SRAFFA AFTER MARX*

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(reviewing: Ian Steedman, *Marx after Sraffa*, N.L.B., London 1977)

Jedes Urteil wissenschaftlicher Kritik ist mir willkommen
(Karl Marx, Preface to the first German edition of *Capital*, vol. I)

I. INTRODUCTION

Does Sraffa's *Production of Commodities by Means of Commodities* [28] belong to the Marxist tradition of economic thought? There exist numerous answers to this question, ranging from an unrestricted "Yes" to an equally unrestricted "No". This is hardly surprising. What is surprising, however, is the fact that both types of extreme answers have been given by economists who consider themselves as Marxists.[1] One would expect that they, at least, should know what Marxism is. In this state of confusion about the specific design and intention of Sraffa's contribution to political economy a book is highly welcome that investigates in detail the relationship between the two celebrated economists, in particular if its author is a most distinguished theorist who conceives himself as working in the materialist tradition.

The present review article tries to assess Steedman's recent contribution [29] to clearing up the relationship between Sraffa's book and the "corresponding" parts in Marx's *oeuvre*. It is argued that Steedman's analysis, although logically correct and very illuminating, is incomplete in the sense that it does not properly bring out the direct descent of Sraffa's surplus theory from Marx's. In other words, *Marx after Sraffa* lacks a satisfactory investigation of *Sraffa after Marx*. In the light of the history of economic thought Sraffa's and Marx's analyses appear to have much more in common than Steedman's "Sraffa-based critique" of Marx seems to suggest. His neglect of the elements that unify the two approaches and his emphasis on those that separate them leads to an optical illusion about Sraffa's great indebtedness to Marx.

In section II the intention of Steedman's book is sketched. Section III contains a critical summary of its main results. In section IV the *raison d'être* of the transformation

[1] See, for example, the Sraffa-Marx discussion in recent issues of the journals *Science & Society*, *Economy and Society*, *New Left Review*, *Bulletin of the Conference of Socialist Economists*, etc.

problem is reconstructed and it is shown that Marx's incomplete solution was accomplished by Sraffa. In section V the analytical significance of the *Standard commodity* in its providing a link with the value-based approach is discussed. Section VI deals with the phenomenon of "negative" labour values, which plays a crucial role in Steedman's fierce rejection of Marx's value reasoning. It is argued that *ex definitione* labour values cannot be negative because they are determined by the medium productive or average labour power of society. The "values" that Steedman obtains by solving a set of simultaneous equations are employment multipliers *à la* Kahn and Keynes and have little to do with Marxian values.

II. STEEDMAN'S INTENTION

Marx after Sraffa is a good-sounding and presumably good-selling title, yet it may rouse expectations that the book cannot satisfy. Steedman deals deliberately only with those parts of Marx's work that are dedicated to the value price-problem.[2] He does not develop the implications of Marx's deficient treatment of this problem for the remaining and definitely more important parts of the latter's analysis, in particular his theory of the laws of motion of capitalism. Nor does he demonstrate that the Sraffa-type of approach is superior to Marx's in the construction of a theory of contemporary capitalism. The reader, therefore, must not expect to improve his understanding of the actual working and development of the capitalist economy. There are no crucial results to be found in the book that have not been derived already in a more or less satisfying way by Marx. Consequently, Steedman does not want to (and of course cannot) change the reader's *Weltanschauung*, provided he is a Marxist of some kind. To whom, then, is the book addressed? It is that species of neo-Marxists who either ignore or reject the critique of Marx's value reasoning implicit in Sraffa's book. Since this critique "*cannot* be met head on and rationally rejected, for the simple reason that it is correct, . . . the self-appointed 'defenders' of Marx descend into evasion" [29, p. 25]. Their attitude is "unMarxian". For, "Marx showed only contempt for those who sought to evade the ruthless criticism of ideas" [29, p. 15]. These "obscurantists", as Steedman calls them, are spoiling both the power and the appeal of Marxism because they do not recognize that the Sraffa-based critique is far from being purely dismissive or negative, indeed it destroys in Marxian theory only what is weak in it and provides instead a sound basis for the rest of it. From the ashes of the hero emerges the phoenix of a superior theoretical approach. "Marx put on Sraffian feet" is Steedman's solution. Substitute Sraffa's analysis of the problems of profits and prices of production for Marx's value-based analysis and this leads to a new theory which embodies the strengths of the old but sheds its deficiencies; you thus vindicate Marx's materialist vision of history,

> "It can scarcely be overemphasized that the project of providing a materialist account of capitalist societies is dependent on Marx's value magnitude analysis *only* in the negative sense that continued adherence to the latter is a major fetter on the development of the former" [29, p. 207].

Steedman wants to push all Marxists toward this position. He is full of optimism.

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[2] I set aside for the moment Steedman's discussion of the "law of the falling rate of profit" [29, chapter 9].

III. THE BASIC MODEL AND THE MAIN RESULTS

What are Steedman's main weapons in his "crusade" against the obscurantists? His first weapon is his clear and lucid language and his ability to deal with problems of utmost intricacy, such as fixed capital and joint production, in a very simple and illuminating way. Steedman obviously has an outstanding pedagogical talent. His second and even more powerful weapon is of course the logical rigour of the Sraffa-type of analysis he adopts.

One might wonder whether Sraffa's contribution can serve at all as the basis for a critique of Marx's value analysis since it is explicitly designed to lay the foundation to a critique of the marginal theory of value and distribution [28, p. vi]. Sraffa's criticism concentrates upon the notion of "capital" hypothesized by neoclassical writers conceiving of capital simply as a quantity that can be measured independently of, and prior to, the determination of the distribution. Steedman's basic proposition is that Marx in his quantitative analysis also adheres to a hypostasised notion of capital, *i.e.* capital defined as "dead" labour, which, as a physical magnitude, is independent of the real wage (the rate of profit). Thus, Marx too is subject to some of the criticism implicit in Sraffa's book. It is noteworthy, however, that Sraffa himself does not mention Marx's analysis as an objective of his attack. Hence it is not possible to presuppose that Sraffa himself would draw all the same conclusions as Steedman, in fact it is most doubtful that he would. Again, *Marx after Sraffa* turns out to be a misnomer.

