

The Negation of 'Negative Values'

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Within the multi-faceted critique directed at Marx's theory of value by those economists who base themselves on the work of Piero Sraffa, there is an area which has intrigued many if only because of the singularity of its very terms. I am referring to the debate on so-called 'negative values' and 'negative surplus-value', a debate initiated by Ian Steedman in 1975,¹ and since then a central feature of his critique of labour values.² To many, it seemed that since the extension of the Marxist theory of value to various fields (i.e. joint production and fixed capital) yielded such absurd results, there certainly had to be something irredeemably wrong about it. Given the impeccable nature of Steedman's mathematical argumentation, there seemed to be no escape route. The contradictions simply had to be admitted.

The truth is that the *mathematical* argumentation that leads to these results is based on a fallacious reconstruction of the *theoretical* structure of Marx's concept of value. It can be shown that in both cases, the demonstration rests on the unacceptable replacement of Marx's concept with another which is totally alien to it. The anomalies reached in this manner are then falsely presented as resulting from Marx's own theory. My purpose in this article is to argue that these anomalous results have no relationship to Marx's theory of value.³

1. Social Values

What I will do is to show that, contrary to his claims, Steedman reaches negative values and negative surplus-value through the application not of Marx's concept of value but of a totally erroneous and caricatured version of it.

In order to do this, one has to reduce the situation depicted by Steedman to its true dimensions. This situation is not joint

production pure and simple, as would have been the case if two commodities were produced by a single process. It is a situation where each of the two commodities in question is produced using two different processes, this is to say, there are prevalent in society two different production methods for each commodity. If, therefore, Marx's theory of value is to be applied to the situation in question, as Steedman claims to do, one has to follow Marx's own method of dealing with such questions. This is briefly what we shall first have to review.

In the first volume of *Capital*, where he investigates commodity and 'capital in general', that is capital in its sole relationship to wage-labour, Marx abstracts from the relations among different producers of the same commodity. Hence, the effects of these relations are excluded by the nature of the level of abstraction. In the investigation of the 'isolated commodity' of the first volume, the labour embodied in the commodity has to be socially necessary, no more, no less.⁴ That which determines socially necessary labour is defined as 'the conditions of production normal for a given society'.⁵ This first definition of socially necessary labour is, therefore, abstract: in other words, it is not explained how the category 'normal' is determined in the concrete. This category is indifferent to the various conditions of production that may exist in real life, be they conditions of average, high or low productivity with respect to the situation prevalent in society.

In the third volume, on the other hand, where the relations between various capitals are included in the investigation, the competition among producers within a single branch of production can no longer be abstracted from. This, of course, results in the analysis of situations where different capitals produce the same commodity with methods of differing productivity.

The concept of socially necessary labour is now subject to new determinations, beyond that generality appropriate to the level of abstraction made in the first volume. It is, in other words, made concrete. It now turns out that in a branch of social production where various capitals produce under different conditions of productivity, the social (or market) value of a unit of the commodity produced in this branch is determined by the division of the whole quantity of labour expended in the branch to the total mass of commodities produced in the branch. Commodities under different conditions of production have distinct individual values which are equalized, through a process, in the social value of the commodity.

In the context of this general approach, Marx investigates the effect which different conditions of production have in determining social value. A detailed analysis of this investigation is unnecessary for our purposes. What is important is the fact that, in different circumstances, different conditions of productivity may influence or determine social value. That is to say, social value can be determined by those producers who work at the lowest or highest levels of productivity, as well as those who work at average levels. It is, therefore, absurd to contend, as Steedman does in his debate with Morishima, that 'in his mature works, Marx repeatedly asserted that ... he would define the value of [a] commodity by reference to the average conditions of production and not by reference to the most (or least) favourable conditions.'⁶

That Steedman distorts Marx's position on this question should not obscure the even more important fact that for Marx the same commodity, when produced with different methods, has a multiplicity of individual values, none of which is in general equal to the social value of the commodity. The latter comes about only as a result of a process of equalization.

