RETHINKING MARXISM VOLUME 23 NUMBER 2 (APRIL 2011)

Recent Interpretations of the "Transformation Problem"

Fred Moseley

In recent decades, there has been a significant amount of new work and reinterpretations of the "transformation problem," which have defended Marx's theory against the long-standing criticism that Marx "failed to transform the inputs" of constant and variable capital. This essay reviews three such reinterpretations: the "new solution" of Duncan Foley and Gérard Duménil, my own "macromonetary" interpretation, and the Rethinking Marxism interpretation of Richard Wolff, Antonio Callari, and Bruce Roberts. I conclude that there is no logical inconsistency in Marx's theory, and that the alleged logical inconsistency is based on a misinterpretation of his logical method—in particular, his method of determination of constant and variable capital. I argue that this criticism of Marx's theory is based on class-inspired ideological grounds and not on canons of sound logic.

Key Words: Karl Marx, Transformation Problem, Logical Method

The question for this panel is: "What is at stake in the debates over Marxian value theory?" I think the answer to this question is pretty simple and straightforward. What is at stake is the *logical consistency* of Marx's theory of exploitation. Marx's theory is a very subversive theory. It concludes that the profit of workers is produced by the surplus labor of workers: that is, by the exploitation of workers. According to Marx's theory, capitalism is inherently an exploitative economic system; there is no way to avoid exploitation in capitalism. Not just low-paid workers in Wal-Mart or Bangladesh, but *all* workers are exploited in the sense that a part of the value they produce is appropriated by capitalists as profit. According to Marx's theory, without exploitation, there is no profit. And of course without profit, there is no capitalism.

Therefore, it is very important and necessary for capitalist ideology to discredit Marx's theory, to show that his theory is invalid, in order to discredit the subversive conclusion of exploitation. A long-standing criticism of Marx's theory involves the infamous "transformation problem" and allegation that there is a fundamental *logical inconsistency* in Marx's theory. More precisely, the criticism is that, in Marx's theory of prices of production in volume 3 of *Capital*, he "*failed to transform the inputs*" of constant and variable capital from values to prices of production. According to this interpretation, constant and variable capital are derived from given physical quantities of means of production and means of subsistence, and are first determined as the

ISSN 0893-5696 print/1475-8059 online/11/020186-12

DOI: 10.1080/08935696.2011.558752

values of these groups of commodities in volume 1 and then determined as their prices of production in volume 3. The criticism is that Marx failed to make this transformation of constant and variable capital in volume 3, but instead left these inputs in value terms. So his theory is judged to be logically incomplete and inconsistent. It is argued further that this mistake can be corrected, along the lines first suggested by Bortkiewicz in the early twentieth century, but it follows from this correction that Marx's two aggregate equalities (total price of production = total value and total profit = total surplus value) cannot both be true simultaneously, and also the rate of profit changes (so that the "value rate of profit $\neq$ price rate of profit"). This result means that individual prices and profits are not merely the redistribution of aggregate amounts of value and surplus value, as Marx claimed. This alleged logical inconsistency has been the main reason given over the past century by mainstream economists and others for the rejection of Marx's theory. It is concluded that Marx's theory of profit and exploitation is erroneous because it contains this logical contradiction.

Even most Marxists have largely accepted these criticisms of Marx's theory of prices of production—that he failed to transform the inputs and that the two aggregate equalities cannot both be true at the same time—although they draw different conclusions. Marxists have generally argued that these are minor problems and that they are not sufficient reason to reject Marx's theory, especially when compared with mainstream theories of profit, which have much more serious logical problems and much less explanatory power than Marx's theory.

I am sympathetic to the usual Marxian response. Mainstream economic theory has almost no theory of profit at all. The most important mainstream theory of profit over the past century has been the "marginal productivity" theory, and that theory has been shown in recent decades (in the "capital controversy") to contain much more serious logical inconsistencies than the alleged inconsistency in Marx's theory. This theory is being quietly abandoned in textbooks, both undergraduate and graduate, without discussion and without an alternative theory of profit. Therefore, if one wants a theory of profit today—and surely an adequate theory of capitalism should include its most important feature—Marx's theory provides the best theory of profit available by far.

