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M – C – M' and the End of the "Transformation Problem"

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Abstract:

The main reason for rejecting Marx's theory over the last century has been the infamous "transformation problem". The critics argue that in Marx's theory of prices of production he "failed to transform the inputs" of constant capital and variable capital from values to prices of production and thus Marx's theory is logically incomplete and inconsistent. This paper argues that Marx did *not* "fail to transform the inputs" because the inputs of constant capital and variable capital are *not supposed to be transformed*. Instead, constant capital and variable capital are *supposed to be the same* in the determination of both values and prices of production – the actual quantities of money capital advanced to purchase means of production and labour-power at the beginning of the circuit of money capital (M – C – M') which are taken as given – and thus Marx's theory of prices of production is logically coherent and complete. An algebraic summary of this "monetary" interpretation of Marx's theory is presented in Section 3. And examples of the textual evidence to support this "monetary" interpretation are presented in Section 4.

Keywords: Marx, Transformation problem, Macro, Monetary, Capital

Money therefore forms the **starting-point** and the conclusion of every valorization process. (Marx 1977a, p. 255)¹

The main reason for rejecting Marx's theory over the last century has been an alleged *logical* problem – the infamous "transformation problem". The transformation problem has to do with the apparent contradiction between the labour theory of value and the tendency toward equal rates of profit across industries with unequal compositions of capital (the ratio of constant capital to variable capital). The labour theory of value seems to imply that industries with unequal compositions of capital should have unequal rates of profit, which is contrary to the tendency of capitalist economies toward equal rates of profit across industries. The critics argue that Marx attempted to resolve this contradiction with his theory of prices of production in Part 2 of Volume 3 of *Capital*, but he failed to solve the problem, because he "*failed to transform the inputs*" of constant capital and variable capital from values to prices of production. He left the inputs of constant capital and variable capital in value terms, and this is logically contradictory, because inputs in some industries are also outputs of other industries, and inputs cannot be purchased at values and sold at prices of production in the same transaction. This was Marx's crucial mistake, according to the critics. Critics point to Marx's tables in the beginning of Chapter 9 which they say clearly show the alleged "problem": constant capital and variable capital are the same in the determination of both values and prices of production, and this is a logical contradiction.

The critics argue that Marx's mistake can be corrected, using a method first suggested by Bortkiewicz in 1905, which utilises a system of equations in which the prices of the inputs are determined simultaneously with the prices of the outputs and the rate of profit. However, the Bortkiewicz method of determination of prices of production results in the following conclusions that are damaging to Marx's theory: Marx's two aggregate equalities cannot both be true at the same time, the price rate of profit is not equal to the value rate of profit, and the two rates of profit may have different trends. Therefore, the critics conclude, Marx's labour theory of value is logically inconsistent and should be rejected.

Of course, there has been a long controversy over the transformation problem, with many participants, including some innovative interpretations in recent decades. In this paper, I will not try to summarise this long debate, but rather present my own interpretation. Part II of my recently published book presents a separate chapter on each of the following interpretations of the transformation problem: the standard or

Sraffian interpretation, Shaikh's iterative interpretation, the New Interpretation, the Temporal Single System Interpretation, the Wolff-Roberts-Callari interpretation, and the Fine-Sadd Filho interpretation. (Moseley 2016)

I argue, both in my recent book and in this paper that, contrary to the critics, Marx did *not* "fail to transform the inputs from values to prices of production" because the inputs of constant capital and variable capital are *not supposed to be transformed*. Instead, constant capital and variable capital are *supposed to be the same* in the determination of both values and prices of production, as in Marx's tables, and that Marx's theory of prices of production is logically coherent and complete, and thus that this long-standing logical criticism of Marx's theory is *not valid* and is not a valid reason to reject Marx's theory.

My interpretation emphasises the *logical method* employed by Marx in the construction of his economic theory in *Capital* (i.e. the *logical structure* of *Capital*), and reconsiders the "transformation problem" from this perspective of Marx's overall logical method. Since the debate is about the *logical consistency* of Marx's theory, an appropriate evaluation of logical consistency of Marx's theory obviously requires a correct understanding Marx's logical method. I argue that, if Marx's logic is correctly understood, then *there is no transformation problem in Marx's theory*, i.e. Marx's theory of prices of production in Volume 3 is logically consistent and complete.

Marx stated in the Preface to the 2nd German edition of Volume 1:

That the method employed in *Capital* has been little understood is shown by the various mutually contradictory conceptions that have been formed of it. (Marx 1977a, p. 99)

Unfortunately, I think that Marx's method is still not adequately understood today.

I argue that there are two main aspects of Marx's logical method that are especially relevant to the transformation problem, and I characterise these two aspects in modern economic terms as *macroeconomic* and *monetary*. Marx's theory is primarily a *macroeconomic* theory (mainly about the *total surplus-value* produced in the economy as a whole) and is also primarily a *monetary* theory (the main variables that are determined in the theory are monetary variables and especially the total surplus-value that is determined in Marx's theory is a *monetary* variable - ΔM , to use Marx's striking abbreviation).

In the first two sections of this paper, I discuss in turn these two main aspects of Marx's logical method, with primary emphasis in this paper on the monetary aspect, because it is the most controversial. Section 3 then presents an algebraic summary of this macro-monetary interpretation of Marx's theory, and Section 4 is a brief summary of the textual evidence that supports my interpretation of the monetary aspect of Marx's logical method.

1. Macro: two levels of abstraction and the prior determination of the total surplus-value

I argue that there are *two main levels of abstraction* in Marx's theory: the *production* of surplus-value in Volumes 1 and 2 (i.e. the determination of the total surplus-value produced in the economy as a whole) and the *distribution* of surplus-value in Volume 3 (i.e. the division of the total surplus-value into individual parts; first the equalization of profit rates across industries, and then the further division of the total surplus-value into commercial profit, interest, and rent).

The key point about this logical method is that the production of surplus-value is *theorised prior* to the distribution of surplus-value, i.e. the *total surplus-value* produced in the economy as a whole is determined *logically prior* to the *division* of the total surplus-value into individual parts. The total surplus-value is determined in the first level of abstraction (the production of surplus-value), and then this total is taken as a *predetermined given* amount in the second level of abstraction (the distribution of surplus-value or the subsequent division of the total surplus-value into its individual parts).

This logical progression from the total surplus-value to the individual parts of surplus-value *follows directly from Marx's labour theory of value and surplus-value*. According to Marx's theory, all the individual parts of surplus-value come from the *same source* – the surplus labour of production workers. Therefore, the total surplus-value must be determined first – by surplus labour – and then this total surplus-value is divided into the individual parts, and these individual parts also depend on other factors besides surplus labour (e.g. competition among capitalists which tends to equalise the rate of profit).

Marx referred to these two levels of abstraction in his theory in Hegelian terms as *capital in general* and *competition*, or *many capitals*. I have argued in Moseley 2014 that this aspect of Marx's logical method was influenced by Hegel's logic of the

Concept, and especially the moments of the Concept of *universality* (capital in general) and *particularity* (many capitals).

