MONEY AND TOTALITY:
Marx's Logic in Volume I of *Capital*

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A widely accepted interpretation of Marx's theory (e.g. Morishima, Steedman) is that Volume I of *Capital* is primarily about the determination of the labor-values of individual commodities. In other words, Volume I presents mainly a *microeconomic* theory, and the main microeconomic variables determined are the *labor-values* of commodities, rather than the prices of commodities.

I have argued in previous papers (Moseley 1993, 2000, 2002) that Volume I is primarily about the determination of the total increment of money (M), or total surplus-value, produced in the capitalist economy as a whole. In other words, Volume I presents mainly a *macroeconomic* theory, and the main macroeconomic variable determined is the total money profit for the economy as a whole. I have called this a 'macro-monetary' interpretation of Marx's theory. (Others who have presented various aspects of such a 'macro-monetary' interpretation include Mattick 1969, Yaffe 1976, Rosdolsky 1977, Mattick Jr. 1981, Carchedi 1984, Foley 1986, and Bellofiore 1989.)

This paper provides further detailed textual evidence to support these two main points - that Volume I presents a monetary theory and that it presents a macroeconomic theory of the total surplus-value.

1. Volume I is about *money*

According to a widely held interpretation of Marx's theory (e.g. Steedman, Morishima, etc.), Volume I of *Capital* is about the *labor-values* of commodities, i.e. the labor-times required to produce commodities. The main variables determined in Volume I are the labor-values of individual types of commodities. The key concepts of constant capital, variable capital, and surplus-value are interpreted to be defined in Volume I in terms of labor-times - as the quantities of labor-times required to produce the means of production, the means of subsistence, and surplus-goods, respectively. The 'value rate of profit' is defined as the ratio of the labor-value of surplus-goods to the sum of the labor-values of the means of production and the means of subsistence. According to this interpretation, money and prices play no essential role in Volume I. Prices are not determined in Volume I. It is argued that money and prices are sometimes used in Volume I to illustrate labor-values or as a shorthand for labor-values, but money and prices are not themselves the subject of Volume I, or determined in Volume I. Rather, labor-values are determined in Volume I. One can write the equations which represent the theory in Volume I without introducing money at all (e.g. Steedman, Chapters 3 and 4; Morishima, Chapters 3-5). Volume I is often described as presenting the "value system".

I argue that this 'labor-value' interpretation of Volume I is mistaken. Volume I is not about the determination of labor-values. Rather, Volume I is about the determination of quantities of money and prices. These money magnitudes and prices are *determined by* quantities of labor-time, which are taken as given. In logical terms, money magnitudes and prices are the *explanandi*, the variables that are to be explained or determined, and quantities of labor-time are the *explanans*, the givens in terms of which the explanandi are explained or determined. Money magnitudes and prices in Volume I are not inessential illustrations or short-hand for labor-values, but are themselves the variables that are determined or explained in Volume I.

This section reviews some key chapters in Volume I in order to support this 'monetary' interpretation of Volume I.

1.1 *Part One: Commodities and money*

Volume I is about money from the very beginning (see the papers by Arthur and Taylor in this volume). Part One of Volume I is entitled 'Commodities and *Money*' (emphasis added), thus clearly indicating the importance of money. The necessity of money in a commodity-producing economy is derived in the very first chapter, in the important but usually neglected Section 3 of **Chapter 1**, as the 'necessary form of appearance' of the abstract labor contained in commodities. Very briefly, Marx's argument is the following: In order for each commodity to be exchangeable with all other commodities, the value of each commodity must be comparable with the value of all other commodities in some objective, socially recognizable form. Because the abstract labor which Marx assumed to determine the value of commodities is not directly observable or recognizable as such, this abstract labor must acquire an objective 'form of appearance' which renders the values of all commodities observable and mutually comparable. This necessity of a common unified form of appearance of the abstract labor contained in commodities ultimately leads to the conclusion that this form of appearance must be money. Money is not an inessential illustration for labor-times. Money is the *necessary* form of appearance of labor-times.

> Because all commodities, as values, are objectified human labor, and therefore in themselves commensurable, their values can be communally measured in one and the same specific commodity, and this commodity can be converted into the common measure of their values, that is into money. Money as a measure of value is the necessary form of appearance of the measure of value which is immanent in commodities, namely labor-time.
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> Marx 1867 (1977): 188

(For discussions of Marx's derivation of the necessity of money from the labor theory of value, see Rosdolsky 1977, Chapters 5 and 6; Weeks 1981, Chapter 6; Murray 1988, Chapter 14.)