In addition, I think an even stronger defense of Marx's theory can be made—that there is in fact *no logical inconsistency* in Marx's theory. Marx did *not* fail to transform the inputs of constant and variable capital from values to prices of production, and his two aggregate equalities are always true simultaneously. The alleged logical inconsistency is the result of a misinterpretation of the logical structure of Marx's theory, in particular the method of determination of the inputs of constant and variable capital. If one correctly understands the logical structure of Marx's theory, then his theory of prices of production in volume 3 is logically complete and consistent. There is no "transformation problem," at least not in the sense of a problem that Marx did not solve.

In the past two decades, there has been a significant amount of new work and reinterpretations of the "transformation problem" that have provided stronger defenses of Marx's theory along these lines. In the following, I will briefly review three of these recent reinterpretations of the "transformation problem."

The "New Interpretation"

The best known and most influential of the new work on the "transformation problem" has been called the "New Interpretation." It was presented originally, and independently, by Duncan Foley (1982, 1986) and Gérard Duménil (1980, 1983–4) in the early 1980s, and has since been adopted by Lipietz (1982), Mohun (1993), Glick and Ehrbar (1987), and others.[1] The main innovation of the New Interpretation is that it argues that *variable capital* is not derived from a given quantity of means of subsistence, but is instead *taken as given* directly, as the actual quantity of money capital advanced to purchase labor power in the real capitalist economy, which is equal to the *price of production* of the means of subsistence, not the value of the means of subsistence. Furthermore, this *same quantity* of variable capital is taken both in the theory of value in volume 1 and in the theory of prices of production in volume 3. In other words, variable capital *does not change* in the transformation of values into prices of production.

The "New Interpretation" also assumes that the aggregate value added also remains invariant in the transformation of values into prices of production, and redefines the aggregate price-value equality in terms of the net product rather than the gross product, which follows by definition from the invariance of value added. It follows further from the invariance of variable capital and aggregate value added that the total surplus value is also invariant, so that total profit = total surplus value. Therefore, according to the New Interpretation, both of Marx's two aggregate equalities, redefined in this way, are always true simultaneously.

However, the New Interpretation continues to accept the standard interpretation of *constant capital*. That is, it continues to assume that constant capital is *derived from given physical quantities* of means of production—first as the hypothetical value of the means of production, and then as their actual prices of production. Therefore, constant capital *changes* in the transformation of hypothetical values into actual prices of production, and Marx's gross aggregate price equality is not satisfied (and the rate of profit also changes). Thus, I argue that there is a fundamental methodological inconsistency in the New Interpretation between variable and constant capital: variable capital and constant capital are determined in different ways. Variable capital is taken as given as the actual money capital advanced to purchase labor power, but constant capital is derived from given quantities of means of production.

Furthermore, because of this interpretation of constant capital, the rate of profit cannot be determined as in Marx's theory—as the ratio of the total surplus value to the total capital invested—but is instead determined in the New Interpretation according to Sraffian theory, meaning it is derived from given physical quantities of inputs and outputs and determined simultaneously with prices of production (of both inputs and outputs). I think this is a very serious weakness of the New Interpretation. It appears that, with respect to the determination of the rate of profit (and hence prices of production), the New Interpretation version of the labor theory of value and surplus value is indeed "redundant," as its critics claim.

1. For a more complete discussion of the New Interpretation, see Moseley (2000; and forthcoming, chapter 9).

A "Macromonetary" Interpretation

My own work on the "transformation problem" extends the "new interpretation" to *constant capital* as well as variable capital, and thereby eliminates this inconsistency in the New Interpretation.[2] I argue that *both* variable *and* constant capital are determined in the same way in Marx's theory; they are both *taken as given* directly, as the *actual* quantities of money capital advanced to purchase means of production and labor power in the real capitalist economy. This is true not only for variable capital, but also (with parallel logic) for constant capital. And the crucial point is that these *same quantities* of constant and variable capital are taken as given in both the theory of value in volume 1 and in the theory of prices of production in volume 3. I argue that the New Interpretation only "goes halfway" in breaking away from the standard interpretation of Marx's theory, and that it should "go all the way" to a consistent "monetary" interpretation of the determination of the initial inputs of constant capital and variable capital in Marx's theory.