In the language of modern economics, we could refer to the first level of abstraction as a *macroeconomic* level of abstraction (the total economy) and the second as a *microeconomic* level of abstraction (the individual industries).²

To take the most important and relevant example, in Marx's theory of *prices of production* in Part 2 of Volume 3, the total surplus-value produced in the economy as a whole in a year (S) is taken as a *predetermined given*, as determined by the prior theory of the total annual surplus-value in Volumes 1 and 2, and this predetermined total surplus-value is used to determine the general rate of profit ($R = S / C$), and then the rate of profit is in turn a determinant of prices of production ($PP_i = [C_i + V_i] [1 + R]$).³ As a result of this logical method, the predetermined total surplus-value is distributed to individual industries in such a way that all industries receive the same rate of profit. Thus, there is no contradiction between Marx's labour theory of value and equal rates of profit across industries.

The "transformation problem" is usually interpreted as a transformation from one set of *micro* variables to another set of *micro* variables – i.e. from *individual labour-values* to *individual prices*. But I argue that this is not what Marx's transformation is about; Marx's transformation is from *macro* variables to *micro* variables – i.e. from the *total price* and the *total surplus-value* to *individual prices* and the *individual parts* of surplus-value. The standard interpretation misses entirely the all-important macro aspect of Marx's theory and logical method, and the prior determination of the total surplus-value produced in the economy as a whole. The "transformation problem" is essentially a *disaggregation problem*, not a transformation of individual labour-values into individual prices.

I think that the textual evidence to support this *macro* aspect of Marx's logical method (the prior determination of the total surplus-value) is very strong and I would say conclusive. This point is repeated many times in all the drafts of *Capital*. Chapter 3 of my recent book is a comprehensive presentation of all the textual evidence related to this key aspect of Marx's method. (Moseley 2016) Other authors who have emphasised this aspect of Marx's logical method include Paul Mattick, Roman Rosdolsky, David Yaffe, and Duncan Foley.

Single system – actual capitalism

A related aspect of Marx's logical method, which follows from the "two levels of abstraction" and the prior determination of the total surplus-value, is that Marx's theory in all three volumes of *Capital* is about a *single system*, and this single system is the *actual* capitalist economy, which is theorised first at the macro level and then subsequently at the micro level.

By contrast, Marx's theory is usually interpreted to be about *two different economic systems* (i.e. the "dual system" interpretation) – first a hypothetical "value system" in Volumes 1 and 2, in which the long-run equilibrium prices of individual commodities are equal to their *values* and then the actual capitalist "price system" in Volume 3, in which the long-run equilibrium prices are equal to their *prices of production*. But I argue that this "dual system" is *not Marx's logical method*. Marx's theory is not about two different economic systems, but is instead about the same economic system – the *actual* capitalist economy – from beginning to end.

In the actual capitalist economy, the long-run equilibrium prices of commodities are equal to their *prices of production*, not their values. In Marx's theory, these actual long-run equilibrium prices of individual commodities are *abstracted from* in the Volume 1 macro theory of the total price and total surplus-value and then they are later explained in the micro Volume 3 theory of the distribution of surplus-value.

2. Monetary: the circuit of money capital is the logical framework of Marx's theory

The second main aspect of Marx's logical method that I emphasise – the *monetary* aspect – has to do with the *circuit of money capital*, which I argue is the basic logical framework of Marx's theory of the production and distribution of surplus-value. The circuit of money capital is expressed symbolically by the familiar formula:

$$M - C \dots P \dots C' - M' \quad \text{where } M' = M + \Delta M$$

which Marx first abbreviated in Chapter 4 of Volume 1 as the "general formula for capital": **M – C – M'**, as in the title of this paper. This monetary aspect is the most relevant to the widely accepted criticism that Marx "failed to transform the inputs".

The circuit of money capital captures the essence of capitalism and focuses Marx's theory on the most important question in a theory of capitalism: where does

the ΔM come from and what determines its magnitude? In other words, how is the initial money capital "valorised"? The circuit of money capital is not just a minor point in Chapter 4 of Volume 1 that plays no significant role in the rest of Marx's theory; instead the circuit of money capital is the *basic logical framework* for all of Marx's theory of the production and distribution of surplus-value in all three volumes of *Capital*. The standard interpretation misses the circuit of money capital as the logical framework of Marx's theory.

A common misinterpretation of Marx's theory is that Volume 1 is only about labour values, and that money and prices are introduced and explained only in Volume 3. Some even interpret all three volumes to be essentially about labour-time variables – even prices of production are interpreted as "redistributed labour-values" (Duménil's version of the "New Interpretation" is an example of this latter interpretation). I argue that view is a fundamental misinterpretation of Volume 1, which loses sight of the essential *monetary nature* of capitalist production and of Marx's theory. Money is derived by Marx in the very first chapter of Volume 1 (in Section 3 of Chapter 1), as the *necessary form of appearance of social labour* in capitalism, and from that point on Marx's theory is about quantities of money that represent and therefore are determined by quantities of labour-time. The title of Part 2 is "The Transformation of *Money* into Capital". Volume 1 is not just about labour-times, but about labour-times that determine prices and quantities of money and above all that determine ΔM ; i.e. that explain how "*money* is transformed into capital". Surplus-value is defined as ΔM , the increment of money that emerges at the end of the circuit of money capital.

Marx's analysis of the turnover of capital in Part 2 of Volume 2 is also in terms of the circuit of money capital. The turnover period of capital is defined as the length of time between the *advance* of money capital at the beginning of the circuit of capital and the *recovery* of (more) money capital at the end of the circuit.

And Marx's reproduction schemes in Part 3 of Volume 2 are also analysed in terms of the circuit of money capital divided into two departments. The main question addressed in this analysis is how the capital *advanced* at the beginning of the circuit in each department is *recovered* at the end of the circuit, especially the constant capital component. The main purpose of Marx's analysis of the reproduction schemes is to criticise what he called "Smith's dogma", according to which the price of commodities could be entirely resolved into wages + profit + interest. Marx argued that Smith's dogma could not possibly be true because if it were true capitalists would be not able to recover their constant capital and capitalist production could not continue on the same

scale. The whole analysis is presented in terms of the advance and recovery of money capital.⁴

And Marx's theory of prices of production in Part 2 of Volume 3 is also analysed in terms of the circuit of money capital. The question that Marx's theory of prices of production is intended to answer is this: how is the money capital *advanced* in each industry (M_i) *recovered* together with an average share of the total surplus-value according to the share of the total capital advanced in each industry ($\pi_i = R M_i$)? (See more on this point in Section 3 below.) This industry level circuit of money capital could be represented symbolically as:

$$M_i - C_i \dots P \dots C'_i - M'_i \quad \text{where } M'_i = M_i + \pi_i$$

Keynes once referred to Marx's M-C-M' circuit of capital as a "pregnant observation", and Keynes agreed with Marx that the goal of entrepreneurs is not "more physical product", but is instead "more money", and that a theory of an "entrepreneurial economy" should be in terms of money variables, not real variables. (Keynes 1979, pp. 81-82) However, Keynes did not seem to realise that Marx's M-C-M' circuit of capital is not just a "pregnant observation", but is the overall logical framework for all of Marx's theory. Unfortunately, Keynes did not adopt a similar M-C-M' framework in his own theory of output and employment, and Keynes' theory does not provide an explanation of the all-important ΔM , but instead in effect takes ΔM as given an initial cost; that is, ΔM is treated as a part of M ! (as in neoclassical economics generally).