Marx considered this derivation of the necessity of money from the labor theory of value to be one of the most important advances of his theory over classical economics, which had simply taken money for granted or had explained the existence of money in *ad hoc* fashion on the basis of the practical difficulties of barter, unrelated to its theory of value.

> Now, however, we have to perform a task never even attempted by bourgeois economics. That is, we have to show the origin of this money-form, we have to trace the development of the expression of value contained in the value-relation of commodities from its simplest, almost imperceptible outline to the dazzling money-form. When this has been done, the *mystery of money* will immediately disappear.
> Marx 1867 (1977): 139; emphasis added)

We could add that no other economic theory since Marx has been able to successfully accomplish this important task - to derive the necessity of money from its basic theory of value.

At the end of Section 3 of Chapter 1, the *price* of commodities is derived as the exchange-value of all other commodities with the money commodity. At this abstract stage of the theory, it is assumed that the prices of commodities are proportional to the labor-times required to produce them, with the proportionality factor being the inverse of the labor-time required to produce a unit of the money commodity (e.g. gold). At a later, more concrete stage of the analysis (Part Two of Volume III), the prices of individual commodities are more fully determined, in such a way that prices are not simply proportional to the labor-times required to produce them, but are also affected by the equalization of profit rates across industries. The point to emphasize here is that Chapter 1 presents an initial, abstract theory of *prices*, which are exchange-ratios with *money*. Chapter 1 does not present a theory of the determination of labor-values. Rather, the magnitudes of labor-times are *presupposed*, i.e. taken as given, in Chapter 1 (and throughout *Capital*), and used to derive the prices of commodities. The relation of determination between prices (P) and labor-times (L) derived in Chapter 1 can be expressed by the following simple mathematical equation:[1]

(1) $P = m L$

where m is the money-value added per labor-hour (which in Volume I is assumed to be equal to the inverse of the labor-time of a unit of gold; i.e. $m = 1 / L_G$; e.g. 0.5 shillings per hour). In mathematical terms, prices are the dependent variables and labor-times are the independent variables. (However, it should be noted that the relation between prices and labor-times in Marx's theory is different from the usual mathematical sense of dependent and independent variables, because Marx's theory derives prices as the *necessary* form of appearance of labor-time. There is no such explanation of necessity in the usual meaning of dependent and independent variables.

The short **Chapter 2** ('The Process of Exchange') discusses the actual emergence of *money* out of the actual process of circulation. One of the main points of Chapter 2 is a critique of the "fetishism of money," according to which gold appears to be money because of its own intrinsic nature, rather than because of the social relations between commodities, which require that all other commodities express their value in gold (C.I: 176).

Chapter 3 is entitled '*Money*, or the Circulation of Commodities' (emphasis added). The title indicates again that Chapter 3 is about money. More precisely, Chapter 3 is about the main functions that money performs as part of the circulation of commodities: measure of value (the objective social representation of the abstract labor contained in commodities), means of circulation (the means by which commodity-owners exchange their commodities for other commodities), hoards, means of payments for debts, and "world money" (i.e. international reserves).

Therefore, we can see that Part One of Volume I is all about money. The necessity of money is derived in Chapter 1, its actual emergence in circulation is discussed in Chapter 2, and its most important functions are derived in Chapter 3. Part One is not about the determination of "labor-values".

1.2 *Part Two: The transformation of money into capital*

Part Two introduces the all-important concept of *capital*, the central concept of Marx's theory, as the title of the book suggests. Unfortunately, this key concept is often ignored in interpretations of Marx's theory. Capital is defined in **Chapter 4** ('The General Formula for Capital') in terms of *money*, as money that becomes more money, through the purchase and sale of commodities. The title of Part Two is 'The Transformation of *Money* into Capital' (emphasis added). The transformation of money into capital happens as a result of the emergence of *more* *money* at the end of the circulation of capital. The circulation of capital is represented symbolically as M - C - (M+ M). In the circulation of capital, money plays an even more important role than in the simple circulation of commodities analyzed in Chapter 3. Indeed money (or more precisely, more money) is the aim and purpose of the whole process. Therefore, the main purpose of Volume I is to explain where this increment of money, M, comes from, and what determines its magnitude. The main purpose of Volume I is not to explain the determination of "labor-values".

The related key concept of *surplus-value* is also defined in Chapter 4 in terms of money, as the increment of money, M, that transforms money into capital.