In several papers (Moseley 1993, 2000, 2001a), I have presented the following arguments and textual evidence to support this "monetary" interpretation of the initial inputs of constant capital and variable capital.

(1) The main argument is that the overall analytical framework of Marx's theory of value and surplus value and prices of production is the *circulation of money capital*, which is expressed symbolically as follows:

$$M - C \ldots P \ldots C' - M'$$

where

$$M' = M + \Delta M$$

This circuit describes the main question that Marx's theory is intended to analyze: what is the origin and magnitude of the $\Delta \mathbf{M}$ that emerges at the end of this process? This structure of the circulation of money capital suggests in two ways that the initial money capital $\mathbf{M}$ is taken as given, first, because the circulation of capital *begins with money*, and second, because the circulation of capital *begins in the sphere of circulation*, prior to production, with the advance of money to purchase means of production and labor power. The initial $\mathbf{M}$ is the starting point of the circulation of money capital, and it is the starting point of Marx's theory of the circulation of money capital. The initial M that is advanced in the sphere of circulation prior to production is taken as given in Marx's theory of how this given amount of money becomes more money at the end of the circuit. Constant capital and variable capital are of course the two components into which the initial presupposed money capital is divided (i.e., $\mathbf{M} = \mathbf{C} + \mathbf{V}$).[3]

2. See Moseley (forthcoming) for a book-length exposition of this interpretation.

3. An anonymous referee argues that this emphasis on the circulation of money capital involves a "fallacy of composition." It is argued that it is legitimate to analyze an individual capital as going through the circuit of money capital, but this makes no sense for the total social capital. The total social capital cannot all be in the form of money at the beginning of the circuit at the same time. Some of the total social capital must be in the form of means of production in order for money capital to be able to purchase means of production.

I argue that this criticism is based on a misunderstanding of my interpretation as a "period model" (e.g., like Sraffa's theory) in which all capitals go through the circuit in lockstep, from

The standard interpretation of Marx's theory ignores the circulation of money capital altogether, and assumes that the initial givens in Marx's theory are the *physical quantities* of inputs (means of production and the real wage). This interpretation implies that the inputs to capitalist production are merely physical quantities without prices rather than commodities with already existing prices (see [3] below). It is as if the symbolic representation of Marx's analytical framework were:

$$Q \ldots P \ldots C'$$

with no money, and no initial advance of money to purchase means of production and labor power in the sphere of circulation.

The New Interpretation of the analytical framework of Marx's theory is a kind of hybrid between the circulation of money capital and the standard interpretation in terms of physical quantities. Variable capital is assumed to be taken as given as the initial money capital advanced to purchase labor power in the sphere of circulation, but constant capital is derived from given physical quantities of means of production. Thus the new interpretation could be represented symbolically as:

$$\begin{array}{ll} M_v - C_{lp} & \\ & \ldots P \ldots C' - M' \\ Q_{mp} & \end{array}$$

The logical inconsistency of the new interpretation is evident in this symbolic expression.

(2) There are many passages in which Marx stated explicitly that the initial **M** in the circulation of capital is "*presupposed* to production" or "*postulated*" or "*pre-posited*" or "*given*." Either Marx was extremely sloppy in these many passages or Marx intended the usual methodological meanings of these terms: namely, that they are the initial data with which his theory begins. (It should be remembered that Marx had a Ph.D. in philosophy, with a specialty in logic, and that he paid a great deal of attention throughout the various drafts of *Capital* to questions of logical method.)