On the other hand, Sraffa's logical method is very different from Marx's logical method. Sraffa's logical framework is not the circuit of money capital, but is instead a matrix of *physical* inputs and outputs (and a labour input vector). The beginning of Sraffa's theory is not an advance of money, but is instead given physical quantities of inputs, which somehow firms are in possession of.

In order to compare Sraffa's physical logical framework with Marx's monetary framework, Sraffa's framework could be represented symbolically as follows:

$$Q \dots P \dots C'$$

where Q stands for the physical quantities of means of production and quantities of labour (The Sraffian formula starts with Q instead of C because the inputs to production in Sraffa's theory do not have prices and thus are not yet commodities.) The most striking feature of Sraffa's framework (compared to the Marx's framework) is the *complete absence of money*, especially the absence of ΔM , the most important characteristic of capitalist economies. How can this be an adequate theory of capitalism? The first phase of the circulation of money capital in the sphere of circulation – the advance of money capital to purchase means of production and

labour-power – is ignored altogether. It is *as if no money capital is advanced* in capitalism to purchase means of production and labour-power.⁵ But this is not the case. Money capital is advanced in capitalism, in definite quantities, and these quantities of money capital advanced must be recovered before there can be any surplus-value.

M presupposed

Here is the crucial point for the so-called "transformation problem": I argue further that Marx's logical structure of the circuit of money capital suggests in two ways that the initial money capital advanced (M) at the beginning of the circuit is *taken as given or presupposed* in Marx's theory, both in the macro theory of the production of surplus-value in Volumes 1 and 2 and also in the micro theory of the distribution of surplus-value in Volume 3. In the first place, the M advanced is the *starting point* of the circuit of capital, which suggests that M is also the starting point of Marx's theory of the circuit of money capital, the initial data in the theory of how M becomes $M + \Delta M$. The initial M exists as a definite quantity at the beginning of the circuit of capital, prior to the recovery of M' and ΔM , and this pre-existing quantity at the beginning of the circuit is taken as given in order to explain the M' and ΔM at the end of the circuit.

The second way that the structure of the circuit of money capital suggests that the initial M is taken as given in Marx's theory is that the *first phase* of the circuit of money capital – the advance of money capital to purchase means of production and labour-power (M - C) – takes place in the *sphere of circulation*, prior to the second phase in the sphere of production. Marx's theory of the circuit of capital also begins in the sphere of circulation (in Part 2 of Volume 1), with the advance of definite quantities of money constant capital and money variable capital to purchase means of production and labour-power (with the famous passage at the end of Part 2 about moving from the "noisy sphere" to the "hidden abode" marking the transition from the sphere of circulation to the sphere of production). Thus, when the second phase of the production of value and surplus-value begins, as analysed in Part 3 and beyond, the quantities of constant capital and variable capital are assumed to have already been advanced in the sphere of circulation, and these already existing quantities of constant capital and variable capital are *taken as given* as the initial data in Marx's theory of how this previously existing given quantity of money capital becomes more money in the subsequent phases of the production and sale of commodities. In this way, the presuppositions of Marx's theory of surplus-value in the sphere of

production come from already existing quantities of money capital previously advanced in the sphere of circulation.

Actual quantities of money capital

Another reason the initial **M** is taken as given in Marx's theory of ΔM is that (as discussed above) Marx's circuit of money capital refers in principle to the *actual* capitalist economy and to *actual* quantities of money capital advanced and recovered in the real capitalist economy.⁶ The ΔM that is determined in Volume 1 is the *actual* total ΔM produced in the capitalist economy as a whole. Volume 1 is not about a *hypothetical* economy and a *hypothetical* total ΔM , that would later have to be transformed into the actual total ΔM in Volume 3, as in the traditional interpretation of Marx's theory. Volume 1 is about the actual capitalist economy and the actual total ΔM from the beginning. Volume 3 is then about the division of the pre-determined actual total surplus-value into individual parts, first into equal rates of profit across industries and then the further division of the total surplus-value into interest and rent, etc. As discussed above, in this Volume 3 theory of the individual parts, the total amount of surplus-value is a *presupposition*, as determined by the prior theory in Volumes 1 and 2.

In order to explain the actual total ΔM in Volume 1, the initial quantities of money capital **M** at the beginning of the circuit must themselves also be the *actual* quantities of money capital advanced to purchase means of production and labour-power in the real capitalist economy; the initial **M** cannot be *hypothetical* quantities of money capital that are proportional to the labour-values of means of production and means of subsistence (as in the traditional interpretation of Marx's theory). If the initial **M** were hypothetical quantities, then the ΔM at the end of the circuit would also be a hypothetical quantity, and the total ΔM could not be presupposed in the Volume 3 theory of the division of surplus-value. Thus, the initial quantities of money capital must themselves be *actual* quantities. The traditional interpretation of the initial **M** given in Marx's theory (as hypothetical labour-values) contradicts the first aspect of Marx's logical method discussed above – the prior determination of the total surplus-value.

However, it is not possible to fully determine the actual quantities of money capital in Volume 1, because these actual quantities of money capital are equal to the *prices of production* of the means of production and means of subsistence, and prices of production cannot be explained in Volume 1, because prices of production

have to do with the distribution of surplus-value, and (according to Marx's logical method, as discussed above), before the distribution of surplus-value can be explained, the total amount of surplus-value first must be determined, and that is the main task of Volume 1.

Therefore, in order to explain the total actual total ΔM in Volume 1, the actual quantities of constant capital and variable capital are taken as given, as initial data in the theory.

And the crucial point for the "transformation problem" is that, in Marx's theory of prices of production in Volume 3, the *same quantities* of money constant capital and money variable capital are *taken as given* as in the Volume 1 theory of the total surplus-value – the *actual* quantities of money capital advanced to purchase means of production and labour-power at the beginning of the circuit of money capital (in the actual capitalist economy). The only difference between Volume 1 and Volume 3 is the *level of aggregation* – in Volume 3 the *individual* quantities of constant capital and variable capital advanced in each industry are also taken as given, in addition to the *total* constant capital and variable capital that are taken as given in the macro theory of surplus-value in Volume 1. As discussed above, the question that Marx's theory of prices of production is intended to answer is this: how is the actual money capital advanced in each industry recovered, together with an average share of the total surplus-value according to the capital advanced in each industry? For this question, the appropriate initial givens are the actual initial quantities of money capital advanced and consumed in each industry (the M's); the money capital consumed is the quantity that has to be recovered before any profit can be appropriated and the money capital advanced determines the share of the total surplus-value that accrues to each industry.