The general assumptions which underlie Steedman's analysis are the following; fully developed capitalist economies are considered, capitalists who control the process of production and circulation strive to maximize the rate of profit, commodities are produced by means of commodities in a circular production process which is of the point input-point output and uniform period of production-type, emphasis is on the social nature of the capitalist production process, all labour is taken to be unskilled, "simple" labour, the length of the working day, the intensity of labour and the real wage are treated as being exogeneously determined and expressing the "momentary" balance of powers between workers and capitalists in the workplace. These assumptions are weakened in several respects. Each set of premises, each type of "freezing in" of certain relations, however, always serves the purpose of focussing attention to one problem at a time. Steedman's book, like Sraffa's, consists of a sequence of abstract intellectual experiments which are supposed to clear the logical grounds for realistic discussions of the long and short-run development of capitalism. In what follows I shall summarize and comment on the main tenets of Steedman's treatise (*cf.* particularly [29, pp. 14—5 and chapter 14]). In accordance with Sraffa and Steedman I shall distinguish between systems with single-product industries and systems with multiple-product industries.

(a)   *Single-Product Industries*

(1)   In systems with circulating capital only the conditions of production in the basic industries and the real wage paid to workers, both specified in terms of physical quantities of commodities, suffice to determine the rate of profit and a (strictly positive and unique) set of relative prices of production.

(2)   The value of any commodity, as defined by the labour-time required directly

and indirectly to produce it, is determined by the physical data relating to the methods of production chosen at a given real wage rate. It follows that value magnitudes are derived from the conditions of production and since the latter depend on income distribution, so do value magnitudes. Steedman concludes: "The determination of the profit rate is thus *logically prior* to any determination of value magnitudes" [29, p. 65]. Hence there is *no* "transformation problem"; Marx's "solution" is internally inconsistent. In general, contrary to what Marx assumed, (i) the rate of profit in value terms, $S/(C+V)$, is different from the rate of profit in price terms, (ii) neither the total price/total value nor the total profit/total surplus value equality will hold, (iii) non-basic industries, and thus the use capitalists make of the surplus value, play no role whatsoever in the determination of the rate of profit.

Comment: 1. The determination of the profit rate is not logically prior to the determination of values. According to Sraffa, two magnitudes are supposed to be known prior to the determination of prices, values and the rate of profit. They are: (i) the real wage, (ii) the social product, *i.e.* the quantities of all commodities produced in the year, and the technical conditions of its production. Adding the criterion of profit rate maximisation to these physical specifications, all interesting variables, such as the rate of profit and the value magnitudes, are determined simultaneously. One's preference for calculating certain variables at first does not establish any logical priority. 2. It should be noticed that Steedman adopts von Bortkiewicz's treatment of the transformation problem [1] with a sole, yet important difference. Whilst the latter assumed that constant capital consisted of one commodity only (*cf.* his grouping of the economy into three departments; means of production, wage goods, and luxury goods), Steedman allows for the heterogeneity of capital goods and does not hide this fact, as Marx did (*cf.* his numerical examples in [17, chapter IX]), by aggregating the different means of production of a sector to a single value magnitude.[3]

(3)   The values of commodities and hence the rate of exploitation may be indeterminate although the prices and the rate of profit are fully determinate. This is the case in switch-points between two techniques.[4] Moreover, if there is a choice of production methods, then a higher (lower) real wage (*i.e.* a lower (higher) rate of profit) may be associated with a higher (lower) rate of exploitation, contrary to what Marx assumed. The profit rate, however, is positive if and only if there is exploitation ("Fundamental Marxian Theorem").

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[3] On this see [6, pp. 50–54] and [12, pp. 111–14]. Recently A. Shaikh [26] tried to provide a rigorous defence of Marx's own transformation approach. He argued that Marx's solution, if properly understood, is only the first step in an iterative procedure which not only qualitatively but also quantitatively establishes the link between total surplus value and total profits and which yields "correct" prices of production. (It is worth mentioning that the iterative "algorithm" was first suggested by A. Brody [3, p. 90].) Whether or not this is an appropriate description of what Marx had in mind, it is an interesting argument, the validity of which, however, crucially rests on the premise that each of the constant capitals of the different departments either consists of a single means of production or of the same means of production in the same proportions. If all we know are the value aggregates of the constant capitals, it is impossible even to begin to "transform" values into prices since the same value system is compatible with an infinite number of quantity systems and thus an infinite number of price systems. Hence Shaikh's (and Marx's) approach only makes sense if it is implicitly assumed that the commodity composition of the different constant capitals are identical. Marx's value analysis prevents a proper treatment of the "transformation problem", since it merges the different elements of a sector's constant capital into a single magnitude. See also section IV of the present paper.

[4] See also [19, pp. 188–90].

Comment: 1. In a strictly Sraffian model there can be no indeterminate values. Given a fully specified quantity system of material and labour inputs and outputs the value of a commodity is determined by the average amount of labour that is necessary to produce one unit of this commodity. This holds irrespective of whether or not the system is in a switch-point between two techniques. Though it is true that each technique has its own vector of "individual" values this fact is of no relevance in this context. For, as Marx stresses: "Here, as in all determinations of value, the average decides" [16, p. 179]. It might be objected that the problem arises because with constant returns to scale a given social product can be produced in different ways, *i.e.* with different linear combinations of the processes of production of the two techniques. This yields different sets of (average) values. This argument, however, disregards Sraffa's emphatic warning that constant returns to scale are not assumed in his analysis.[5] It follows that the very notion of a switch-point presupposes the full specification in terms of physical quantities of the co-existing techniques. 2. It should be pointed out that Marx, in a dynamic setting, was perfectly aware of the possibility that with a rise in labour productivity both real wages and the rate of exploitation could rise (see, for example, [15, p. 489]).

(b)   *Multiple-Product Industries*

(4)   In systems with fixed capital or pure joint production proposition (1) is still valid if the number of the methods of production is equal to the number of products, whereas proposition (2) has to be modified to cover the possibility that labour values, defined in "Marx's additive way", may be indeterminate. When they are determinate, some of them can be zero or even negative.[6] This raises the abstract possibility of "negative" surplus value with positive profits and thus entails a contradiction with the Fundamental Marxian Theorem. Apart from this proposition (3) still holds.

Comment: Marx had no theory of joint production[7] and there is no evidence that he calculated values by solving a set of simultaneous equations. This does not mean of course that joint production need not interest us. Being a dominant form of production in reality, joint production has to be investigated carefully. This implies that Marx's notion of value, which is related to single-product industries, has to be appropriately reinterpreted. On this point see section VI of the present paper.

