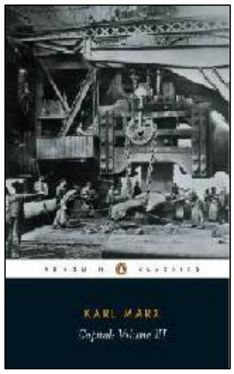
Transformation Problem: The Feedback Controversy
Ernest Mandel, Introduction to *Capital*, volume 3, 1981 (extract).



The feedback controversy arises from the fact that, in the way in which Marx solves the transformation of values into prices of production in Chapter 9 of Volume 3, apparently only the values of currently produced commodities (outputs) are being 'transformed' and not the values of 'input-commodities'. Ever since the Prussian statistician Ladislaus von Bortkiewicz first raised this objection[1],a constant stream of authors - some claiming to be Marxists, others obviously adhering to other economic doctrines or at any rate other theories of value - have repeated this assertion about a basic flaw in Marx's reasoning[2].

This 'flaw' seems, at first sight, all the more evident in that Marx himself appeared to be aware of it. Again and again, the following passage from Chapter 9 has been quoted: 'The development given above also involves a modification in the determination of a commodity's cost price. It was originally assumed that the cost price of a commodity equalled the *value* of the commodities consumed in its production. But for the buyer of a commodity, it is the price of production that constitutes its cost price, and can thus enter into forming the price of another commodity. As the price of production of a commodity can diverge from its value, so the cost price of a commodity, in which the price of production of other commodities is involved, can also stand above or below the portion of its total value that is formed by the value of the means of production going into it. It is necessary to bear in mind this modified significance of the cost price, and therefore to bear in mind too that if the cost price of a commodity is equated with the value of the means of production used up in producing it, it is always possible to go wrong'[3].

However, this quotation from Marx should not be made to say more than it does. It says only that *if one uses value calculations in inputs and prices-of-production calculations in outputs*, then one is likely to arrive at numerically erroneous conclusions. This is rather obvious, since the whole analysis precisely concerns the deviation of prices of production from values. But the extract cited does not imply that prices of production of inputs should be calculated *within the same time-span* as prices of production of outputs. Such an interpretation is even explicitly rejected in a passage which immediately follows that quoted by von Bortkiewicz and so many

[1] See Ladislaus von Bortkiewicz, 'Value and Price in the Marxian System', *International Economic Papers*, 1952.

[2] It is impossible to give a full list of these authors. Three works less well known in the English-speaking world may be mentioned here: Gilbert Abraham-Frois and Edmond Berrebi, *Théorie de la valeur, des prix et de l'accumulation*, Paris, 1976; C. C. von Weiszacker, 'Notizen zur Marx'schen Wertlehre', in Nutzinger and Wolfstetter, *Die Marx'sche Theorie und ihre Kritik*, Frankfurt, 1974; Gilles Dostaler, *Valeur et prix, histoire d'un débat*, Paris, 1978.

[3] Marx, *Capital*, volume 3, p.264-265.

others: 'Our present investigation does not require us to go into further detail on this point. It still remains correct that the cost price of commodities is always smaller than their value. For even if a commodity's cost price may diverge from the value of the means of production consumed in it, this error in the past is a matter of indifference to the capitalist. *The cost price of the commodity is a given precondition, independent of his, the capitalist's production*, while the result of his production is a commodity that contains surplus-value, and therefore an excess value over and above its cost price'[4] (my italics).

And even more clearly: 'For all the great changes that constantly occur in the actual rates of profit in particular spheres of production (as we shall later show), a genuine change in the general rate of profit, 'one not simply brought about by exceptional economic events, is *the final outcome of a whole series of protracted oscillations*, which require a good deal of time before they are consolidated and balanced out to produce a change in the general rate. In all periods shorter than this, therefore, and even then leaving aside fluctuations in market prices, a change in prices of production is always to be explained *prima facie* by an actual change in commodity values, i.e. by a change in the total sum of labour-time needed to produce the commodities'[5]. (my italics).

In other words, inputs in current cycles of production are *data*, which are given at the start of that cycle, and *do not have* a feed-back effect on the equalization of the rates of profit in various branches of production during that cycle. It is sufficient to assume that they are likewise calculated in prices of production and not in values, but that these prices of production result from equalization of rates of profit during the *previous* cycle of production, for any inconsistency to disappear.

Such an assumption eliminates the logical inconsistency of which von Bortkiewicz and his followers accuse Marx, between supposedly calculating inputs in the form of values and outputsin the form of prices of production. But is it compatible with what we know about the actual operation of capital movements in a given time-span (a year, for example)? Could it not, for instance, be argued that raw-material prices fluctuate constantly, changing many times during one year: hence one may assume that, where this is the case, feedback effects do indeed occur; and that the final equalization of the rate of profit is not only a function of redistribution of surplus-value between branches of production whose commodities can be considered only as industrial outputs, but should include, at least with regard to raw materials, part of the inputs as participating in the current (annual) redistribution of surplus-value between various branches?

This objection, however, is not a valid one. I repeat, prices of production of raw materials, like all other inputs bought by capitalists currently occupied in production, are *unchangeable data*. They cannot vary through ups or downs of current production

[4] Marx, idem, p.265 (my italics).
[5] Marx, idem, p.266 (my italics).

of surplus-value, or current changes in the organic composition of capital occurring during a given year. The capitalists have to pay a *given* price for them, which does not change *a posteriori* as a function of what is occurring during a given year in the field of final surplus-value redistribution. They are results of the equalization of the rate of profit which occurred during the previous period. Even if one were to assume that capitalists buy their raw materials currently and not only at the beginning of the year, and even if one were to eliminate all existing stocks of previously produced raw materials to explain the origin of these current purchases, the argument would still hold.