We are now ready to evaluate Steedman's claim that what he applies to the case of joint production is Marx's theory of value. Before embarking upon a detailed critique of Steedman's procedure, it is useful to point out that the result of negative surplus-value is entirely contingent upon the existence of negative values, so that, once the concept of negative values is done away with, there remains no problem to be solved with respect to negative surplus-value.

A second point of considerable importance is that, in the example which Steedman constructs,⁷ which analyses a situation where two commodities are produced jointly by two different processes, one of the processes represents a higher productivity of labour. That is to say, one process is more productive than the other.

Using Steedman's example, if one compares the two processes, the net product (in Sraffa's sense) of the first process contains one unit of each commodity, while the net product of the second contains three units of the first commodity and two of the second. This is no mere coincidence. It has been proved that negative values can only arise under such conditions. In other words, an absolute difference of productivity between the two processes is a necessary condition for the appearance of such negative values.⁸ Hence, if it can be shown that Steedman's method is inappropriate in this specific case, then the question of negative values will totally disappear.

Figure 1

	Inputs		Lab.	Outputs		Net product	
	Com- modity	Com- modity		Com- modity	Com- modity	Com- modity	Com- modity
	1	2	1	2	1	2	
Process 1	5	0	1	6	1	1	1
Process 2	0	10	1	3	12	3	2

2. The Equalization Process

Once this has been established, we can now proceed to investigate Steedman's example in the light of Marx's framework. In a system of one-product processes, given the values of all other commodities, the individual values of a certain commodity produced under several different conditions can be determined by recourse to the individual processes. With joint production, on the other hand, it is not possible to 'read off' individual values from individual processes, since at least some processes produce more than one commodity. Nevertheless, where an absolute difference exists between the two processes with respect to productivity, one fact can be established unequivocally: that the individual values of both commodities cannot be simultaneously equal for both processes. For instance, if the individual values of the first commodity are equal in the two processes, those of the second are necessarily unequal, and vice versa. Of course, in all probability, the individual values of both commodities will be different for the two processes, but as a special case one of the two commodities may have identical individual values in the two processes. However, even in such a case, this cannot be true for both commodities at the same time.

The proof is simple. Pick a commodity at random and assume that its individual values in the two processes are equal. Once due deduction is made for this commodity, the quantity of labour that remains for the second commodity in the first process is necessarily smaller than that remaining in the second process. This is because, in the second process, a greater amount has been produced of the first commodity, so that whatever value is allocated to this commodity in the first process, more has to be allocated in the second. On the other hand, more has been produced of the second commodity in the

second process than in the first. Therefore, to determine the value of the second commodity, a smaller amount of labour has to be divided into a larger number of units in the second process. Hence the individual value of the second commodity is necessarily smaller in the second process than in the first. Equality between individual values in the two processes is not possible for commodities simultaneously.

This result is very important, for it implies that in the context of an absolute difference in productivity between the two processes, the individual values in the two processes of at least one of the commodities are unequal. Hence a method consistent with Marx's has to investigate the method of equalization of these two distinct individual values. Steedman claims that he is applying Marx's method to his own special case. Yet what he does is to ignore this difference between the individual values (which has conclusively been proved) and to declare, through the use of simultaneous equations, their equality. Thus he totally sets aside Marx's own analysis regarding the determination of social value. Whereas Marx speaks of a process of equalization between distinct individual values, with Steedman these lose their quality of distinctness only to be assumed equal from the outset. Hence the existence of negative values. These arise as a result of the forcible equalization of distinct and unequal magnitudes.

It has, therefore, been shown that in the unique case where negative values can arise, Steedman has reached them by applying a theory of value different from Marx's. Hence the futility of his allegation that Marx's theory of value leads to self-contradictory results in the context of joint production. It is a caricature of the Marxist concept of value that leads to these absurdities. Of course, as has already been noted, once the existence of negative values is disproved, so is the existence of negative surplus-value, so that there is no contradiction in either the theory of value or the theory of surplus-value developed by Marx.