(5)   The von Neumann analysis determines, although at a very high level of abstraction, all quantity and price magnitudes of an economy which is in a semistationary equilibrium, without reference to any value magnitude.

Comment: It is well known that the so-called "Marx–von Neumann model" (Morishima) of expanded reproduction exhibits Standard proportions *à la* Sraffa. With the rate of accumulation equal to the rate of profit ("Golden Rule of Accumulation") the compo-

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[5]See [28, Preface] and the quarrel between J. Eatwell, E. Burmeister and A. L. Levine in the *Journal of Economic Literature*, March 1977.

[6]If the system is *productive, i.e.* if there exists a vector of activity levels x, such that $x(B-A) > 0$, where A is the input matrix and B the output matrix, of course only *some* of the labour values *à la* Steedman can either be zero or negative, since a *positive* quantity of labour is required for the production of society's net product. Steedman's assertion "they can be positive, zero or negative" [29, p. 203] has to be interpreted in this way. See also section VI of this paper.

[7]We set aside those few passages in Marx's *oeuvre*, some of which are quoted by Sraffa [28, p. 95], in which he adopts Torrens' method of treating what is left of fixed capital at the end of the year as a kind of joint product.

sition of aggregate output and aggregate input (including necessary wage goods) is physically identical. The ratio of these two magnitudes is thus independent of whether prices or values are used to evaluate the different commodities. In this case the rate of profit in value terms is equal to the rate of profit in price terms, which is a strictly Marxian result.[8] In addition, Steedman arrives at the following conclusions:

(6)   Technical progress in a Sraffa-type model, by itself, never can be the cause of a falling rate of profit. Without having recourse to non-producible resources, such as land, the rate of profit can fall only if the real wage rises.

Comment: Recently B. Schefold [24] has proved that mechanisation, defined as increased inputs of machinery per unit of output, combined with the same or increased quantities of materials and a reduced amount of labour, necessarily lowers the maximum rate of profit. This result has been used by A. Shaikh [27], who argued that if this pattern of mechanisation is the prevailing form of technical progress then it would appear to imply that sooner or later the actual rate of profit must necessarily fall (*cf.* however [29, pp. 126–27]). Shaikh maintains that in the presence of fixed capital there exist two different measures of profitability; profits in relation to capital used up in production (*i.e.* in relation to cost-price), which he calls the "profit-margin on costs"; and profits in relation to capital advanced, or the "rate of profit". He then proceeds to show that the cheapening of commodities due to more "roundabout" techniques brings about a rise in the profit-margin on costs, yet does not of necessity contradict the tendency of the rate of profit to fall.[9, 10]

(7)   The stretch-out and speed-up of the labour process and the increased pressure to save material inputs and their respective impacts upon the rate of profit can be dealt with in a Sraffa-type of analysis.

(8)   With heterogeneous labour there is no need to "reduce" one kind of labour-time to another in order to determine the rate of profit within Sraffa's physical quantities framework. Given the profit rate, with differential wage rates the wage rate in one industry is inversely related to that in every other industry.

Comment: Implicit in Steedman's argument of the unimportance of the labour reduction problem is a re-definition of the notion of value in the spirit of Bowles and Gintis [2]. Accordingly, value is no longer a single magnitude (a scalar), but rather a multiplicity (a vector) of magnitudes, one for each type of labour.

[8]For a comprehensive account of all special cases where some or all of the ratios measured in value or price terms coincide, see [21, pp. 91–4].
[9]Shaikh's is an interesting argument, irrespective of whether it is in the spirit of Marx. In fact Marx maintained: "No capitalist ever voluntarily introduces a new method of production, no matter how much more productive it may be, and how much it may increase the rate of surplus-value, *so long as it reduces the rate of profit*" [17, p. 264; emphasis added]. Accordingly, Marx seems to be convinced that capitalists strive to maximize the rate of profit rather than the profit-margin on costs. (As Marx's above statement is immediately followed by a short discussion of fixed capital and machinery, it cannot be argued that in Marx's opinion the maximization of the profit rate does not apply to systems with fixed capital.)
[10]In my view the Marxist discussion of the "law of the falling rate of profit" has not appropriately taken into account the impact of technical progress, *i.e.* the introduction of new, energy and raw materials consuming methods of production, on the exhaustion of non-reproducible natural resources. This argument cannot be dismissed as "Ricardian", since it is also used by Marx: "Productivity of labour is also bound up with natural conditions, which frequently become less productive as productivity grows . . . " [17, p. 260]. See also [29, p. 129].

Steadman concludes:

> "Marx's value reasoning—hardly a peripheral aspect of his work—must there-
> fore be abandoned, in the interest of developing a coherent materialist theory
> of capitalism" [29, p. 207].

On the other hand he does not weary of emphasizing again and again that his Sraffa-
based critique, by its very nature, involves no "iconoclastic dismissal of Marx's entire
political economy", that the issues in question are far from exhausting the latter's con-
tent, and that no doubt is cast on "Marx's many insights which were independent of his
value magnitude reasoning" [29, pp. 205, 14 and 206]. Yet what is the reason for the
affirmation, frequently reiterated by Steedman, that his critique is entirely consistent
with Marx's materialist analysis? Unfortunately, Steedman does not fully reveal his notion
of materialism; a necessary attribute of a materialist analysis, however, seems to him to
be that it starts from objective data, such as the conditions of production and the real
wage, and does not have resort to subjectivistic concepts, such as "utility" (cf., for
example, [29, pp. 66, 162 and 197, fn. 17]). On the other hand, one has to recognize
that in systems with joint production and/or non-reproducible resources, the technique
used, the rate of profit and the values and prices of commodities all depend on the levels
of activity of the system and thus "demand", even if there are constant returns to scale
with each method of production.[11] So "demand" must enter the picture in a second
stage of the analysis. Clearly, the neoclassical fable of autonomous utility-maximizing
households cannot be taken seriously if one accepts Marx's formulae, according to which
"the evolution of the economic formation of society is viewed as a process of *natural*
history" and capitalism is a state of society, "in which the process of production has the
mastery over man, instead of being controlled by him" [15, pp. 21 and 85; emphasis
added]. Thus, it would appear to be in the spirit of Marx to conceive of the needs,
interests and tastes of individuals as systematically produced by society itself rather than
considering them as totally subjective and emanating from within the heads of the indi-
viduals. With regard to consumers, for example, Marx stresses:

> "The consumer is no freer than the producer. His judgement depends on his
> means and his needs. Both of these are determined by his social position,
> which itself depends on the whole social organization" [14, p. 41].[12]

This issue, however, is not the concern of Steedman's book.