This is why I conclude that Marx did *not* "fail to transform the inputs" of constant capital and variable capital from values to prices of production, as is commonly alleged – because no such transformation of the inputs is necessary or appropriate in Marx's theory. The inputs of constant capital and variable capital in Marx's theory of prices of production in Volume 3 are the *same actual quantities of money capital* advanced and consumed in the actual capitalist economy that are the inputs in Marx's theory of total surplus-value in Volume 1. The only difference is the level of aggregation. Constant capital and variable capital do not have to be transformed in Volume 3 because they are already transformed in Volume 1.

This aspect of Marx's logical method – taking the initial money capital advanced as given – is not unique to Marx's theory in the history of economic theory. Indeed, in

this respect, Marx's method is similar to a long line of 'cost of production' theories of value, including Adam Smith, R. Torrens, J.S. Mill, Keynes, and current Post-Keynesians. All these "cost of production" theories of value take as given the money wage paid as a known quantity, and use the given money wage to determine prices (along with the mark-up) (they usually ignore material costs, following Smith's erroneous example). Marx's theory is of course also different from these cost of production theories, especially in the sense that Marx's theory provides a theory of profit or surplus-value based on the labour theory of value (i.e. Marx incorporated these given initial money costs into his labour theory of value in order to provide a labour theory of surplus-value, ΔM). These other theories either take profit as given (as the unexplained "mark-up") or have a "bargaining power" or "monopoly power" theory of profit. But the relevant point here is that Marx's theory is similar to these cost of production theories in the sense of taking the money wage as given. And that this is a valid logical method with a long and distinguished history.

The textual evidence to support this second aspect of my interpretation of Marx's theory – that the same actual quantities of the initial money capital are taken as given at both levels of abstraction – is not as clear-cut and conclusive as for the first aspect (the two levels of abstraction and the prior determination of the total surplus-value). The determination of constant capital and variable capital is somewhat complicated because commodities are analysed as *products of capital* within the framework of the circuit of money capital. In the published editions of Volume 1 of *Capital*, Marx tried to simplify and finesse this complication, which I think was a mistake and has left a legacy of ambiguity and misunderstanding. Nonetheless, I think that the evidence to support this monetary interpretation of the initial givens in Marx's theory is still substantial (and I would say more substantial than for the traditional interpretation). Because of the necessity of a longer discussion, examples of this textual evidence on this key point will be discussed below in Section 4 (and a much longer discussion is in Chapter 4 of my book).

I consider my monetary interpretation of the initial givens in Marx's theory to be a logical extension of New Interpretation, especially Foley's version. The New Interpretation takes the money wage (or variable capital) as given, rather than the real wage as in the standard interpretation; and the money wage remains invariant in the transformation of values into prices of production. However, the New Interpretation continues to interpret constant capital in the standard way – as derived from given physical quantities of means of production, first as the value of the means of production and then transformed into the price of production of the means of

production. Therefore, there is a fundamental logical inconsistency in the New Interpretation – constant capital and variable capital are determined in different ways. But constant capital and variable capital are the two components of the initial money capital (i.e. $M = C + V$) and thus they should be determined in the same way. This inconsistency leads to other problems: the gross price-value equality is not satisfied and the price rate of profit is not equal to the value rate of profit. So I extend the New Interpretation to take both constant capital and variable capital as given and remain invariant in the transformation of values into prices of production, with much more methodological grounding and much more textual evidence. In this way, the logical inconsistency of the New Interpretation is eliminated and the "transformation problem" is also eliminated. I thought about calling my interpretation the "New New Interpretation", but "macro-monetary" is more descriptive.

Sequential determination

The final aspect of Marx's logical method to be discussed is that Marx's theory is based on the logic of *sequential determination* of the key variables, not simultaneous determination (as in Sraffian theory and the Sraffian interpretation of Marx's theory). Sequential determination follows from the two main aspects of Marx's method discussed above: (1) the total surplus-value is determined logically prior to its division into individual parts, and the total surplus-value is taken as given in the determination of the individual parts; and (2) the circuit of money capital is the logical framework of Marx's theory which implies that the initial money capital $M (= C + V)$ at the beginning of the circuit is taken as given in the determination of M' and ΔM at the end of the circuit. On the other hand, the logic of simultaneous determination is obviously not appropriate for Marx's theory for both of these reasons: simultaneous determination does not allow for the prior determination of the total surplus-value, and does not allow for taking a pre-existing money capital M as given at the beginning of the circuit of money capital in order to determine M' and ΔM at the end of the circuit.

The "cost of production" theories of value mentioned above in Section 5 are also all based on the logical method of sequential determination in the sense of given initial money costs in order to determine prices, but not in the sense of the determination of the total surplus-value prior to its division into individual parts.

3. Algebraic summary of the macro-monetary interpretation

This section summarises in algebraic form the "macro-monetary" interpretation of Marx's theory of the production and distribution of surplus-value presented in this paper. It is hoped that this algebraic summary will help to clarify the main points. A more complete algebraic summary is presented in Chapter 2 of my book.

Theory of the *production of the total surplus-value* (Volume 1)

The magnitude of surplus-value is by definition: $\Delta M = M' - M$. For any given period of production (e.g. a year), the magnitude of surplus-value is the difference between the total price of the commodities produced during this period (P) and the cost of producing these commodities (K), which Marx called the *cost price*:

$$(1) \quad S = P - K$$

All these variables refer to aggregate quantities in the capitalist economy as a whole.

The *cost* of commodities is the sum of two components: consumed constant capital (C)⁷ and variable capital (V):

$$(2) \quad K = C + V$$

I argued above that constant capital and variable capital are *taken as given* in Marx's theory of surplus-value, as the actual (long-run equilibrium) quantities of money capital advanced to purchase means of production and labour-power (equal to the price of production and the means of production and means of subsistence, respectively).⁸ In order to indicate that constant capital and variable capital are taken as given, I will use a bar over these variables in the equations below, and equation (2) can be rewritten as follows:

$$(2') \quad K = (\bar{C} + \bar{V})$$

This is the first sense in which constant capital and variable capital are taken as given – as components of the *cost* that are subtracted from the price of the commodities produced in order to determine the quantity of surplus-value.

The *total price* of commodities produced in a year is also the sum of two components: the consumed constant capital (\bar{C}) which existed previously ("old value") and is taken as given and transferred to the price of the output, and the "new value" (in money terms) produced by the labour of the current period (N):

$$(3) \quad P = \bar{C} + N$$

With regard to the constant capital component of the price of commodities, it is important to recognise that Marx distinguished between the price of commodities as *products of capital* and the price of *simple commodities* (as analysed in Part 1 of Volume 1). One key difference has to do with the "transferred value" component of the price of commodities. The "transferred value" (or "old value") component of the price of simple commodities is proportional to the labour-time required to produce the means of production, but the "transferred value" component of the price of commodities produced by capital is the *actual constant capital* advanced to purchase the means of production at the beginning of the circuit of money capital (i.e. the same constant capital that is taken as given as a component of the cost price in equation (2')), which tends to be equal to the *price of production* of the means of production, and which in general is not proportional to the labour-time required to produce the means of production. The means of production are purchased with constant capital at the beginning of the circuit of money capital, and thus the labour-time required to produce the means of production *has already been represented objectively and socially* as this actual quantity of money constant capital advanced (even if somewhat misrepresented; i.e. not proportional); and it is this quantity of actual money capital advanced that becomes the first component of the price of commodities produced by capital. This previously existing money constant capital is transferred directly, as a given quantity of money capital, to the price of commodities produced by capital.