To take one important example, there is a long passage in the manuscript entitled "The Results of the Immediate Process of Production" (written in 1864–5 as a transition from volume 1 to volume 2, and published for the first time in English in 1977 in the Vintage edition of volume 1 of *Capital*), which clearly states that the "*point of departure*" for Marx's theory of surplus value is a "*given sum of money*" (Marx 1977, 976–7). Marx's theory is about the "transformation of money into

inputs to production to sale. However, my interpretation is not based on a period model of this type. All the individual circuits interact in complicated and nonsynchronized ways. But all the individual capitals begin with the advance of money capital and end with the recovery of money capital, and the price of the output (and hence the money capital recovered at the end of the circuit) depends in part on the capital advanced at the beginning of the circuit. The total capital advanced in a year (say) is the sum of all the individual capitals advanced in that year, and the total money capital recovered in that year is the sum of all the individual capitals recovered in that year. There is no fallacy of composition here. The circuit of money capital applies to each and every capital, and thus the total capital recovered and recovered is equal to the sum of the individual capitals advanced and recovered.

capital": that is, the transformation of a *given* initial sum of money into the "given amount of money + additional money." The main task of Marx's theory is to explain how the initial given sum of money is transformed into more money.

(3) There also are a number of passages which emphasize that the inputs to capitalist production (means of production and labor power) are *commodities*, which means that they have already been bought and sold in the sphere of circulation prior to production and thus that these commodity inputs *already have prices*. These already existing prices are *presupposed* in Marx's theory of value and surplus value and prices of production. These already existing prices of the means of production and labor power are identically equal to the magnitudes of the constant capital and variable capital that have been advanced to purchase these inputs. Both the prices of the means of production and labor power and the identical magnitudes of constant capital and variable capital advanced to purchase them are *presupposed* and become *determining factors* in Marx's theory of the value and surplus value and prices of production of the commodities produced. The clearest of these passages are from the little-known second draft of volume 1 of *Capital* in the *Manuscript of 1861–3* (which was published for the first time in English in 1988, in volume 30 of the new fifty-volume *Marx-Engels Collected Works*, published by International Publishers) and also in the "Results" manuscript mentioned above in (2).

(4) There is also Marx's repeated emphasis in part 2 of volume 3 (and elsewhere) that the "*cost price is the same*" in the determination of both the value and the price of production of commodities. The cost price consists of constant and variable capital. Since the cost price is the same for both values and prices of production, so are its two components, constant and variable capital. Therefore, in Marx's theory, constant and variable capital are *not supposed to be transformed* from values to prices of production. There is only one cost price, not two.

The main passages that make this point are five key paragraphs in the middle of chapter 9 of volume 3, including a recently discovered "missing paragraph" that is in Marx's *Manuscript of 1864–5* but is inexplicably missing from Engels's published version of volume 3 with which we are familiar.[4] These paragraphs state repeatedly, including in clear, unambiguous, algebraic formulations, that value = cost price + surplus value:

$$V = K + S$$

and that price of production = cost price + profit:

$$P = K + p'$$

The only difference between values and prices of production is the second component: surplus value or profit. Since the cost price is the same for both values

4. Marx's original manuscript has recently been published in full in German for the first time, but unfortunately the fifty-volume collection from International Publishers does not include an English translation of this key manuscript. This "missing paragraph" was recently discovered by Alejandro Ramos (1998). See Moseley (2001a) for an extensive discussion of these five key paragraphs.

and prices of production, the cost price (C + V) does not have to be transformed, and it is not a "failure" that Marx did not make such an unnecessary transformation.

(5) Another important argument is that this "monetary" interpretation of constant and variable capital is *consistent with the prior determination of the total surplus value:* that is, the determination of total surplus value prior to its division into individual parts. This is a very important aspect of Marx's theory, which I have discussed elsewhere (Moseley 1993, 1997, 2001b). The total surplus value is determined in volume 1 by the total class relation between the capitalist class as a whole and the working class as a whole. This total surplus value is then divided into individual parts in volume 3 as a result of the intraclass competition among capitalists. The distribution of surplus value in volume 3 takes as given the total surplus value, as already determined in volume 1. In particular, the rate of profit and prices of production (the most important aspect of the distribution of surplus value) takes the total surplus value as given, and determines the rate of profit as the ratio of this predetermined total surplus value to the total capital invested.