IV. THE "TRANSFORMATION PROBLEM"

Many people have maintained that the labour theory of value is dead. However, as is
the case with Nietzsche and God, after a while the critics die, whereas the labour theory
of value lives on. On the basis of overwhelming historical evidence in support of this fact
I presume that Steedman will not be the exception to the rule. This curious phenomenon
is partly due to the fact that the grave-diggers of the labour theory of value, in general,

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[11] For a demonstration of this result within a Sraffian framework and with respect to the problem of
the rent of land, a case which is not discussed by Steedman, see, for example, [13]. Sraffa cannot
be blamed for the emergence of the view that "demand" does not matter and has nothing to do with
the notion of normal price, since his investigation is explicitly restricted to systems in which no
changes in output take place.
[12] Some interesting ideas on this issue are to be found in [18].

are much more fond of digging the grave than of burying the body. Again, Steedman is no exception to the rule; his book is explicitly devoted to a critique of that theory and to a discussion of an "intrinsically unimportant problem, the so-called 'transformation problem'" [29, p. 29]. Moreover, the recent inflation of the literature on this issue is by no means a symptom that the attraction of the labour theory of value has disappeared. What, then, constitutes its appeal? It is, in my opinion, the great transparency that the value reasoning gives to certain crucial properties of the capitalist system, in particular the class antagonism. The frequent misrepresentation of the Sraffa-approach as an "adding-up theory of profits", in which profits appear directly as a charge to be paid to the owners of capital and proportionate to it, witnesses of the deep confusion of some of Sraffa's Marxist critics who cannot cope with the loss of the labour theory of value. The source of this confusion lies, at least partly, in the lack of transparency of Sraffa's surplus equations approach, and not, as these critics maintain, in its "unMarxian" character. Sraffa's refusal to start his own analysis with the legendary, simple and telling picture of capitalism in value terms seems to be a major obstacle to a proper understanding of his treatise. A Marxist critic, however, should know about the difference between the method of presentation and that of inquiry:

> "Of course the method of presentation must differ in form from that of inquiry. The latter has to appropriate the material in detail, to analyse its different forms of development, to trace out their inner connexion. Only after this work is done, can the actual movement be adequately described. If this is done successfully, if the life of the subject-matter is ideally reflected as in a mirror, then it may appear as if we had before us a mere *a priori* construction" [15, p. 28].

Without too great a stretch of the imagination one can see that this dialectical relationship between the two forms is not only characteristic of Marx's *Capital* but, *mutatis mutandis,* also of Sraffa's *Production of Commodities.* In what follows I shall try to reconstruct Sraffa's surplus equations method as a result of a critical examination of Marx's theory of production prices.[13]

In Classical and Marxian theory surplus is defined as social product less that share of product which must be paid to the workers. Given the real wage per worker and the number of workers that are employed in producing a given product, the physical size and composition of the social surplus is determined. The rate of profit is expressed by the ratio between the social surplus and the social capital. In a simple economy with circulating capital the latter consists of the advanced wage goods, or "variable" capital, and the used-up means of production, or "constant" capital. In general, the surplus and the capital both consist of heterogeneous bundles of commodities which are different. The rate of profit, however, is a ratio of homogeneous magnitudes. Thus there is need for a measure of value. Since the explanation of the rate of profit is the basic object of the inquiry, the standard of measurement must not be dependent on the rate of profit. If this were not so, the surplus-based theory of the profit rate would be in danger of circularity.

The great merit of Ricardo was his determination of value by means of labour-time. With the assumption that commodities are exchanged according to the respective quanti-

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[13] I should like to indicate the great debt I owe to P. Garegnani's works, in particular [8] and [9].

ties of labour necessary to produce them, he was able to bypass the risk of circular reasoning and to present a relatively satisfactory theory of the rate of profit. His finding of the inverse relationship between the real wage and the rate of profit destroyed the rational basis of Adam Smith's harmonic view of the capitalist society.

Marx developed his own theory of profits as a critique of Ricardo's. The role he attributed to the theory of value, however, is basically the same as in Ricardo. It serves the purpose of measuring the social product independently of its division into wages, profits and rent:

> "Thus, the separation and resolution of new value annually added by new labour . . . into . . . wages, profit and rent, do *not* at all alter the limits of the value itself, the total value to be distributed among these various categories; any more than a *change* in the mutual relations of these individual parts can change their total, this *given* magnitude of value" [17, p. 858; emphasis added).

> "In reality, the commodity-value is the magnitude which *precedes* the sum of the total values of wages, profit and rent, *regardless* of the relative magnitudes of the latter" [17, p. 862; emphasis added] .

If, then, the quantities of labour embodied in the different commodities are used to determine the (value) magnitudes of the surplus, s, and the social capital, $c+v$, the rate of profit, r, is given by $r=s/(c+v)$. To recapitulate, once the social surplus and the social capital are known as physical aggregates, the rate of profit can unequivocally be determined, if a standard of value is found which itself is independent of r.

Prices, however, are not proportional to labour values. This was already pointed out by Ricardo. Although he saw clearly that prices, in general, deviate from values he was sufficiently confident that this phenomenon could not endanger his value-based determination of profits. Yet, he was not able to provide a rigorous proof that his confidence was well-founded. Marx inherited this unsolved problem from Ricardo. Obviously, he was convinced that he had found the answer of the riddle, even though he freely admitted that his sketch of a proof, posthumously published by Engels in vol. III of *Capital*, was incomplete. "Our present analysis does not necessitate a closer examination of this point" [17, p. 165] .

Why, then, do commodities not exchange in relation to the quantities of labour embodied? The reason is twofold; first, different commodities are generally produced with capitals of different "organic composition", c/v, secondly, in competitive capitalism there is a tendency of the rate of profit to be uniform between different industries. With a uniform degree of exploitation, s/v, however, these two phenomena become contradictory, as can be seen most easily from the formula $r = (s/v)(c/v+1)^{-1}$. Marx's theory of production prices attempts to solve this contradiction. He argues that the deviation of prices from values simply reflects the redistribution of surplus value away from industries with a relatively low organic composition and towards those with a high organic composition. Ultimately, "the deviations from the value which are embodied in the prices of production compensate one another" [17, p. 161] .

