relative prices even when no change has occurred in the method of production, then it cannot be the case that prices are proportional to embodied labor time. Ricardo saw all of this with crystal clarity.

So did Marx, whose approach to the theory of value and distribution rests solidly on Ricardian foundations. The two economists came at the problem from slightly different angles, however. To expose the fact that commodities do not in general exchange in proportion to the amounts of socially necessary abstract labor required to produce them, Marx shows that sectoral differences in what he calls the organic composition of capital (roughly akin to what modern economists would call the capital/labor ratio) cause relative prices to deviate from labor values in a systematic way. Commodities with lower-than-average organic compositions of capital must exchange at prices that are lower than their labor values; and vice versa for goods whose organic compositions are

higher than average. In other words, for Marx, the mechanism that equalizes profit rates operates by reallocating surplus-value from sectors with low organic compositions of capital to those with high organic compositions; this same process causes prices to diverge from labor values. Marx is making the same point as Ricardo: sectoral differences in capital structure entail systematic deviations of relative prices from ratios of embodied labor time.

Ricardo nevertheless maintained that labor values are close approximations to long-period prices (see Stigler, 1958). On this assumption the components of equation (1), summed across the entire economy, could all be expressed as quantities of labor time. In this way he evaded the difficulty posed by the interdependence of prices and the profit rate. Marx, in contrast to Ricardo, drew a sharp distinction between value and price: they are not the same thing, and they coincide only when the organic composition of capital is identical across all of the economy's production processes. Marx contended, though, that the general rate of profit is determined by the ratio of aggregate surplus-value (S) to the sum of aggregate constant capital (C) and aggregate variable capital (V), all of which are quantities of labor time: $r = S/(C + V)$. If this explanation of the profit rate is accepted, Marx argued, prices could be determined by the competitive mechanism that equalizes profit rates, with prices deviating from labor values according to each sector's organic composition of capital. He believed this approach to be an advance over Ricardo's, in part because it does not rely upon an assumption which is not true, i.e. that prices are proportional to embodied labor time.

None of this is particularly controversial. Most Marxists, including, I trust, William Jefferies, would find it unobjectionable as a description of the technical difficulties that both Marx and Ricardo sought to resolve by means of their labor value analyses.

The upshot of the preceding discussion is that Marx and Ricardo, via their labor value framework, were able to arrive at an essentially correct understanding of how prices, the real wage and the profit rate are connected to one another. If it is indeed 'better to be vaguely right than precisely wrong,' then the analytical achievements of Ricardo and Marx merit our deep admiration. For those achievements have withstood the test of time, and remain central to any meaningful understanding of the economic forces at work in modern capitalism. Still, there is no reason to prefer a framework that is vaguely correct when a precisely correct approach is available which encompasses all of the insights of Marx's technical analysis while superseding the limitations of the labor value theory. Sraffa's model offers a precisely correct solution to the problem that vexed Ricardo, and that troubled Marx enough to hinder the completion of *Capital*. Sraffa recognized that if prices and the profit rate cannot be determined independently from one another, they have to be determined at the same time through a system of simultaneous equations. This solution obviates the need to bring labor values into the analysis. Sraffa's solution deprives labor values of their principal raison d'être.

Numeraires and the Theory of Production

In his *Critical Sociology* paper, William Jefferies challenges this conclusion by questioning the analytical soundness of the Sraffian framework. The gist of his critique is that the Sraffa model, though it purports to depict the production processes of a multisector economy, in fact abstracts from the most essential aspect of production: the transformation of a set of inputs into an altogether different set of outputs. By adopting as numeraire a composite commodity (the Standard commodity) in which outputs appear in the same proportions in which they are utilized as inputs, Sraffa – so Jefferies contends – drains his model of all explanatory relevance. Jefferies furthermore argues that whereas Ricardo's adoption of a labor value approach was an analytical advance over the inadequate corn-ratio explanation of the profit rate, Sraffa's adoption of a 'physical numeraire' amounts to a resuscitation of the standpoint that Ricardo deliberately abandoned, and hence amounts to a disastrous step backwards.

Jefferies's argument is grounded in a number of serious misunderstandings concerning the analytical function of numeraires, the uses of abstraction, and the aims and fundamental logic of the Sraffa model. Space constraints and a disinclination to abuse the reader's patience compel me to focus on the most egregious confusions.