The new value component of the total price of commodities (**N**) (in units of money) is determined by the product of the quantity of the current socially necessary labour-time (**L**) (in units of abstract labour-hours) and the (money) new value produced *per hour* of abstract labour (**m**):⁹

$$(4) \quad \mathbf{N} = \mathbf{mL}$$

Equation (4) is the *key assumption of Marx's labour theory of value*: that the money new-value produced in the current period in the economy as a whole is proportional to the total quantity of socially necessary labour-time employed during this period in the economy as a whole.¹⁰

Substituting equation (4) into equation (3), we obtain:

$$(5) \quad \mathbf{P} = \bar{\mathbf{C}} + \mathbf{mL}$$

And substituting equations (2') and (5) into equation (1), we obtain:

$$(6) \quad \begin{aligned} \mathbf{S} &= \mathbf{P} - \mathbf{K} \\ \mathbf{S} &= (\bar{\mathbf{C}} + \mathbf{mL}) - (\bar{\mathbf{C}} + \bar{\mathbf{V}}) \end{aligned}$$

We can see that the given constant capital consumed is a component of both the price of the output and the cost price of the inputs. Marx referred to this double inclusion of constant capital as the "dual significance of constant capital". (Marx 1981, pp. 119-120) As a result of its "dual significance", constant capital cancels out in the determination of the surplus-value, and thus equation (6) simplifies to:

$$(7) \quad \mathbf{S} = \mathbf{mL} - \bar{\mathbf{V}}$$

Thus, according to Marx's theory, the quantity of surplus-value is determined by the difference between the new value produced by workers and the variable capital they are paid.

The point to emphasise here is that the *actual* quantities of C and V are taken as given, both as components of cost and as components of price, and used along with the basic labour theory of value assumption ($\mathbf{N} = \mathbf{mL}$) to determine the *actual* sv produced;

C and V are not assumed to be *hypothetical* quantities that are used to determine a *hypothetical* quantity of surplus-value, that would later have to be transformed into the actual surplus-value.

According to Marx's theory, the working day is divided into two parts: necessary labour-time (\mathbf{NL}) and surplus labour-time (\mathbf{SL}). Necessary labour-time is defined as the number of hours of socially necessary labour-time that it takes workers to produce (money) new value that is equal to the average variable capital that is paid to workers per day; algebraically: $\mathbf{NL} = \bar{\mathbf{V}} / \mathbf{m}$.¹¹ The remainder of the working day is surplus labour-time ($\mathbf{SL} = \mathbf{L} - \mathbf{NL}$), i.e. the labour-time in which the money new-value produced by workers no longer goes to reproduce an equivalent of the variable capital paid to workers, but instead becomes the surplus-value of capitalists.

Substituting these definitions of NLT and SLT into equation (7), we obtain:

$$(8) \quad \begin{aligned} \mathbf{S} &= \mathbf{mL} - \bar{\mathbf{V}} \\ &= \mathbf{mL} - \mathbf{m}(\mathbf{NL}) \\ &= \mathbf{m}(\mathbf{L} - \mathbf{NL}) \\ \mathbf{S} &= \mathbf{m}(\mathbf{SL}) \end{aligned}$$

This then is Marx's "surplus labour" theory of surplus-value. It explains the actual total annual surplus-value produced in the capitalist economy as a whole, and it concludes that the actual total surplus-value is proportional to the total amount of surplus labour-time of workers, with \mathbf{m} as the factor of proportionality (i.e. each hour of surplus labour produces \mathbf{m} amount of money surplus-value).

This is the main conclusion of Marx's macro theory of the production of the total surplus-value in Volumes 1 and 2 of *Capital*.

Theory of the *distribution* of surplus-value and *prices of production* (Volume 3)

As discussed above, the main subject of Volume 3 is the distribution of surplus-value, or the division of the predetermined total surplus-value into individual parts. The first and most fundamental aspect of the distribution of surplus-value is the equalization of the rate of profit across industries and the determination of prices of production.

Marx's theory of prices of production is quite simple and straightforward, and consists of the following logical steps. First, the general rate of profit is determined by the macro ratio of the pre-determined total annual surplus-value (**S**) (as explained above) to the total capital advanced ($\bar{\mathbf{M}}$):

$$(9) \quad \mathbf{R} = \mathbf{S} / \bar{\mathbf{M}}$$

This general rate of profit is then multiplied by the given capital advanced in each industry ($\bar{\mathbf{M}}_i$) in order to determine the average profit received in each industry (π_i), and this average profit is added to the given cost in each industry ($\bar{\mathbf{C}}_i + \bar{\mathbf{V}}_i$) in order to determine the price of production in each industry (**PP**_{*i*}).

$$(10) \quad \pi_i = \mathbf{R} (\bar{\mathbf{M}}_i)$$

$$(11) \quad \mathbf{PP}_i = (\bar{\mathbf{C}}_i + \bar{\mathbf{V}}_i) + \pi_i$$

And that is all there is to it. It really is pretty simple, as Marx stated.¹² No matrix algebra is necessary; no need to invert matrices and determine eigenvalues, etc., as in the Sraffian interpretation (which is only about micro prices). Just a simple logical deduction from the macro total surplus-value to the micro prices of production.

As discussed above, the crucial point is that the *same quantities* of constant capital and variable capital are taken as given at both levels of abstraction. The only difference is the level of aggregation. Again, that is why Marx did *not* "fail to transform the inputs from values to prices of production" – because no such transformation of the inputs is necessary or appropriate in Marx's theory.

It is easy to show that it follows from this "macro-monetary" interpretation of Marx's theory that both of Marx's two aggregate equalities (total price of production = total value-price and total profit = total surplus-value) are *always*

both true simultaneously, as Marx claimed (see pp. 39-40 of my book for the trivial proof).

We can also see from the above algebra that Marx's theory of the rate of profit is fundamentally different from Sraffa's theory of the rate of profit, which is summarised by the familiar system of equations:

$$p = (pA + pbL) (1 + r)$$

The main difference between the two theories is that the labour theory of value plays no role in Sraffa's theory – labour is *only a cost* and is *not a producer of value* as in Marx's theory (i.e. there is no $N = mL$ term in Sraffa's equation like equation (4) above).