It follows straightforwardly from this monetary interpretation of the initial givens in Marx's theory that *both* Marx's two aggregate equalities (total price of production = total value and total profit = total surplus value) are always true simultaneously, and also that the rate of profit does not change. These two aggregate equalities are true not only for the special case of equal compositions of capital across industries, but also for the general case of unequal compositions of capital. These two aggregate equalities follow from the nature of Marx's logical method.

Therefore, I conclude that *there is no logical inconsistency* in Marx's theory of prices of production. Marx's theory of prices of production is logically consistent and complete. The alleged logical inconsistency is based on a misinterpretation of Marx's logical method—in particular, his method of determination of constant and variable capital, the two components of the initial money capital.

The Rethinking Marxism Interpretation

I call the third recent reinterpretation of the "transformation problem" to be discussed the "Rethinking Marxism" (RM) interpretation, because it has been presented by some of the leaders of Rethinking Marxism: Richard Wolff, Bruce Roberts, and Antonio Callari.[5]

The RM interpretation and mine are similar in arguing that *both* constant and variable capital are the *same* magnitudes in the determination of *both* values and prices of production, and that these magnitudes of capital are equal to the *prices of production* of the means of production and means of subsistence. This point of agreement is very important. As we have seen above, it means that constant and variable capital are not supposed to be transformed from values to prices of production, and that Marx did not fail to make this unnecessary transformation. Therefore, the main criticism of Marx's theory of prices of production over the past

5. For a more complete discussion of Rethinking Marxism, see Moseley (forthcoming, chap. 10).

century is mistaken. This point of agreement also implies that Marx's two aggregate equalities are always satisfied, as in my interpretation.

Another important similarity in our interpretations is the assumption that the production of surplus value should be analyzed to its distribution. The RM interpretation emphasizes that Marx's theory privileges *class*, and thus his theory begins with the total class relation between capitalists and workers. Volume 1 is about the total surplus value produced by the working class as a whole for the capitalist class as a whole, and volume 3 is about the distribution of surplus value among individual capitalists. In this way, the theory proceeds by "levels of argument" and "intermediate stages." However, we will see below that the class theory of the production of surplus value plays no role in their interpretation of the determination of the rate of profit (similar in this respect to the New Interpretation).

There are also several important differences between the RM interpretation and my "monetary" interpretation. In the first place, the RM interpretation argues that all the variables in Marx's theory—including constant capital, variable capital, and surplus value, and even profit and prices of production in volume 3—are defined in units of *labor time*. *Money* is almost entirely missing from the RM interpretation. The suggestion seems to be that the three volumes of *Capital* could have been presented entirely in terms of labor times. These labor times could also be expressed or measured in terms of money, but this is not an essential part of the theory, but serves only for purposes of convenient exposition or illustration.

I think this is a fundamental misinterpretation of Marx's theory, which misses entirely the overall analytical framework of Marx's theory, which is the *circulation of money capital*: **(M** ... **M** + Δ**M)**. It also misses the main phenomenon that Marx's theory is intended to explain: the origin and magnitude of the Δ**M** that emerges at the end of the circulation of money capital. Constant and variable capital are defined by Marx as the two components of the initial money capital advanced to purchase means of production and labor power at the beginning of the circulation of money capital (i.e., **M** is divided into **C**+**V**). Marx repeatedly referred to constant and variable capital as the "*money* capital advanced" or the "*money* laid out" or similar phrases. The RM interpretation of constant and variable capital in terms of labor time makes it appear as though capitalists somehow purchased means of production and labor power with payments of labor time, but this is clearly not the case in actual capitalism. Money, not labor time, is paid by capitalists to purchase means of production and labor power, and constant and variable capital are defined as these quantities of money capital.

A second important disagreement between the RM interpretation and my "monetary" interpretation is the way in which constant and variable capital are determined. I argue that they are taken as given ("presupposed"), as the actual quantities of money capital advanced to purchase means of production and labor power in the real capitalist economy: that is, as the initial **M** in the circuit of money capital (**M—C** ...). By contrast, the RM interpretation argues that constant and variable capital are derived from given physical quantities of means of production and means of subsistence, as the price of production of the given means of production

and means of subsistence. Symbolically, the RM interpretation could be represented in the same way as the standard interpretation:

$$Q \ldots P \ldots C'$$

without money and without the initial advance of money for means of production and labor power in the sphere of circulation. The difference between the RM interpretation and the standard interpretation is that, in the former, constant and variable capital are not first determined as the values of the means of production and means of subsistence, and then later determined as the prices of production of these groups of commodities. Instead, constant and variable capital are determined as the prices of production of the means of production and means of subsistence in the determination of both the values and the prices of production of the outputs.