At the very outset of his paper, Jefferies draws a spurious and highly misleading distinction between 'physical' and 'social' numeraires. His target here is Sraffa's Standard commodity, a basket of goods with the peculiar property that the proportions in which its components appear as outputs coincide with the proportions in which they are utilized as inputs (Sraffa, 1960: 18–22). *If* the economy produces goods in precisely these proportions, and *if* wages are paid in units of the Standard commodity, then the profit rate can be calculated as a ratio of two physical quantities, each comprised of a number of units of the Standard commodity. The numerator is a basket of goods consisting of what remains of the net product after wage goods have been distributed to workers; the denominator is the basket of goods comprising the means of production. Since both baskets consist of the same goods in identical proportions, each can be represented as a scalar quantity of the Standard commodity, and the division of one by the other would give the system-level profit rate. This operation is possible when actual outputs are produced in the Standard proportions.[5]

In general, of course, the economy will not produce goods in the Standard proportions, and then the profit rate cannot be calculated in physical terms: outputs must be reckoned in prices, and the profit rate must be calculated as a ratio of two magnitudes of exchange value, which will depend on the distribution of income between wages and profits. If, in this general case, we measure the real wage in units of the Standard commodity, the trade-off between the wage rate and profit rate will be linear.

Jefferies contends that Sraffa's adoption of the 'physical' Standard commodity as a numeraire is a sharply different and much inferior approach from that of Ricardo and Marx, who, Jefferies further alleges, adopt labor time as a 'social numeraire … to measure the incommensurable inputs and outputs' (2017: 1).

Jefferies is confused on several counts. For a start, all numeraires are physical entities. The purpose of a numeraire is to enable us to express the price of a good in real terms, i.e. in terms of the number of units of some *other* good for which the first good might be swapped (see Walras, 1977 [1926]: 161). Labor is in this regard no different from any other good or collection of goods we might wish to adopt as a standard of value – including Sraffa's Standard commodity. In so far as labor is meant to serve as a standard of value, it must be precisely measurable *in physical terms* such as person hours. It is true that labor has a social dimension that bushels of wheat and tons of iron lack. But labor, in its capacity as a numeraire if we adopt it as one, might as well be a bushel of wheat: the social dimension has no bearing whatsoever on its capacity to function as a measure of value.

Quite aside from this, however, and contrary to what Jefferies contends, neither Ricardo nor Marx utilized labor as a numeraire. Ricardo, in the *Principles*, and Marx, in Volume I of *Capital*, simply assume that commodities exchange in proportion to the quantities of labor required to produce them, an assumption that is entirely independent of the selection of the numeraire in which prices are to be expressed.[6] Furthermore, designating labor as the numeraire means fixing the wage at 1, a step which would have made it difficult for Ricardo or Marx to discuss how a *change* in the wage rate might affect prices and the profit rate.

Jefferies is also mistaken in supposing that Sraffa's analysis depends in any way upon his choice of numeraire. Nothing of substance in Sraffa's analytics would change if the Standard commodity were replaced by any randomly selected basic good or composite commodity. In particular, the implications of the analysis as regards labor values remain intact. Sraffa's model

resolves the problem that the interdependence of prices and distribution posed for Ricardo and Marx; it does so without recourse to labor values; and the solution is not in any way contingent on which commodity is selected as the standard of value. In a book-length elucidation of the Sraffian framework, Kurz and Salvadori (1995) devote all of six pages to the Standard commodity. Nor does the Standard commodity play a substantial part in Pasinetti's influential 1977 exposition of the Sraffa model. Steedman (1977) conducts his entire discussion with no mention of the Standard commodity. Sraffa (1960: 31) himself emphasized that 'the Standard system is a purely auxiliary construction.'[7]

Yet Jefferies insists that Sraffa's analysis

> is predicated on the identity of physical inputs and outputs. This is the precondition for his physical numeraire and *his entire model is subordinated to it*. As production is of necessity a process of change – one thing being changed into another – so Sraffa's model contradicts the essential nature of production. (2017: 6; emphasis added)

Jefferies offers no argument in support of his claim that Sraffa's analytics depend on the proportionality properties of the input and output vectors. The assertion is just that, an assertion; and it is breathtakingly wrong. The Standard commodity functions solely as a numeraire; it is not meant to serve as an analogue of any actual economy, nor does Sraffa present it as one. His model would generate the same fundamental insights if any other commodity were selected as the standard of value.