Although it has already been proved that Steedman's method of simultaneous equations is patently inappropriate for representing Marx's method, it may still be necessary to dwell upon Steedman's own claim that the former method is in fact due to Marx. Since the method of simultaneous equations does not occur in Marx's own voluminous work, Steedman bases his claim on Marx's calculation of value through the addition of that part of constant capital used, variable capital and surplus-value. In either of the following cases, it can be regarded as appropriate to express this method of calculation through the use of simultaneous equations: firstly, if each commodity

is produced by a single method or, secondly, if individual values have already been reduced to social values. However, if and when there exist more than one method of production for a commodity, it is impossible to determine the social values of this commodity simultaneously with the others by the use of a system of equations.

There are two reasons for this, one theoretical, the other formal. The theoretical reason is that this method assumes equal individual values where there are only unequal magnitudes. The formal reason is, very simply, that if two production equations are included in the system but in both cases the same identical value is attributed to the commodity, the number of equations will exceed the number of unknowns and the system will be indeterminate. Hence the method of simultaneous equations is inappropriate for the reduction of distinct individual values into one social value. Note that this is true even in the general case, before joint production is introduced. Not being valid in the general case, naturally it cannot be extended to Steedman's case. Therefore Steedman's claim that he is applying Marx's method to joint production falls to pieces. The 'difficult' problems of negative values and the coexistence of positive profits with negative surplus-value are no more than pseudo-problems that arise from mistaking mathematical relations for real relations.

One final point before we leave the matter. Not only is the method applied by Steedman to the analysis of joint production not Marx's method, but, equally, this method is itself internally inconsistent. According to Steedman, value is determined by the labour embodied in commodities, which in its turn is totally dependent upon the method of production used. In his own example, two different methods of production are used for the production of each commodity and, consequently, the quantity of labour embodied in the commodity is different in the two processes. The value of the commodity when produced in one process should therefore be different from that of the same commodity when produced in the other. Steedman contradicts himself by assuming these different, individual, values of the commodities to be equal.

3. Fixed Capital

A third area where Steedman claims to have shown an inconsistency is in Marx's treatment of fixed capital. This question is also important because the significance of joint production for the theory of value has been defended not on the grounds of 'pure' joint production but on

the contention that joint production is the only method of satisfactorily dealing with fixed capital. In what follows, both contentions will be seen to be wrong. Limitations of space do not permit the reproduction of Steedman's arithmetic examples. The interested reader is referred to the relevant chapter of his book.⁹

Steedman's point of departure is the observation that value depreciation with respect to time may not be linear, for example a machine may turn out to be less efficient in the first year of its life and more efficient in the following years. He admits that Marx is aware of this fact but assumes linear depreciation as a first abstraction. He claims, however, that once this first level of abstraction is abandoned, Marx's method of treating fixed capital, namely the transfer of value to the final product, can lead to self-contradictory results. To show that this is the case, he constructs an example where the same machine of different ages is used by different capitals. His first step is to reach two different values for the same commodity, produced by the use of these machines of differing ages, through the application of Marx's method. What is more, both of these values are different from the 'correct' value, calculated by the use of the net product method. Therefore, concludes Steedman, the use of this method within Marx's theory of value leads to internally inconsistent results.¹⁰

According to him the correct method of calculation is to attribute different values to machines of different ages and solve the problem by means of a system of simultaneous equations. In other words, it is to treat fixed capital as a joint product. This does lead to consistent results but also to other sorts of bizarre consequences. Depending on the case, either the depreciation quota, that is the value transferred from fixed capital to the final product, or the value of fixed capital at the end of the period may turn out to be negative.¹¹ Hence even in those cases where it does not lead to unacceptable results, the theory of value ends up in a state of contradiction with its bases.