> "Thus, although in selling their commodities the capitalists of the various spheres of production recover the value of the capital consumed in their production, they do not secure the surplus-value, and consequently the profit,

created in their own sphere by the production of these commodities. What they secure is only as much surplus-value, and hence profit, as falls, when *uniformly* distributed, to the share of every aliquot part of the *total* social capital from the *total* social surplus-value, or profit, produced in a given time by the social capital in *all* spheres of production" [17, p. 158; emphasis added].

Marx's transformation "algorithm" can be described in the following way. For simplicity, I shall assume that the economy consists of two departments only; department I produces means of production and department II consumption goods. The rate of profit is given by

$$r \; = \; \frac{s}{c+v} = \frac{\Sigma s_i}{\Sigma(c_i+v_i)} \quad (i=\mathrm{I,II}) \tag{1}$$

This rate of profit is applied to the capital used in each department, whereby the capital has to be reckoned in terms of prices of production, since competition will distribute profits in proportion to the price of the constant and variable capital and not in proportion to its value, as was assumed by Marx in a first and admittedly defective step of his analysis (*cf.* [17, p. 165]). We obtain

$$p_I \; = \; (1+r)\,(c_I p_I + v_I p_{II})$$

$$p_{II} \; = \; (1+r)\,(c_{II} p_I + v_{II} p_{II}) \tag{2}$$

where p_I and p_{II} are the respective prices of production of the two types of products. In addition, Marx assumed that "the sum of the prices of production of all commodities produced in society . . . is equal to the sum of their values" [17, pp. 159–60], *i.e.*

$$\Sigma p_i \; = \; \Sigma(c_i+v_i+s_i) \qquad (i=I,II) \tag{3}$$

Counting equations and unknowns we find that four equations are designed to determine three unknowns, *i.e.* the rate of profit and the two prices of production. Thus, the system is overdetermined. Which one of the equations is redundant? Clearly, the price equations in (2) are indispensable, and (3) contains the fundamental Marxian normalization assumption, according to which all prices of production are expressed in terms of the value of the gross social product. It is equation (1) that is superfluous. Indeed, one can see at a glance that (2) and (3) are sufficient to determine both the prices of production and the uniform rate of profit. Moreover, the rate of profit so determined will, in general, be different from the rate of profit as given by (1). Hence Marx's formula (1) is not merely redundant, it is also incorrect. The reason for this is that the social surplus and the social capital are "transformed" into price magnitudes. Since both aggregates, in general, consist of different bundles of commodities, the transformation of the values of these commodities into prices of production will have a different impact upon the size of these aggregates. This is why the "redistribution" of the surplus value affects its own size as well as the size of the social capital and thus the rate of profit, which is the ratio between the two. It appears then that Marx could have consistently solved the "transformation problem" if he had consequently carried out his own proposal, namely to reckon the capital advances in price terms.

Sraffa deserves the merit for having generalized the (corrected) Marxian approach to the case of many (n) means of production and many (up to n) consumption goods. Let c_{ij} designate the value of the quantity of commodity i that is used in the production of commodity j in the form of constant capital, and ℓ_j the amount of direct labour (equivalent to what Marx called *Wertprodukt, i.e.* the newly created value). The value of commodity j is then given by $\Sigma c_{ij} + \ell_j$. Let p_j be the price of commodity j and w the (uniform) price of labour power or wage rate per unit of labour-time. We have accordingly[14]

$$
\begin{aligned}
p_1 &= (1+r)\,(c_{11}p_1 + c_{21}p_2 + \ldots + c_{n1}p_n + wl_1) \\
& \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\
p_n &= (1+r)\,(c_{1n}p_1 + c_{2n}p_2 + \ldots + c_{nn}p_n + wl_n)
\end{aligned}
\qquad (2^*)
$$

In addition, the price of labour power is determined by

$$
w = v_1 p_1 + v_2 p_2 + \ldots + v_n p_n
\qquad (4)
$$

where Σv_i is the quantity of labour necessary to produce the given real wage (consisting of the socially and historically determined amounts of the n commodities, some of which may be zero). Clearly, Σv_i is equivalent to Marx's variable capital per unit of labour-time. (2^*), (4) and (3), where $i = 1, 2, \ldots, n$, suffice to determine all prices, the money wage rate and the rate of profits.

Finally, we arrived within one step of reaching Sraffa's general solution to the "transformation problem". This last step consists in the measurement of the different elements of the constant capital of an industry and the various elements of the standard wage goods basket directly in terms of their own physical units and no longer in terms of embodied labour. This procedure has the advantage that we can immediately base the analysis upon the technical information about each single method of production, whilst the measurement in terms of embodied labour is impossible as long as we do not know the particular solution of (2^*), which is associated with $w=1$ and $r=0$. For, at the maximum level of wages (which corresponds to a zero rate of profit) prices and values coincide. It is clear, then, that the value of a commodity input, unlike its physical magnitude, depends both on the method of production of this commodity and the methods by which its direct and indirect means of production are produced.

The origin of Sraffa's analysis should now be evident. There can be no doubt that *Production of Commodities* belongs to the Marxian tradition of economic thought. Indeed, Sraffa has demonstrated in a most impressive way that a proper elaboration on the material provided by Marx finally leads to a correct theory of the profit rate. *En route,* however, Sraffa discovered that if we are to explain profits and prices adequately we must, and in fact can, leave the value schema and base the analysis on the physical quantities description of the economy. It thus follows that Sraffa starts his inquiry with a sketch of the physical framework; even though "it may appear as if we had before us a mere *a priori* construction" (Marx). The (false) proposition of the "unMarxian" character of Sraffa's contribution seems to have drawn its spurious legitimacy from the impression

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[14] For simplicity, we normalize the system by setting the gross product of each commodity equal to unity.

that in the price equations (2*) profits are a mark-up on the costs of production inclusive of wages. This seems to have caused the further and related misconception that profits may be determined independently of wages. Sraffa, however, has once and for all destroyed the rational foundation of such "vulgar" doctrine. He proved that there exists an inverse relationship between the wage rate and the rate of profit, a fact that is beyond easy recognition because of the complex nature of the system of simultaneous equations. Yet there exists a simple device to make this basic property of the capitalist economy "visible".