No one could quarrel with Jefferies's point about the transformative nature of production. But Sraffa's model is not at all in conflict with that point. In Sraffa's model some goods appear as both inputs and outputs in the production equations; others may appear only as outputs, or as inputs into their own production. Nothing precludes the physical transformation of the inputs: steel enters a factory as sheet metal and leaves as part of an automobile or jetliner, having been wrought in various ways by workers and machinery. Jefferies appears to object to the unexceptional premise expressed in the title of Sraffa's book, i.e. that in a complex modern economy the inputs utilized in production must themselves be produced.

Jefferies also has a bone to pick, on much the same misguided grounds, with the simple no-surplus economy that Sraffa discusses in the opening chapter of *Production of Commodities*:

> To describe [the no-surplus system] as production or as an economy is a misnomer. The quantities and type of inputs are exactly the same as the quantities and type of outputs. Simple reproduction for a physical economy means the transformation of the one quantity of inputs of the same type, into the same quantity of outputs of the same type. This is no transformation at all but rather a redistribution of existing and identical inputs and outputs. It is a stable state; the economic equivalent of three friends sitting round a table and swapping stuff the one with the other. (Jefferies, 2017: 6)

True, the simple reproduction model presented by Sraffa at the start of his book does produce goods in the same proportions in which they are used as inputs. What Jefferies fails to appreciate is that the model is an abstraction with a purely heuristic purpose: it is presented in order to make the point that once an economy becomes capable of generating a physical surplus, relative prices will depend in a systematic way upon how the net product is distributed among social classes. The hopelessness of Jefferies's confusion is underscored by the not-incidental circumstance that *the capacity to produce a surplus entails that commodities will in general be produced in proportions that differ substantially from the proportions in which they are required as inputs*. That is to say, as soon as Sraffa introduces the possibility of a surplus, four pages into his argument, his model no longer exhibits the very feature upon which Jefferies's entire critique hinges!

Let us linger a bit further on Jefferies's complaint against Sraffa's no-surplus scenario. According to Jefferies, Sraffa's simple reproduction model does not involve any genuine act of production, by virtue of the fact that the output vector has the same physical composition as the input vector. A question that arises straightaway is how even simple reproduction can occur without production. The economy finds itself with a technology that enables it to produce precisely as much of each commodity as it uses up in the production process. Some of the output will be consumed as material inputs, some as fuel, and some as sustenance for workers. The fact that the net output of each sector is zero does not in any way negate the reality of production. How, one might wonder, can there be any gross output at all if no production occurs? How could this hypothetical economy exist in the first place, to be talked about by Sraffa or Jefferies, if no production had ever been undertaken?

Jefferies also gravely distorts intellectual history when he argues that Sraffa's use of the Standard commodity as a numeraire is a retrogressive step because it resurrects the corn-model logic that Ricardo explicitly abandoned. Ricardo did recognize the pitfalls of the corn model; that is why he discarded it in favor of the labor value approach of the *Principles*. But he never abandoned the core theoretical outlook that underpinned the corn model: the idea that the profit rate depends upon the technical conditions of production and the real wages of labor. He saw that when there is more than one basic commodity we cannot avoid reckoning in prices, and that the interdependence of prices and the profit rate posed a technical difficulty that needed to be resolved. It was to overcome this difficulty that he resorted to labor values. Sraffa's model solves that very problem while fully preserving the theoretical perspective that informed Ricardo's theoretical work from the corn model of 1815 to the labor value analysis of the *Principles*.