This fundamental difference between Marx's theory and Sraffa's theory is the basis of my main criticism of all the other recent reinterpretations of the transformation problem that I discuss in Part 2 of my book, as mentioned above. In their interpretations of the rate of profit, *all* of these reinterpretations (including the New Interpretation) explicitly or implicitly adopt the Sraffian system of equations for the rate of profit and in effect abandon Marx's theory of the rate of profit that is based on the labour theory of value and surplus-value as reviewed above. There are of course positive aspects of these other interpretations (as reviewed in my book), but this is the most negative aspect in my view – there is no connection between the labour theory of value and surplus-value, on the one hand, and the theory of the rate of profit and prices of production, on the other hand, in these interpretations.

4. Textual evidence: M presupposed

This section presents a brief summary of the textual evidence to related to monetary interpretation of the initial givens in Marx's theory.¹³ This section will first discuss some textual evidence that supports the "monetary" interpretation presented here and will then discuss some contrary textual evidence that seems to support the traditional interpretation.

The most important textual evidence to support my monetary interpretation of the initial givens in Marx's theory is the *circuit of money capital* itself as the logical framework for Marx's theory, which begins with **M – C**, and which suggests (as discussed above) that the initial money capital M at the beginning of the circuit is the initial given in Marx's theory of how the previously existing M becomes $M + \Delta M$.

In addition, there are also many passages in the various drafts of *Capital* in which Marx stated explicitly that the initial M is *presupposed* or *given* in his theory of

surplus-value. One of the clearest such statement is the following passage from the "Results" manuscript,¹⁴ which was intended as a summary of Volume 1 and a transition from Volume 1 to Volume 2:

In what we may call its first, provisional form of *money* (the **point of departure** for the formation of capital), capital exists as yet only as money, i.e. as a *sum of exchange-values* embodied in the *self-subsistent form of exchange-value*, in its *expression as money*. But the task of this money is to generate value. The exchange-value must serve to create still more exchange-value. The *quantity of value* must be increased, i.e. the available value must not only be maintained; it must yield an increment, Δ value, a surplus-value, so that the *value given*, the *particular sum of money*, can be viewed as a *fluens* and the increment as fluxion...

Here, where we are concerned with money only as the *point of departure* for the *immediate process of production*, we can confine ourselves to the observation: capital exists here as yet only as a *given quantum of value = M (money)*, in which all use-value is extinguished, so that **nothing but the monetary form remains...**

If the original capital is a quantum of value = x , it becomes capital and fulfills its purpose by changing into $x + \Delta x$, into a quantum of money or value = the original sum + a balance over the original sum. In other words, it is transformed into the **given amount of money + additional money**, into the *given value + surplus-value...*

As a *given sum of money*, x is a constant from the outset and hence its increment = 0. In the course of the process, therefore, it must be changed into another amount which contains a variable element. **Our task** is to discover this component and at the same time to identify the mediations by means of which a constant magnitude becomes a variable one. (Marx 1977b, pp. 976-77; bold emphasis added; italicised emphasis in the original. This convention will be followed in the rest of this paper.)

In this passage, Marx states clearly and repeatedly that a definite quantity of money capital (x) is the *point of departure* for his theory of the production of surplus-value ($x + \Delta x$), and that the initial quantity of money capital is *taken as given*. In the beginning of this process, capital exists as a given quantity of money *in which all*

use-values are extinguished, so that nothing remains but the money form (i.e. no physical quantities of means of production or means of subsistence; only money capital). "Our task", Marx says, is to explain how the given initial money capital becomes more money at the end of the process. This process and this all-important result are what Marx's theory is primarily about.

There are also a number of similar explicit statements in the second draft of Volume 1 of *Capital* in the beginning of the *Economic Manuscript of 1861-63* in which Marx first developed his M-C-M' framework, especially in the draft of what later became Chapters 4 and 7.2 of Volume 1. (Marx and Engels 1988, volume 30, pp. 9-20 and 66-92)¹⁵ This key point is less explicit in the final published versions of these chapters of Volume 1 – as Marx tried to "popularise" *Capital*, at the constant insistence of Engels. But the framework is the same (M – C – M') and the theory is the same, with the initial M taken as given.

Another important set of textual evidence is from the key Chapter 9 of Volume 3 in which Marx repeatedly stated and assumed that *the cost price is the same* in the determination of values and prices of production. One of Marx's clearest such statements is a passage in Marx's original Volume 3 manuscript that unfortunately Engels left out of his edited version of Volume 3 that we are familiar with. This passage was discovered by Alejandro Ramos from Marx's original manuscript that was published for the first time in German in the MEGA in 1992, Volume II/4.2.

The value of the commodity is equal to the value of the capital consumed to produce it plus the surplus-value. If we take the **cost price** as equal to the **value of the capital advanced** in the production of the commodity as we did in our original analysis of cost price (*in chapter one*), we arrive at following equivalences:

Value = Cost Price + surplus-value

$$V = K + s$$

or profit as identical with surplus-value

$$\text{or } = K + p$$

cost price = value - surplus-value

$$\text{or } K = V - s$$

price of production = cost price + profit

$$P = K + p'$$

calculated according to the general rate of profit = p'...

Since $V = K + s$ or p , and $P = K + p'$, $V = P$ when $s = p'$, $> P$ when $p' < s$, and $< P$ when $p' > s$. (Marx 2016, pp. 275-76)¹⁶

We can see from this remarkable passage that Marx states clearly and repeatedly that the *cost price is the same* in the determination of both values and prices of production, including in unambiguous algebraic equations. Throughout this passage, there is only one cost price mentioned, which is equal to the "value of the capital consumed" and which is represented algebraically by K . There are not two cost prices, one cost price a component of value and a second cost price a component of price of production. Instead, the K is the same quantity in all these equations. All the detailed comparisons in the last sentence of the passage: $\text{value} = > < \text{price of production}$ *if and only if* $s = > < p'$ (average profit) make sense *only if there is only one cost price*. If there were two cost prices, one for values and another for prices of production, then these comparisons would be nonsense. But since there is *only one cost price*, these comparisons make perfect sense, and are elementary. I think this "missing passage" is clear and strong textual evidence for the monetary interpretation of the initial givens in Marx's theory of value and price of production. Unfortunately, Engels left it out.

And then there are Marx's famous tables at the beginning of Chapter 9, which were mentioned in the beginning of this paper, and in which the *cost price is clearly the same* for the determination of both values and prices of production. It is of course widely argued that this unchanging cost price in Marx's tables is a *mistake*, i.e. that Marx *should have changed* the magnitudes of cost price in his tables, and that he failed to do so. I argue that this long-standing criticism of Marx's tables overlooks the fact that Marx emphasised repeatedly in the surrounding text (including in the missing passage two pages earlier) that the *cost price is supposed to be the same* in the determination of both values and prices of production, and thus that his tables are consistent with the surrounding text. The "mistake" interpretation of Marx's tables, on the other hand, is contradicted by the surrounding text and all the other evidence discussed in this section.