Another important difference between our interpretations is the method of determination of the rate of profit. I have argued above that, according to Marx's theory, the rate of profit is determined by the aggregate ratio of the total surplus value to the total capital invested, and the total surplus value is determined by the volume 1 macro theory and then taken as given (predetermined) in the volume 3 micro theory of the rate of profit and prices of production. Thus, there is a direct logical connection between Marx's theory of surplus value and his theory of the rate of profit; the former is the precondition of the latter.

In contrast, in the RM interpretation, there is *no logical connection* between the theory of surplus value and the determination of the rate of profit (similar to the New Interpretation in this respect). The total surplus value plays no role whatsoever in the determination of the rate of profit. Instead, Marx's theory of surplus value and the rate of profit is abandoned, and the rate of profit is determined according to Sraffian theory—derived from given physical quantities of inputs and outputs and determined simultaneously with prices of production (of both inputs and outputs). This Sraffian determination of the rate of profit is completely independent of the "class" theory of surplus value in volume 1.

A final important difference between our interpretations, which is related to all the above differences, is whether Marx's theory is based on the method of sequential determination or simultaneous determination. I argue that Marx's theory is based on the method of sequential determination, in two senses: the total surplus value is determined prior to the determination of the rate of profit and prices of production; and constant and variable capital are taken as given in the determination of the value and surplus value and prices of production. The circuit of money capital, which is a real process in real historical time, can be theorized only with sequential determination.

Wolff, Roberts, and Callari (1984), on the other hand, argue that Marx's theory is based on the method of simultaneous determination, similar to the Sraffian interpretation of Marx's theory. The rate of profit and the prices of both inputs and outputs are all determined simultaneously. I argue that the method of simultaneous determination cannot be applied to Marx's theory. The circuit of money capital and

the prior determination of the total surplus value cannot be theorized with the method of simultaneous determination.[6]

Therefore, even though the RM interpretation assumes that constant and variable capital are the same in the determination of both values and prices of production (and this is an important advance), I argue that their definition of all the Marxian variables in terms of labor time, their derivation of constant and variable capital from given physical quantities, their determination of the rate of profit, and their use of the method of simultaneous determination are misinterpretations of Marx's theory.[7]

Conclusion

My general conclusion is that there have been significant new reinterpretations of the so-called transformation problem in recent decades, which provide even stronger defenses against the widespread criticism of logical inconsistency in Marx's theory. I myself argue that there is no logical inconsistency in Marx's theory and that the alleged logical inconsistency is based on a misinterpretation of Marx's logical method—in particular, Marx's method of determination of constant and variable capital. Marxists should embrace this conclusion, and mainstream economists and others will have to deal with it. It will become all the more obvious that the long-standing criticism of Marx's theory is based on class-inspired ideological grounds and not on canons of sound logic.

6. Another recent reinterpretation of the "transformation problem" is the so-called Temporal Single System (TSS) interpretation, presented by Kliman and McGlone (1988). The TSS interpretation was the first to emphasize that Marx's theory is not based on the method of simultaneous determination, which is a very important contribution. However, the TSS interpretation argues that the transformation of values into prices of production takes place over a number of successive periods, which are understood to be real historical periods. Within any one period, the TSS interpretation is similar to my interpretation in that it assumes that both constant and variable capital are taken as given (as quantities of money capital advanced to purchase means of production and labor power), from which it follows that Marx's two aggregate equalities are always true. However, over successive periods, the TSS interpretation is similar to the standard interpretation in that it assumes that both constant and variable capital change from period to period, and that only one of Marx's two aggregate equalities is true over successive periods.