One last point is in order, regarding Jefferies's misreading of how Sraffa introduces a surplus into his model. Jefferies suggests that this is accomplished by some sort of sleight of hand on Sraffa's part – the 'magic' of Jefferies's snarky title. In Chapter II of *Production of Commodities* Sraffa considers the possibility of a surplus, which he illustrates by modifying the two-sector no-surplus numerical example of the preceding chapter. Suppose, Sraffa hypothesizes, that the output of the wheat sector were higher, while the iron-sector output and the inputs into both sectors remained unchanged. Here Sraffa simply wishes to show that with the emergence of a surplus we must introduce an additional variable, the profit rate, into the model in order to determine relative prices.[8] His perfectly sensible rhetorical strategy is to start by tweaking a numerical example that is already familiar to the reader. Jefferies (2017: 6–7), however, sees smoke and mirrors:

> The increase in wheat is the product of magic. No possible combination of wheat and iron alone can produce more wheat. The surplus comes from nowhere and is the product of nothing. In Sraffa's system this must be so, for if the production process transforms the nature of the use value from input to output, the physical form of the input and output would be incommensurate. There would be no algebraic correspondence between them.

No magic is involved in the rise in wheat output, however. Sraffa has merely asked '*What if the technology had been different*, so that more wheat could be produced with the same inputs of our previous example? How will that affect our calculations?' It is the same method of analysis that all economic theorists, including Ricardo and Marx, have used since the time of Adam Smith. There is nothing mysterious about it.

The Transformation Problem

It is widely, though not universally, agreed that Marx fumbled his attempt to establish the connection between labor values and long-period prices of production. The issue is too complicated to rehearse here,[9] but in his brief assessment of it Jefferies (2017: 4) gets to the heart of the matter:

> In *Capital* III, Marx showed how the movement of value between capitals to equalize profit rates transformed values into prices of production. … Marx was obviously aware that in the real capitalist mode of production, input prices were already transformed into prices of production. The idea that Marx forgot to transform the value of inputs into prices of production is a non sequitur [since] the purpose of his [transformation algorithm] was to demonstrate the movement of values into prices. The transformation of values into prices of production does not alter the social laws that Marx describes throughout *Capital*, as even though capitalists do not know, and cannot separate, values from prices of production, they nevertheless must combine quantities of direct and indirect labour together to transform one set of inputs into a different set of outputs in order to produce commodities for sale on a market and to enable the accumulation of capital to take place. They must reduce costs, i.e. the quantity of socially necessary labour time required for production, and increase revenues, the quantity of social labour time commanded on sale, to maximize profits.

I agree that the social laws elucidated by Marx are not contingent on the transformation of values into price. The validity of those laws is ultimately an empirical matter. The important question that Jefferies has placed on the table in this passage is whether Marx's labor value analysis is necessary to bring those social laws to light and to assess their soundness.

The labor theory of value *was* indispensable to Ricardo and Marx, who were writing in the 19th century and who were able, by means of the labor value approach, to arrive at crucial insights that are now known to be correct. Marx and Ricardo saw that prices, the wage rate and the profit rate are tightly interconnected, and that these interconnections are embedded in the technology of production. Marx's law of the tendency of the rate of profit to fall turned out to be less robustly grounded than he had thought; but his method of approach to economic dynamics – his focus on the interplay of technical change, class conflict, distribution and aggregate demand – continues to bear fruit. In the mid-19th century Marx could not easily have developed that method of approach without some sort of labor value analysis. But by the middle of the next century, what was valid in his analysis could be established without the problematic device of the labor theory of value. And a deeper understanding of his missteps undoubtedly places us in a better position to build upon his essentially solid foundations.

The last few lines of the passage quoted above inadvertently demonstrate the superfluity of labor values. As Jefferies acknowledges, capitalists reckon costs and revenues not in terms of labor values, about which they care not a fig, but in terms of money prices. That the outputs sold to generate revenues, and the inputs whose utilization gives rise to costs, can be said to contain socially necessary abstract labor hardly amounts to a compelling case for the labor theory of value. No economist would deny that labor enters into the production of all things, or that it might be useful in some analytical contexts to express our accounts in units of labor time (as, indeed, Sraffa does in his chapter on the reduction of prices to dated quantities of labor). But if capitalists take their decisions on the basis of prices, paying no regard at all to embodied labor time, it is difficult to see how the mechanisms by which capitalism's social laws unfold can have much to do with labor values.

Jefferies's paper is the latest contribution to a tradition which insists that something vital will be lost if we discard Marx's labor value analysis. At the start of his paper Jefferies (2017: 1–2) promises that 'a re-examination of the original arguments around the development of the labour theory of value, alongside the assumptions used to reject it, demonstrates its ongoing purpose and usefulness.' Scrupulously ignoring the well-documented deficiencies of the labor theory of value, Jefferies insists that we cannot resolve the aforementioned commensurability problem without the expedient of labor values – because, he furthermore alleges, Sraffa's model is not up to the task. But these claims are built upon a grotesque caricature of that model. When the model is accurately represented, Jefferies's case for the 'ongoing usefulness' of the labor value theory evaporates.