Another important set of textual evidence has to do with the important point (discussed above) that Marx's theory is about *commodities as products of capital*, not simple commodities. Because Marx's theory is about commodities produced by *capital*, the initial givens in Marx's theory are *quantities of money capital* advanced to purchase means of production and labour-power at the beginning of the circuit of money capital (not quantities of labour-time contained in the means of production). Marx emphasised this point in Section I of the "Results" manuscript which is entitled "*Commodities as the Product of Capital*". In this section, one of the main differences between

commodities produced by capital and simple commodities that Marx discussed is the determination of the "transferred value" component of the price of commodities produced by capital: since the means of production in capitalist production are *commodities*, which have been purchased at the beginning of the circuit of capital, and which therefore enter the valorization process *with already existing specific prices* which are taken as given and transferred to the price of the output. For example:

Since ... the elements of capitalist production already **enter the process of production as commodities**, i.e. **with specific prices**, it follows that **the value added by the constant capital is already given in terms of a price**. For example, in the present case it is **£80** for flax, machinery, etc. (Marx 1977b, p. 957)¹⁷

And a similar point was made earlier in the *Grundrisse*:

In so far as capital obtains raw material, instrument, labour through **exchange**, its **elements are already present in the form of prices**; already posited as prices; **presupposed** to it [production]. The comparison of market prices of its product with the prices of its elements that becomes decisive for it. (Marx 1973, p. 762)

Contrary textual evidence¹⁸

I acknowledge that there are also passages in Volume 1 (especially Chapters 6 and 7) that seem to support the traditional interpretation of constant capital and variable capital – that constant capital and variable capital in Volume 1 are proportional to the *labour-values* of the means of production and means of subsistence, which means that C and V in Volume 1 are *hypothetical* quantities that later have to be *transformed* into *actual* quantities in Volume 3.

However, I argue that the traditional interpretation of these passages does not pay sufficient attention to the *circuit of money capital* which is the logical framework of Marx's theory and which implies that the initial givens in Marx's theory is the initial M at the beginning of the circuit of money capital, not physical quantities of inputs. Furthermore, the traditional interpretation is contradicted by all the other textual

evidence discussed above and more fully in my book ("M presupposed", "the cost price is the same", "commodities as products of capital").

In addition, I argue that these passages in Volume 1 that appear to support the traditional labour-value interpretation of Volume 1 *can be interpreted in a different way*, and in a way that is consistent with all the other textual evidence discussed above. I will briefly summarise my interpretation of these controversial passages here; my interpretation of these passages is discussed at much greater length in Chapter 4 of my book.

According to my alternative interpretation, these controversial passages in Volume 1 provide a *partial explanation of the given actual magnitudes* of C and V. They do not provide a complete determination of the magnitudes of C and V, because according to Marx's logical method a complete explanation of the actual C and V is *not possible* in Volume 1. The actual C and V at the beginning of the circuit of money capital are equal to the *prices of production* of the means of production and means of subsistence, and prices of production cannot be explained in Volume 1. However, a *partial explanation* of the given actual magnitudes of C and V can be given in Volume 1, and Volume 1 provides one: that these magnitudes are *determined primarily, but not solely*, by the labour-values of the means of production and means of subsistence. Mathematically:

$$C = f(L_{mp}, X) \text{ and } V = f(L_{ms}, X).$$

where X stands for other factors that affect prices of production and hence affect C and V, especially the equalization of the rate of profit across industries. However, this assumption is only a first approximation (a partial explanation of the given actual magnitudes). Prices of production depend not only on labour-values, but also on the equalization of profit rates across industries that cannot yet be analysed in Volume 1. However, labour-values are the *main determinant* of prices of production, and also the *main cause of changes* in prices of production, and this provisional assumption in Volume 1 enables Marx to explain a great deal – e.g. the effects of changes in the labour-values of these commodities on the given magnitudes of constant capital, variable capital, and surplus-value.

For example, in Marx's theory of relative surplus-value in Chapter 12 of Volume 1, technological change that reduces the labour-values of the means of subsistence reduces the price of means of subsistence, which in turn reduces variable capital and increases surplus-value and the rate of surplus-value. This theory of relative surplus-value does not require that variable capital be exactly proportional to the labour-value of the means of subsistence; the same general conclusions follow even if the quantities

are not proportional. Similarly, a reduction in the labour-value of the means of production reduces the price of the means of production, which in turn reduces constant capital and the composition capital.

The crucial point for the present discussion is that this partial explanation of the given actual quantities of constant capital and variable capital in Volume 1 *does not determine the magnitudes* of these variables in Marx's theory of value and surplus-value in Volume 1. This partial explanation does not determine the magnitude of *constant capital* that is the first component of the price of commodities; i.e. that is transferred to the price of the output. Instead the first component of the value of commodities is the *actual* money capital advanced to purchase means of production in the real capitalist economy, which is taken as given, as initial data, and which in general is equal to the price of production of the means of production, not their values. Similarly, this partial explanation does not determine the magnitude of *variable capital* that is subtracted from the new-value produced in order to determine the surplus-value produced; instead the variable capital that is subtracted from new-value is the *actual* money capital advanced to purchase labour-power, which is taken as given as initial data, and which in general is not equal to the value of the means of subsistence. In this way, the total surplus-value that is determined in Volume 1 is the actual total surplus-value, not a hypothetical total surplus-value that would later have to be transformed into the actual total profit in Volume 3.

In Volume 3, after prices of production have been explained, Marx provided a *more complete explanation* of the given actual magnitudes of C and V – that these actual magnitudes are equal to the *prices of production* of the means of production (PP_{mp}) and means of subsistence (PP_{ms}), and not equal to their labour-values.

Mathematically:

$$C = PP_{mp} \text{ and } V = PP_{ms}$$

But again, the important point is that this more complete explanation of the given actual quantities of constant capital and variable capital *does not change the magnitudes* of C and V themselves. The magnitudes of C and V remain the same - the *actual* quantities of money capital advanced to purchase means of production and labour-power in the sphere of circulation, which are taken as given. What changes in Volume 3 is the *explanation* of these given actual quantities – from a partial explanation to a more complete one.

A similar interpretation also applies to the key paragraph in Chapter 9 of Volume 3 (pp. 264-65) in which Marx stated that, after the determination of prices of production, there is a "modification in the determination of the cost price". This

sentence is widely interpreted by Marx's critics as "Marx's admission" that he "failed to transform the inputs". However, I argue that there is a different interpretation of "modification" in this sentence – not a modification of the *magnitude* of the cost price, but a modification in the *explanation* of a *given magnitude* – from a partial explanation (approximately equal to labour-values) to a more complete explanation (equal to prices of production).¹⁹

My interpretation of these controversial passages is consistent with all the other textual evidence that I discussed above: the circuit of money capital, "M presupposed", "cost price is the same", and "commodities as products of capital". This interpretation is also consistent with the other main aspect of Marx's logical method discussed in Section 1 of this paper – the two levels of abstraction and the prior determination of the total surplus-value. And this interpretation of these Volume 1 passages leads to the conclusion that *there is no transformation problem* in Marx's theory! The magnitudes of C and V do not have to be transformed because the magnitudes of C and V are the *same magnitudes* in both volumes – the *actual quantities* of money capital at the beginning of the circuit of capital and taken as given. These given actual quantities are partially explained in Volume 1 and then more fully explained in Volume 3. And Marx's theory of prices of production is logically consistent and complete.