V. THE "STANDARD SYSTEM"

The previous discussion may have generated the impression that Marx's idea of a determination of the rate of profit independently of the system of prices of production is doomed to failure. This is not so, indeed, Marx's idea is fundamentally correct. This has been demonstrated for the first time by Sraffa with his illuminating invention of the "Standard system". The problem of constructing the Standard system amounts to finding a set of suitable multipliers to be applied respectively to the production equations of the various commodities such that the resulting quantities of the different commodities will bear the same proportions to one another in the aggregate output as they do in the aggregate input (means of production). Sraffa chooses as unit of the "Standard commodity" the quantity of it that would form the net product of a Standard system employing the total annual labour of the actual system. If the wage is expressed in terms of this unique composite commodity, the rate of profit "appears as a ratio between quantities of commodities *irrespective of their prices*" [28, p. 22; emphasis added] . The relationship between the share of wages and the rate of profit is given by the famous formula

$$r \; = \; R(1-w) \tag{5}$$

where R is the ratio between the Standard net product and its means of production, which is equivalent to the maximum rate of profit ruling at zero wages.

With regard to the purpose of the present investigation there is no need to enter into a more detailed discussion of the peculiarities of Sraffa's *Hilfskonstruktion*.[15] It is important to notice, however, that the Standard commodity "may give transparency to a system and render visible what was hidden" [28, p. 23] . The "radioscopy" corroborates Marx's notion of profits as the money form of the surplus product. In comparison to (2*) expression (5) has the advantage of great logical simplicity; the residual character of profits is obvious. Indeed, it can be said that (5) is a modern version of Marx's formula (1). In both equations the rate of profit is the only unknown and in both cases it is expressed as a ratio of two magnitudes that are independent of prices.

The "Marxian" character of Sraffa's contribution is thus fully revealed. With regard to both the history of scientific progress and the fundamental identity of the results of Marx's and Sraffa's investigations Steedman's following proposition is untenable: "Marx's value reasoning is *often internally* inconsistent, *completely* failing to provide the explanations which Marx sought for certain features of the capitalist economy" [29, p. 206; emphasis added] .

[15] The interested reader should consult, for example, [23] and [5] .

VI. "NEGATIVE" LABOUR VALUES?

Clearly, in joint production systems there may be fewer methods of production (or processes) used than products produced and some of the products may have zero prices, *i.e.* so-called "free goods". Von Neumann showed that with a given set of available processes from which capitalists can choose, there may or may not be some processes that are unused and there may or may not be some "free goods". More specifically, it can be demonstrated that the choice of process(es) and the imputation of zero price(s) to certain product(s) may depend upon the level and composition of the basket of wage goods [29, chapter 13]. Hence the quantities of labour that are necessary to produce the different commodities may be indeterminate and, in general, depend upon income distribution and "demand". If they are determinate, however, some of them may be zero or even "negative". The occurrence of negative amounts of imputed labour "looks at first as if it were a freak result of abstraction-mongering that can have no correspondence in reality" [28, p. 60]. So let us have a second look at this phenomenon.

We investigate at first fixed capital. To deal adequately with the age structure of the capital stock and the depreciation problem, it is necessary to treat durable capital goods at different stages of wear and tear as qualitatively different goods so that each capital good serves only one period. Steedman shows by means of a simple example of a self-reproducing economy with a uniform age structure of the capital stock that the quantity of labour which is imputed to a partly worn out fixed capital good, say a "machine", by solving a set of equations may be negative [29, p. 145]. This is the case if the machine from a certain time on exhibits a rather steep fall in efficiency over its technical lifetime. The decreasing efficiency may be due to rising costs of maintenance and repair, a rise in consumption of raw materials, a fall in the rate of output or an increase in the proportion of output which is non-vendible because of inadequate quality. The imputation of negative amounts of "embodied" labour to old machines may or may not be accompanied by hypothetically negative equilibrium or "book" prices; whether it does will depend on the physical input-output pattern of the economy and the level of real wages. Obviously, in equilibrium the price of a machine (either new or "aged") is equal to the capital value one gets by discounting all future net receipts that might be obtained by further use of the machine at the ruling discount factor $(1+r)$. A zero or even negative price of the old machine thus means that the machine becomes *economically obsolete* before the end of its *technical* lifetime. If it is used beyond the date at which its price falls to zero it yields at best zero profits. Hence the machine will be scrapped, the production process in which this "aged" durable means of production is employed will be truncated (*cf.* [10]). Since decisions of capitalists are based on profit and price considerations, negative quantities of imputed labour of old fixed capital goods do not imply that these capital goods will be jettisoned unless their continued use entails losses.

Steedman's analysis is logically correct, we may ask, however, if what he calls "values" correspond with Marx's labour values. This question cannot be settled with complete certainty, since Marx, when discussing the way in which a machine gradually loses its value over its life, assumed generally linear value depreciation. He justified this method explicitly with the assumption of constant efficiency of the fixed capital good. However, Marx was well aware of the complexity of efficiency profiles of machines and admitted

that the linear value depreciation was an oversimplication (*cf.* [29, pp. 139–40]). Yet, he did not develop how this simple rule has to be modified in the case of varying efficiency. On the other hand, we know that in Marx's opinion the capacity of living labour to create value depends on the productivity of labour power. If, for example, the efficiency of a machine falls over its life, the labour power that is equipped with the new machine exhibits a higher productivity than the labour power that is equipped with an old one. Consequently, the former will create a greater value. The differences in productivity can thus be used to scale down the living labour that is employed to run a machine at its different stages of wear and tear. If this "reduction" is carried out properly the phenomenon of "negative" values of partly worn out machines will disappear. This holds irrespective of the fundamental deficiencies of Marx's treatment of fixed capital that have been brought to light by Steedman.

We have seen that the need to impute negative quantities of labour to some commodities is a consequence of Steedman's implicit assumption that all living labour possesses the same capacity to create new value. Odd assumptions produce odd results. The correctness of this truism can be demonstrated by means of yet another example from Steedman's criticism of Marx. Steedman maintains that in pure joint production systems it is possible to have positive profits with "negative" surplus value [29, chapter 14].[16] If this proposition were true it would be a serious blow to the so-called "Fundamental Marxian Theorem" (*FMT*).