The problem seems serious indeed. Negative value transfer or a negative value for the used fixed capital is contradictory with the fundamentals of Marx's treatment. As Marx says, 'the means of production can never add more value to the product than they themselves possess independently of the process which they assist.'¹² This is contradicted by a negative value for fixed capital, for what this implies is, in effect, that fixed capital imparts to the final product more value than it possesses and thereby acquires a negative value. On the other hand, the value of the means of production 'is determined not by the labour process into which it enters as a means of production, but by that out of which it has issued as a product.'¹³ This is in blatant

contrast with negative value transfer. What happens in such a case is a flow of value from the product to fixed capital, or, in other words, the determination of the value of fixed capital by that process into which it has gone as a means of production.

All these important results are obtained, however, on the basis of unsound arguments. To show that this is the case, it is better to start with the second of Steedman's calculation methods. As in the case of joint production, this allegedly correct method relies on the forcible equalization of the unequal individual values of different species of a commodity produced under different conditions. It is of course very easy to show that individual values are not equal: different degrees of efficiency having been assumed for the different ages of the machines, equal numbers of living labour will produce unequal quantities of the commodity in the different cases. This of course implies unequal individual unit values.

What should have been done, on the contrary, is to admit the inequality of individual values and to investigate the process of the formation of social value. The answer to this correct question is not difficult to provide, since as 'the means of production transfer their value to the product only in so far as they lose their exchange-value along with their independent use-value',¹⁴ they impart to each unit that can be produced during their lifespan the same amount of value. Which means that the basis of Marx's conception is linear depreciation not with respect to time but with respect to use-value. In this case, the value of each such unit is equal in magnitude. During those years in which the means of production are less or more efficient than average, individual value rises above or falls below social value. In the first case, the capital in question receives a lower rate of profit than average, in the second, it is the opposite that holds. But calculated over the whole lifespan of the instrument, the rate of profit of both the branch and the individual capital that uses this instrument is equal to the general rate of profit.

The application of Steedman's allegedly 'correct' method is not only inconsistent with the bases of value theory, it also produces absurd results. To take but a single instance, if this method is adopted but the example is modified, the value of the commodity will fluctuate from one year to another.¹⁵ That this result is absurd in the context of the theory of value is obvious, for the products of the various years will have different social values even though all are produced under what Marx calls 'normal' conditions prevalent in society. But this is secondary. What is of primary importance is that Steedman has arrived at negative-value transfer and negative fixed-capital value not

by applying Marx's method but by abandoning it. Therefore, these results have nothing to do with Marx's theory of value.

Once this is understood, it is easy to see that value calculation according to Marx's own method, that is value transfer to the final product proportional to use-value depreciation, is totally consistent and adequate. It was already noted that Steedman obtains three different values for the same commodity through the application of this method. Once it is grasped that two of these three values are the individual values related to two different production processes, it is very simple to explain firstly, why these values are not equal to each other, and secondly, why both of them are distinct from and not equal to the third, which is social value. In fact, far from being the symptom of an inconsistency, this result is a perfect manifestation of the logical coherence of Marx's work in its totality. The analysis of fixed capital merges here into the analysis of the formation of social value in the context of the existence of different methods of production for a commodity. Steedman's allegations, both of inconsistency and of the necessity of the method of joint production in the treatment of fixed capital, fall to pieces on careful examination.

Conclusion

The argument presented in this article shows that the anomalous results reached by Steedman in his treatment of joint production and fixed capital have no bearing on Marx's theory of value, for they are derived on the basis of a total misrepresentation of the relevant aspects of this theory. Once this is seen, the mystique that surrounds the concepts of 'negative values' and 'negative surplus-value' vanishes. Non-existent in theory, 'negative values' are revealed to embody wasted intellectual labour in practice.

The rebuttal of the allegations concerning joint production and fixed capital removes yet one more foundation of the post-Sraffian critique of the Marxist theory of value. Of modest importance on its own, this result is significant insofar as it contributes to the all-sided demise of this supposed critique.