7. David Kristjanson-Gural (2008) has added money to the Rethinking Marxism interpretation of Marx's theory, which is an improvement. However, it remains true in his extended model that the rate of profit does not depend in any way on Marx's labor theory of value and surplus value. Instead, the rate of profit continues to be determined by a Sraffian-type equation based on physical input-output coefficients.

Furthermore, Kristjanson-Gural's extension of the RM interpretation is based on the "price of production of gold," and I have argued (Moseley 2005) that the "price of production of gold" has no meaning in Marx's theory. The price of production of a commodity in Marx's theory is a *quantity of gold* that is equivalent to the given commodity, and *gold cannot be its own equivalent*. 2 oz. of gold = 2 oz. of gold does not compare the value of gold with the value of all other commodities. As Marx put it, "money has no price" (1977, 189). Therefore, neither the "direct price of gold" nor the "price of production of gold" exists in Marx's theory. Kristjanson-Gural cites my 2005 essay, but he does not respond to this argument.

This conclusion also strengthens the argument that the best theory of profit by far is Marx's theory, which demonstrates that profit is produced by the exploitation of workers. Capitalism is an economic system based on the exploitation of workers, and there is no logical inconsistency in Marx's theory to weaken this subversive conclusion.

References

Duménil, G. 1980. *De la valeur aux prix de production*. Paris: Economica.

——. (1983–4). Beyond the transformation riddle: A labor theory of value. *Science and Society* 47 (Winter): 427–50.

Foley, D. 1982. The value of money, the value of labor-power, and the Marxian transformation problem. *Review of Radical Political Economics* 14 (Summer): 37–49.

——. 1986. *Understanding Capital: Marx's economic theory*. Cambridge, Mass.: Harvard University Press.

——. 2000. Recent developments in the labor theory of value. *Review of Radical Political Economics* 32 (1): 1–39.

Glick, M., and H. Ehrbar. 1987. The transformation problem: An obituary. *Australian Economic Papers* 26: 294–317.

Kliman, A., and T. McGlone. 1988. The transformation non-problem and the non-transformation problem. *Capital and Class* 35: 56–82.

Kristjanson-Gural, D. 2008. Money is time: The monetary expression of value in Marx's theory of value. *Rethinking Marxism* 20 (2): 257–92.

Lipietz, A. 1982. The "so-called transformation problem" revisited. *Journal of Economic Theory* 26 (February): 59–88.

Marx, K. 1977. *Capital*. Vol. 1. New York: Random House.

Mohun, S. 1993. A re(in)statement of the labor theory of value. *Cambridge Journal of Economics* 18: 391–412.

Moseley, F. 1993. Marx's logical method and the transformation problem. In *Marx's method in "Capital": A reexamination*, ed. F. Moseley. Atlantic Highlands, N.J.: Humanities Press.

——. 1997. The development of Marx's theory of the distribution of surplus-value. In *New investigations of Marx's method*, ed. F. Moseley and M. Campbell. Atlantic Highlands, N.J.: Humanities Press.

——. 2000. The new solution to the transformation problem: A sympathetic critique. *Review of Radical Political Economics* 32 (2): 282–316.

——. 2001a. Marx's alleged logical error: A comment on Laibman. *Science and Society*.

——. 2001b. Hostile brothers: Marx's theory of the distribution of surplus-value in volume 3 of *Capital*. In *The culmination of Capital: Essays on volume 3 of* Capital, ed. G. Reuten and M. Campbell. London: Palgrave.

——. 2005. Money has no price: Marx's theory of money and the transformation problem. In *Marx's theory of money: Modern reappraisals*, ed. F. Moseley. London: Palgrave.

——. Forthcoming. *Money, totality and time: Marx's logical method and the transformation problem*.

Ramos-Martinez, A. 1998. Value and price of production: New evidence on Marx's transformation procedure. *International Journal of Political Economy* 28 (4): 55–81.

Wolff, R., B. Roberts, and A. Callari. 1982. Marx's (not Ricardo's) "transformation problem": A radical reconceptualization. *History of Political Economy* 14 (4): 564–82.

——. 1984. A Marxian alternative to the "transformation problem." *Review of Radical Political Economics* 16 (2–3): 115–35.