Conclusion

If intellectual history is worth discussing, we ought to care about getting it right. Useful engagement with Sraffa's ideas cannot occur unless those ideas are understood at some elementary level. Jefferies's critique starts from a profoundly muddled representation of the objectives, properties and claims of Sraffa's model. Jefferies takes aim at the wrong target for the wrong reasons; he's attacking a theoretical framework that in almost every important respect reinforces Marx's theoretical agenda.

Edgeworth (1921: 73) once condescendingly remarked that 'The importance of Marx's theories is … wholly *emotional*.' He was wrong, yet one cannot help but sense that the labor theory of value continues to exert a strong emotional pull that has to some degree eclipsed Marx's genuine scientific achievements. The reflexive attachment of some Marxian scholars to the labor theory of value provides ammunition to those who would dismiss Marx's work as a purely ideological exercise. Jefferies can offer no rationale for that attachment, other than an ill-conceived attack on Sraffa grounded in a specious metaphysical distinction between physical and social numeraires. Marx was not concerned with metaphysical abstractions but with the concrete social relations embedded in and molded by the mode of production.[10] These relations can be thoroughly and accurately investigated without drawing on labor values.

None of this means that we ought not to continue debating the thorny question of 'what Marx really meant.' The question is not only interesting in itself; the process of trying to answer it is an effective way to tease insights out of his writings.[11] Nor do I mean to suggest that Sraffa's equations hold the answer to all relevant social scientific problems. *Production of Commodities* is a slender book that addresses a small number of highly focused but crucial theoretical problems. These are not the only problems that should interest us.

It might be fitting to conclude by observing that Ricardo and Marx developed their ideas well before the ascendance of neoclassical economics. They therefore did not face the necessity of refuting an entrenched orthodoxy which claims that the market remunerates labor and capital more or less in accordance with their productive contributions. By the time Sraffa embarked on the project that would culminate in his 1960 book, the marginal productivity theory of distribution was regarded by most economists as a self-evident truth. Neoclassical economics has proved to be a powerful ideological weapon against class-conflict approaches to the analysis of income distribution. As is well known, the model developed by Sraffa in *Production of Commodities* provides the basis for a damaging critique of the neoclassical theory (see Garegnani, 1970). Thus in addition to resolving the difficulty that led Ricardo and Marx to develop the labor theory of value, Sraffa's model buttresses the Marxian view that class struggle is at the center of capitalist production relations.

Notes

1. '[M]any aspects of Marx's political economy, because they are independent of his reasoning in terms of value magnitudes, are unaffected by the Sraffa-based critique. For example, the concepts of labour, of labour power and of surplus labour are quite untouched by that critique. So are Marx's emphases on

the labour process, on coercion therein, and on the everchanging nature of the labour process resulting from both workplace conflicts and the competitive struggle. Equally unquestioned is Marx's stress on accumulation, involving both quantitative expansion and qualitative developments. … Marx's analysis of fetishism, reification and related matters is quite untouched by the Sraffa-based critique' (Steedman, 1977: 206).

2. The tensions predate the publication of Steedman's book. Frank Roosevelt (1975: 2) had argued a few years earlier that 'it is fundamentally incorrect to link together the approaches of Marx and the [Sraffians].' Roosevelt's main objection is that the Sraffian approach focuses on the purportedly superficial quantitative relations among prices, wages and the profit rate, whereas Marx sought, through his value analysis, to expose the structural social relations of capitalist commodity production concealed behind the façade of exchange relations. Marx was undoubtedly concerned with such social structural relations, but he also grappled with the issues addressed by Sraffa. Roosevelt does not, in any case, establish that the investigation of capitalist social relations requires us to express our accounts in units of labor time.