In order to illustrate his findings, Steedman presents the following example [29, p. 151]

$$A = \begin{bmatrix} 5 & 0 \\ 0 & 10 \end{bmatrix}, \quad \ell = \begin{bmatrix} 1 \\ 1 \end{bmatrix}, \quad B = \begin{bmatrix} 6 & 1 \\ 3 & 12 \end{bmatrix},$$

where A is the matrix of commodity inputs, ℓ the vector of direct labour inputs, and B the matrix of outputs. If "values" are calculated by solving the familiar matrix equation

$$B\Lambda = A\Lambda + \ell \tag{5}$$

we obtain

$$\Lambda = [B - A]^{-1}\ell, \text{ i.e. } \Lambda_1 = -1 \text{ and } \Lambda_2 = 2$$

Moreover, since one cannot exclude the possibility of profits being chiefly spent on the commodity with a "negative" value *à la* Steedman, it is clear that a "negative" surplus value *à la* Steedman can appear, even though the rate of profit and the prices of both products may be strictly positive [29, p. 152]. This has been regarded by Steedman as a counter-example to the allegedly general *FMT*. His far-reaching conclusion reads,

> "Marxists should therefore concentrate on developing the materialist account of why production conditions and real wages *are what they are,* leaving the discussion of "value magnitudes" to those concerned only with the development of a new Gnosticism" [29, p. 162; emphasis added].

[16] Since partly worn out machines, in general, do not enter surplus (net) product, the phenomenon of a machine with a negative value *à la* Steedman cannot give rise to such a strange result as "negative" surplus value. In this respect systems with fixed capital are different from those with pure joint production.

Steedman certainly does not want to indicate that his example is by any means an appropriate, though highly simplistic, description of what production conditions are or, at least, realistically can be. Neither he nor I know whether his example has any correspondence with reality. Since the question cannot be settled on empirical grounds one has to investigate the theoretical foundation of this counter-example.

The first problem concerns the possibility of imputing specified quantities of labour to different products that are produced by the selfsame process. As Sraffa puts it:

> "In the case of joint-production there is no obvious criterion for apportioning the labour among individual products, and indeed it seems doubtful whether it makes any sense to speak of a *separate* quantity of labour as having gone to produce one of a number of *jointly* produced commodities" [28, p. 56; emphasis added].

It is of course even more doubtful that the resulting Λ_is can be identified with Marx's values. A look at Steedman's example shows that process II yields a higher physical net product per worker $(3, 2)$ than process $I(1, 1)$. Thus for any given semi-positive vector of arbitrary "prices" labour productivity in "price" terms in process II is at least twice and at most three times as high as labour productivity in process I. A difference in labour productivity, however, means that living labour in the two processes must be treated as two different kinds of labour, *i.e.* heterogeneous labour. This idea is to be found frequently in *Capital*. At the very beginning of volume I Marx writes:

> "The labour, however, that forms the substance of value, is *homogeneous human labour, expenditure of one uniform labour power.* The total labour-power of society, which is embodied in the sum total of the values of all commodities produced by that society, *counts* here as one homogeneous mass of human labour-power, composed though it be of innumerable individual units. Each of these units is the *same* as any other, *so far as it has the character of the average labour-power of society,* and takes effect as such; that is, so far as it requires for producing a commodity, no more time than is needed *on an average,* no more than is *socially necessary*" [15, p. 46; emphasis added].

Accordingly, the determination of values presupposes the knowledge of the whole system of production and, if necessary, the appropriate reduction of differently productive labour power to one uniform labour power. From this we can see that Marx's notion of value stands in startling contrast to Steedman's implicit assumption of predetermined quantities of abstract labour used in the two processes. Let us therefore reformulate Steedman's above example in a way that appears to be in the spirit of Marx.[17]

In order to express the different levels of labour productivity in the two processes we attach a productivity index π_I to the direct labour in process I and a productivity index π_{II} to the direct labour in process II $(\pi_I, \pi_{II} > 0)$. We have

$$5\Lambda_1^* + \pi_I = 6\Lambda_1^* + \Lambda_2^*$$

$$10\Lambda_2^* + \pi_{II} = 3\Lambda_1^* + 12\Lambda_2^* \tag{6}$$

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[17]A similar argument has been developed independently of the author by Krause [11].

Solving for "Marxian" values Λ_1^* and Λ_2^* yields

$$\Lambda_1^* = -2\pi_{\mathrm{I}} + \pi_{\mathrm{II}} \quad \text{and} \quad \Lambda_2^* = 3\pi_{\mathrm{I}} - \pi_{\mathrm{II}}$$

Now, Λ_1^* and Λ_2^* are clearly non-negative (strictly positive) if the ratio $\pi_{\mathrm{I}}/\pi_{\mathrm{II}}$ comes to lie within the closed (open) interval (1/3, 1/2). The interpretation of this result is obvious, if product 1 (2) notionally assumes a zero "price" (*i.e.* becomes a "free good"), labour productivity in terms of product 2 (1) is twice (three times) as high in process II as in process I and this is reflected by the fact that labour spent in process II *counts* twice (three times) as much as labour spent in process I, *i.e.* $\pi_{\mathrm{I}}/\pi_{\mathrm{II}} = 1/2$ (1/3).

System (6) contains two independent equations and four unknowns and has thus two degrees of freedom. This means that in the case in which both products are "useful things" (Marx), *i.e.* socially wanted, their labour values are indeterminate, even though the number of processes is equal to the number of commodities. If we normalise (6) by setting $\pi_{\mathrm{I}} + \pi_{\mathrm{II}} = \ell_1 + \ell_2$ we can determine arbitrarily a set of strictly positive values by attaching to $\pi_{\mathrm{I}}/\pi_{\mathrm{II}}$ any value from the open interval (1/3, 1/2). With strictly positive, although arbitrary, values there is no possibility of "negative" surplus value, hence the *FMT* is resurrected.[18]

Even if one does not accept the above adaptation of Marx's notion of value to Steedman's peculiar example of joint production, there do exist two further and convincing arguments, why Steedman's rejection of the *FMT* does not hold. The first argument is based upon Marx's concept of competition, the second upon the notion of exploitation.