The formation of prices of production, i.e. the calculation of the average rate of profit, is not a constantly moving process. It is linked to the overall realization of surplus-value of *all* (most) of the commodities currently produced. That is why a minimum time-span must be assumed before one may speak of a new average rate of profit replacing a previous one. Even the assumption of such an annual change is probably an exaggeration, rather than an underestimate. Therefore, one has to assume that currently purchased raw materials on a quarterly or even monthly basis do not fundamentally change the prices of production (average rate of profit), as resulting from the capital movements which had occurred during the previous year. One should, of course, not confuse the formation of prices of production (which result from a redistribution of the total surplus-value produced for society as a whole) with current fluctuations of market prices, which Marx explicitly *excludes* from the study of prices of production, as is clearly stated in the passage cited above.

The reason for this relative rigidity of prices of production (of average rates of profit in a given country) is linked to the very nature of the processes of which the equalization of rates of profit is a result: the determination of the total mass of surplus-value (surplus labour) produced; and the fluxes and refluxes of capital (large-scale capital movements) between various branches of production, determining changes and differences in the organic composition of capital both of productive sectors as a whole and of each productive sector taken separately. It is clear that such *overall social movements* cannot vary from quarter to quarter, let alone from month to month. The relative indivisibility of fixed capital alone is a formidable obstacle to such broad movements under advanced capitalist conditions, except in the case of radical devalorization of capital under conditions of severe crisis. Therefore, not only is Marx theoretically consistent when he assumes prices of production of inputs resulting from equalization movements in different time-spans (during different years) from prices of production of outputs. This also corresponds much more closely to the real, empirically verifiable operation of the capitalist system as we know it than does the opposite assumption of von Bortkiewicz and his followers.

Numerous attempts have been made both to extend von Bortkiewicz's critique of Marx's solution to the transformation problem, and to provide an alternative solution to that proposed by von Bortkiewicz himself. J. Winternitz sought to formulate one in which total prices of production would still equal total value. More recently, Anwar Shaikh has proposed yet another solution, using the 'iterative method' rather than that of simultaneous equations[6]. However, mathematical models cannot, in and of themselves, 'solve' theoretical problems. They can only formalize interrelations previously understood as such, whose nature and implications have to be grasped before a meaningful formalization can take place. Unfortunately, many authors of such models operate by silently assuming correlations which have not been previously proved or empirically tested. Their equations lead to conclusions which are, of course, mathematically consistent, but may nevertheless be theoretically wrong: i.e. which do not correspond to a meaningful representation of the problem supposedly to be solved.

In the 'Okishio theorem', for instance, the author puts fixed capital between brackets altogether, in order to arrive at conclusions regarding the trend of the rate of profit. But if one postulates that precisely the growth of fixed capital is one of the main - if not the main - determinant of the tendency of the rate of profit to decline, then this theorem does not prove anything[7]. Similarly, in the von Bortkiewicz 'solution' of the transformation problem (accepted by Paul Sweezy, Piero Sraffa, F. Seton and many others), besides uniform profits for all products (not all branches of industry or even firms, which is quite another story), it is assumed that only those equations are needed for a solution which involve commodities entering into the production of other commodities. It is logical that, under these circumstances, the organic composition of department III (whose commodities do not enter the reproduction process) does not influence the average rate of profit[8]. But this tells us nothing either about department III in Marx's analysis, where such a distinction is explicitly excluded, or especially about what happens in the really functioning capitalist economy, i.e. in real life. To say that the organic composition of the armaments industry, including its size, is .immaterial to the real rate of profit of a real capitalist economy is quite untenable -especially if one takes a look at the size of that department in, say, 1943 in Germany or 1944 in the U.S.A.

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[6] J. Winternitz, 'Values and Prices: A Solution of the So-Called "Trans formation Problem"', in *The Economic Journal*, June 1948; F. Seton, 'The "Transformation Problem"', in *Review of Economic Studies*, Vol. 24, 1957; C. C. von Weiszäcker and Paul Samuelson, 'A New Labor Theory of Value for Rational Planning, through Use of the Bourgeois Profit Rate', in *Proceedings of the National Academy of Sciences, U.S.A.*, Vol. 68, No. 6, June 1971; A Medio, 'Profit and Surplus-Value: Appearance and Reality in Capitalist Production', in E K. Hunt and Jesse Schwartz (eds.), *A Critique of Economic Theory*, London, 1972; Elmar Wolfstetter, 'Surplus Labour Synchronized Labour Costs and Marx's Labour Theory of Value', in *The Economic Journal*, Vol. 83, September 1973; Anwar Shaikh, 'Marx's Theory of Value and the "Transformation Problem"', in Jesse Schwartz (ed.), *The Subtle Anatomy of Capitalism*, Santa Monica, 1977; Ira Gerstein, 'Production, Circulation and Value', in *Economy and Society*, Vol. 5, 1976; etc. A good summary of the bibliography on the subject is included in Carlo Benetti, Claude Berthomieu and Jean Cartelier, *Économie classique, économie vulgaire*, Paris, 1975.

[7] N. Okishio, 'Technical Changes and the Rate of Profit', in *Kobe University Economic Review*, Vo1. 7, 1961, pp. 85-90; N. Okishio, 'A Mathematical Note on Marxian Theorems', in *Weltwirtschaftliches Archiv*, Vol. 91 (1963 11), pp. 287-99.

[8] I owe this observation to Emmanuel Farjoun, of the Hebrew University of Jerusalem.