3. Jefferies gets off to an unfortunate start in the very first lines of his essay, where he misrepresents Sraffa's analytical agenda. It is incorrect to say, as Jefferies (2017: 1) does, that in his Introduction to *The Works and Correspondence of David Ricardo*, Sraffa (1951) sought to 'get rid of the problem of value.' Sraffa fully understood that this could not be done: the very point of his 1960 book was to clarify how value and distribution are intertwined. It was Ricardo who, for a time, wanted to evade the problem of value, because he could see no satisfactory solution to it. Jefferies injures not only Sraffa, but also Kurz and Salvadori (2000), from whom the phrase quoted above is taken. Kurz and Salvadori were in no way suggesting that Sraffa wanted to 'get rid of value'; they were observing that Sraffa had interpreted Ricardo's corn-ratio model as an attempt to do so.

4. We abstract from rents, which must also be paid out of the surplus. If we assume that fertile land and other natural resources are sufficiently abundant that they pose no constraint upon production, and hence command no price, we can ignore rents. Allowing for rents would have no bearing on the issues at stake in the present discussion.

5. Such a system reproduces the conditions of Ricardo's corn model in a multisector context: output, wages and the means of production consist of an identical composite commodity. Hence the profit rate can be expressed as a ratio of quantities of that composite commodity, without having to weight the various goods which comprise it by their relative prices. But we shall see in a moment that, contrary to what Jefferies supposes, Sraffa's argument does not rest upon the supposition that the actual pattern of production conforms to the Standard proportions.

6. To see this, let us suppose that the production of a particular commodity, Good A, requires the expenditure of 10 hours of abstract labor, and that the production of Good B requires the expenditure of 5 hours of labor. On Ricardo's assumption that prices are proportional to embodied labor time, one unit of A will swap for two units of B, and the price of B will be half that of A, regardless of whether A, B or labor is the numeraire. If A is the numeraire, then $p_A = 1$, $p_B = 0.5$ and $w = 0.10$; if B were the numeraire, then $p_A = 2$, $p_B = 1$ and $w = 0.2$. If labor were the numeraire, then $p_A = 10$, $p_B = 5$ and $w = 1$. The same point applies to any Sraffa-type model: as in any other model of price determination, labor could be selected as the numeraire, in which case the price of labor would be set equal to 1. When the profit rate is specified to close the model, prices will be determined, and they will indicate the number of units of the numeraire, in this case labor, for which each commodity could be swapped.

7. Sraffa (1960: 23) remarked that the adoption of the Standard commodity as numeraire 'may give transparency to a system and render visible what was hidden, but … cannot alter [the system's] mathematical properties.' He does not say what was hidden, what the Standard commodity renders transparent. The closest he comes to explaining the purpose of the device is the following passage:

The necessity of having to express the price of one commodity in terms of another which is arbitrarily chosen as a standard, complicates the study of the price-movements which accompany a change in distribution. It is impossible to tell of any price-fluctuation whether it arises from the peculiarities of the commodity which is being measured or from those of the measuring standard. (Sraffa, 1960: 18)

Sraffa here appears to be alluding to an essay left unfinished by Ricardo at the time of his death (see Ricardo, 1951b [1823]). Kurz and Salvadori (1993) provide an insightful assessment of the Standard commodity's analytical role.

8. Thus Jefferies (2017: 6) is again mistaken when he asserts that Sraffa's objective was to 'derive the exchange proportions of goods from their physical proportions alone.' On the contrary, a foundational element of Sraffa's analysis is the idea that prices depend upon how the net product is distributed between wages and profits. There is nothing controversial about this proposition; as we have seen, it was shared by Ricardo and Marx, and it holds for all numeraires, including Sraffa's Standard commodity.

9. My views on the transformation problem can be found in Mongiovi (2002).

10. 'The hallmark of a metaphysical proposition,' Joan Robinson (1962: 3) has observed, 'is that it is not capable of being tested. We cannot say in what respect the world would be different if it were not true. The world would be just the same except that we would be making different noises about it.'

11. My concern in the present note has been to clarify the particular misunderstandings about Sraffa put forward by Jefferies. But as two referees have noted, the connection between Marx and Sraffa remains a topic of debate. Sraffa's unpublished papers, preserved at Trinity College, Cambridge, contain an enormous amount of material relating to his views on Marx. This material has formed the basis of much recent research on the evolution of Sraffa's attitude toward the labor theory of value (see Kurz and Salvadori, 2010, and the essays in Bellofiore and Carter, 2014).

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