On the other hand, the traditional interpretation of these controversial passages has some very serious deficiencies: (1) it implies that the magnitudes of C and V in Volume 1 are *hypothetical* magnitudes, and hence the magnitude of S (or ΔM) that is determined in Volume 1 is also a *hypothetical* magnitude, and all these hypothetical quantities of capital must later be transformed into *actual* quantities in Volume 3; (2) it is contradicted by the other textual evidence discussed above; (3) it is also inconsistent with the first aspect of Marx's logical method discussed in Section 1 – the prior determination of the total surplus-value. If the total surplus-value changes in the transformation, then the total surplus-value cannot be presupposed as a predetermined magnitude and this crucial aspect of Marx's logical method breaks down; (4) and of course it implies that *there is a transformation problem* in Marx's theory, which Marx failed to solve, and which can be "solved" only by eliminating the labour theory of value.

In general, the traditional interpretation of the determination of constant capital and variable capital makes Marx's theory *logically incoherent*, and implies that Marx made fundamental logical mistakes in his theory of prices of production. On the other hand, the "monetary" interpretation of the determination of constant capital and

variable capital presented in this paper (and more fully in my book) makes it possible to understand Marx's theory as a *logically consistent whole*.

5. Conclusion

There is a widely accepted principle in the scholarly field of hermeneutics (the study and interpretation of texts) that, when the evidence for different interpretations of a text is ambiguous and not entirely clear-cut one way or the other, then the preferred interpretation is the one that *makes the text as a whole more internally logically consistent*.²⁰ I suggest that this principle should be applied to these different interpretations of Marx's logical method and the initial givens in Marx's theory. The preferred interpretation is the one that makes Marx's theory more logically consistent as a whole, and that interpretation is the "macro-monetary" interpretation presented here. Why continue to insist on the traditional interpretation of Marx's logical method that results in logical contradictions, when there is an alternative interpretation, with substantial textual evidence, that does not have these contradictions?

To those who would still insist that my interpretation is a fundamental misunderstanding of Marx's theory (i.e. that there is *no way* that one could reasonably interpret Marx's theory in this way), I would make the following radical suggestion for consensus: There are at least significant threads of this "monetary" interpretation of constant capital and variable capital throughout the various drafts of *Capital* (as presented in Chapter 4 of my book), even if Marx himself perhaps was not completely clear about this key point and may have thought sometimes that constant capital and variable capital are derived from given physical quantities, and that their magnitudes change from Volume 1 to Volume 3, as in the standard interpretation. If this were the case, then I would suggest that we *revise* Marx's theory, or "*reconstruct*" it, along the lines of these significant threads in his drafts and the "monetary" interpretation presented here – that the magnitudes of constant capital and variable capital are initially presupposed in the theory of surplus-value and prices of production and then are eventually explained in successive stages by the values and the prices of production of the means of production and means of subsistence. With this one revision, which is entirely reasonable and for which there is substantial textual evidence, Marx's theory would be transformed from a logically contradictory mess to a logically consistent whole.

This conclusion is similar to that of Duncan Foley in his famous 1982 RRPE paper with respect to variable capital only. Foley argued that if Marx himself did not

take variable capital (or the money wage) as given and invariable in the transformation, this is what Marx *should have done*, and we should revise Marx's theory in this way. I argue in similar fashion: if Marx himself did not take variable capital *and constant capital* as given and invariant in the transformation, this is what Marx *should have done*, and we should revise Marx's theory in this way. I would hope that there would be no objection to such a reasonable reconstruction of Marx's theory, which would make the theory logically consistent and would make possible its further development.

¹ Emphasis added.

² However, it should be noted that Marx's micro level of abstraction (the distribution of surplus-value) is very different from neoclassical microeconomics, which is based on the individual decisions of consumers and firms.

³ See Section 3 below for further details.

⁴ See Moseley 1998 for further discussion of this primary purpose of Marx's reproduction schemes.

⁵ Sraffa assumed that the wage rate is a *share* of the surplus (a pure number from 0 to 1) which is paid "*post factum*" and he acknowledged that with this assumption he was "abandoning the classical economists' idea of wages advanced from capital." Marx's theory, on the other hand, follows the classical tradition of wages advanced from capital.

⁶ By "actual" I mean the *actual long-run equilibrium* quantities of money capital (equal to prices of production), as opposed to *hypothetical long-run equilibrium* quantities (equal to values), as in the standard interpretation of Marx's theory. "Actual" does not refer disequilibrium market prices. In Marx's theory of the production and distribution of surplus-value, the actual capitalist economy is assumed to be in long-run equilibrium.

⁷ Please note that this C which stands for consumed constant capital (depreciation cost of fixed constant capital plus circulating constant capital) is not the same as the C which stands for commodities in the circuit of money capital.

⁸ As discussed above, by "actual" I mean quantities of constant capital and variable capital that are equal to the actual long-run equilibrium prices (i.e. prices of production) of the means of production and means of subsistence, respectively; i.e. as opposed to quantities of constant capital and variable capital that are equal to hypothetical long-run equilibrium prices of these inputs (the values of these inputs), as in the standard interpretation.

⁹ The money new value produced per hour (**m**) has been called by Foley and others the "monetary expression of labour-time" abbreviated as the "MELT". In Marx's well-known example in his theory of surplus-value in Chapter 7 of Volume 1, **m** is assumed to be = 0.5 shillings per hour, and it is determined by the value of gold as the money commodity.

¹⁰ This assumption is a key difference between Marx's theory and Sraffa's theory. In Sraffa's theory, there is *no new value component* of the prices of commodities; i.e. no new value produced by current labour. Labour in Sraffa's theory is considered *only as a cost*, not as a producer of value, and in this respect (cost) labour is no different from the material inputs.

¹¹ The standard interpretation of necessary labour-time is different: the labour-time necessary to produce a *given bundle of wage goods*. See Chapter 4, Section 5.1 of Moseley 2016 for further discussion of the definition of necessary labour-time.

¹² "The matter is in itself extraordinarily simple.' (Marx 1971, p. 191)

¹³ This section is a brief summary of a very long chapter (100 pages), Chapter 4 of Moseley 2016.

¹⁴ "The Results of the Immediate Process of Production", Marx 1977b, written in 1863 and published for the first time in English as an Appendix in the Vintage edition of Volume 1 of *Capital* (1977).

¹⁵ This part of the manuscript was published for the first time in 1976 in the MEGA, Volume II/3.1. It is very interesting and important and I think one of the main contributions of the MEGA.

¹⁶ Please note that Marx is using p' here to stand for the *amount* of profit, not the *rate* of profit.

¹⁷ Marx also emphasised this point in the second draft of Volume 1 of *Capital* in the *Economic Manuscript of 1861-63* mentioned above; for example, see MECW.30, pp. 67-74.

¹⁸ See Moseley 2001 and 2008 for further discussions of contrary evidence.

¹⁹ See Moseley 2001 and 2016, Chapter 4, for extensive discussions of this key paragraph.

²⁰ See for example Warnke 1993.

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