Suppose that the whole annual labour of Steedman's model, *i.e.* two units of labour-time, is employed in the production with process II. The net product of this new system would be (6,4) of commodities 1 and 2 respectively, compared to (4,3) of the actual system. Thus, the net product of society could be considerably augmented by a mere transfer of labour away from the less productive process I and towards process II. The negative "value" Λ_1, calculated by Steedman, reflects this. $\Lambda_1 = -1$ means that the society can get an extra unit of commodity 1 by subtracting two units of labour from the production with process I and by adding one unit of labour to that with process II. Accordingly, the society can economize one unit of labour in total by producing one additional unit of commodity 1. Hence Steedman's "values" are employment multipliers *à la* Kahn and Keynes. We may ask now: What prevents the transfer of labour to the superior process II? It is Steedman's implicit assumption that any arbitrarily given final "demand" is exactly matched by the "supply" side of the economy; the overproduction

[18] It is even possible to fix the productivity indexes in such a way that the resulting values are strictly proportionate to the prices of production that are associated with a given real wage (or rate of profit). Obviously, this possibility is not restricted to our peculiar example. Indeed, the reduction problem can, in general, be "solved" in such a way that the transformation problem "disappears" altogether. However, there do exist two important objections to this procedure: First, this type of "reduction" is completely dissociated from Marx's fundamental idea that the capacity of labour power to create new value depends on its production and reproduction costs (see, for example, [15, pp. 168–9 and pp. 191–2]). Secondly, this method would imply that the set of reduction multipliers and thus the values of commodities are a function of production prices and thus the real wage (or the rate of profit); instead of being the *prius* of prices, values would be mere doublets of the former. Marx's criticism of "vulgar economy" is close at hand: "In the above *erroneous conception,* wages, profit and rent are three *independent* magnitudes of value, whose *total magnitude* produces, limits and *determines* the magnitude of the *commodity-value*" [17, p. 862; emphasis added].

of some commodities, which is a common feature of capitalist economies, is not allowed for. In a sense, Steedman's analysis is based on Say's law. Certainly, this is not a very convincing platform for a Marxist to stand on. If this premise is weakened, what will happen? In Marx's opinion capitalists purchase labour power for a specified period in order to squeeze the maximum possible productivity out of it during the labour process. This pattern of behaviour rules also the capitalists' choice of (new) techniques. Therefore, labour-saving and "capital"-augmenting technical progress will be the dominant form of technical change. The tendency towards substitution of machinery *etc.* for living labour and the ensuing rise in labour productivity are according to Marx absolutely necessary outcomes of the capitalist-controlled labour process. For, the introduction of labour-saving methods of production will replenish the reserve army of the unemployed, which in turn will exert a dampening influence on the real wage and thereby raise the rate of profit. If the above is true, it follows that the two processes in Steedman's example cannot co-exist over a longer period of historical time. Since the battle of competition is fought by the cheapening of commodities, the capitalists that use process II will drive their competitors that use the inferior process I out of the market. This can lead to an overproduction and hence wastage of one of the commodities that may be compared, for example, to the wastage of energy in connection with fast breeders as it is observable in terms of the heating up of rivers whose water is used for cooling purposes. We may conclude that Steedman's analysis of joint production cannot be regarded as a counter-example to the *FMT*, since he neglects Marx's fundamental insights into the role of competition in capitalism. Competition weeds out any potential method of production that is inferior and that endangers the survival of the individual capitalist, who uses it.

Finally, it can be shown that there exists exploitation in Steedman's example, *i.e.* the labour-time that is necessary to (re)produce the bundle of wage goods of the working class is smaller than its total labour-time (see also [4], [20] and [22]). Clearly, the notion of exploitation, which is designed by Marx to describe the specific class character of the capitalist economy, is quite independent of the labour theory of value as a theory of commodity-values. We may demonstrate this by using Steedman's assumption [29, p. 186] that the real wage per unit of labour-time consists of the commodity bundle $y = (1/2, 5/6)$. Measured in terms of Steedman's "values", the "value" of labour power V, *i.e.* the labour "embodied" in the unit wage bundle, will be $V = 1/2 \, \Lambda_1 + 5/6 \, \Lambda_2 = 7/6$ and thus exceeds 1. The same result obtains if Garegnani's device of the "integrated wage-commodity industry" is used, which is a special type of Sraffian sub-system (*cf.* [7, p. 419] and [28, p. 89]). This fictitious system *en miniature* "produces" a gross product which equals the means of production used up plus the (exogenously given) basket of wage goods y. The whole living labour employed in this system can be regarded as directly or indirectly going to produce the unit wage basket. In mathematical terms the open Leontief-system $xB = xA + y$ has to be solved for the activity levels $x = (x_I, x_{II})$ of the two processes. We obtain

$$x = y(B - A)^{-1}, \quad \text{i.e.} \quad x_I = \frac{3}{2} \text{ and } x_{II} = -\frac{1}{3}$$

Therefore process I is activated at the positive level of 3/2, whilst the superior process II is activated at a (hypothetically) negative level of - 1/3. Total labour employed is then

given by $x\ell = 3/2 - 1/3 = 7/6 > 1$. Again, the negativity that creeps in is due to Steedman's implicit assumption that the wage goods have to be produced precisely in the given quantities of $1/2$ and $5/6$ respectively. If this odd assumption is relaxed, $5/12$ units of labour would suffice to produce the wage goods basket y and an extra $3/4$ unit of commodity 1, *if* the economy would use only the superior process II at the activity level of $5/12$. On the other hand, $5/6$ units of labour would suffice to produce y and an extra $2/6$ unit of commodity 1, *if* the economy would use only the inferior process II at the activity level of $5/6$. Clearly, $5/12 < 5/6 < 1 < 7/6$. Accordingly, there exists exploitation in Steedman's example. Therefore the latter cannot invalidate the *FMT*.

VII. CONCLUSION

Steedman's is a good book. It would be an even better one, if the author had spent more time on a thorough and correct interpretation of Marx's analysis in general and his notion of value and exploitation in particular. This combined with an adequate investigation of the (Ricardian and) Marxian roots of Sraffa's work could have prevented him from overemphasizing the impact of the Sraffa-type of analysis on Marx's political economy; indeed, it could have made him emphasize the impact of Marx's treatment of the value/price-problem on the genesis of Sraffa's method. The book owes its quality largely, if not mainly, to the logico-mathematical issues that it raises and that have not previously been perceived or solved by Marxists. The audience the book is addressing are particularly those still unconvinced by the recent criticism of Marx. However, since the book exhibits certain weaknesses in its Marx-expository parts, the "sectarian" critics of Sraffa might (erroneously) feel they have an easy task in evading the latter's message. This would of course be a complete *non sequitur*. On the other hand, even the most ardent admirer of Sraffa's treatise has to admit that with Sraffa we do not know much more about the working of the capitalist system and its laws of motion, but without Marx we would know considerably less. Steedman deserves the merit for having played the part of the *advocatus diaboli* in the Marxist discussion of the scope and content of Marx's *oeuvre*. Though it is true that with some people for friends you don't need enemies, it is also true that with many people for enemies Marxism does need friends of Steedman's kind in order not to degenerate to a sort of quasi-religious doctrine.

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