> More *money* is finally withdrawn from circulation than was thrown into it at the beginning. The cotton originally bought for *£100* is for example re-sold for *£100* + *£10*, i.e. *£110*. The complete form of this process is therefore *M* - C - *M*', where *M*' = *M* + *M,* i.e. the original sum plus an increment. The increment of excess over the original value I call 'surplus-value'.
>
> Marx 1867 (1977): 251; emphasis added

Chapter 5 ('Contradictions in the General Formula') argues that one cannot explain the emergence of this increment of money as long as one's analysis is restricted to the sphere of circulation only (i.e. only the acts of buying and selling are considered, as Marx's theory in Volume I has been restricted up to this point) because, according to Marx's assumption) no additional value is produced through the acts of circulation. According to Marx's theory, the acts of buying and selling only transform a given amount of value from commodities to money, or vice versa. These acts of circulation do not produce additional value. Hence, they cannot be the source of surplus-value, or M.

Chapter 6 ('The Purchase and Sale of Labor-Power') identifies the key precondition that must be fulfilled if the increment of money is to emerge at the end of the circulation of capital: labor-power (the source of additional value) must be available on the market for capitalists to purchase, i.e. the majority of the population must posses no means by which they could produce for themselves and hence must sell their labor-power to capitalists in order to survive. At the end of Chapter 6 is Marx's dramatic passage from the sphere of circulation to the 'hidden abode of production', in which 'the secret of *profit-making* must at last be laid bare.' (p. 280; emphasis added) Here we can see again that 'profit-making' is the main question of Volume I. 'Profit-making' is making *money*.

1.3 *Part Three: The production of surplus-value, or more money*

Chapter 7 is the most important chapter in Volume I, in which Marx's theory of surplus-value, or the 'secret of profit-making', is presented.This theory is clearly presented in terms of money. The whole point of the theory is to explain where the increment of money that emerges at the end of the circulation of capital comes from and what determines its magnitude (3 shillings in Marx's example). Marx exclaimed at the conclusion of the presentation of his theory: 'The trick has at last worked. *Money* has been transformed into capital.' (p.301; emphasis added). The 'trick' is the emergence of the 3 shillings. 'Money [is] ... transformed into capital' by the emergence of these 3 shillings.

The magnitude of surplus-value, e.g. 3 shillings, is determined, according to Marx's theory, by the excess of the working day over necessary labor, i.e. by the magnitude of surplus labor. This relation of determination between surplus-value (increment of money) and surplus labor can be expressed by the following equation:[2]

(2) $S = m\,(L_T - L_N)$

$S = m\,L_S$

where L_S stands for surplus labor, L_T for total labor,[3] and L_N for necessary labor. This theory is illustrated in Chapter 7 by Marx by the following numerical example:

3 shillings = 0.5 sh./hr. (6 hrs.)

= 0.5 sh./hr. (12 hrs. - 6 hrs.)

The labor-time quantities on the right-hand side of these equations are the independent variables, which are taken as given, presupposed, and then used to determine the dependent variable, the money quantity on the left-hand side of the equations, the magnitude of surplus-value, or M.

In **Chapter** 8, the key concepts of constant capital and variable capital are defined as the two components into which the initial money-capital that begins the circulation of capital is divided; i.e. M = C + V. Since capital in general is defined in terms of money, so are the components of capital, constant capital and variable capital. Constant capital is that portion of the initial money-capital that is used to purchase means of production, and variable capital is that portion of the initial money-capital that is used to purchase labor-power. Constant capital and variable capital are not defined in terms of quantities of labor-time.

Chapter 9 introduces the key concept of the rate of surplus-value. The rate of surplus-value is defined in terms of a ratio of two quantities of money-capital, the ratio of the magnitude of surplus-value (M) to the magnitude of money variable capital. In Marx's main example in Chapter 9, surplus-value is equal to £90, and variable capital is equal to £90, so that the rate of surplus-value is 1.0, or 100%.

Marx then went on in Chapter 9 to derive the 'degree of exploitation', which is a ratio of labor-time quantities, from the rate of surplus-value, which as we have seen is a ratio of quantities of money-capital. The 'degree of exploitation' is the ratio of surplus labor (SL) to necessary labor (NL). Necessary labor and surplus-value are derived from variable capital and surplus-value as follows: Necessary labor is derived as the number of hours required for workers to produce new-value (in terms of money) which is equal to the money variable capital with which their labor- power is purchased; i.e. NL = V / m. Surplus labor is then the difference between the total working day and necessary labor. Derived in this way, necessary labor is proportional to variable capital and surplus-value is the same proportion to surplus-value, so that the 'degree of exploitation' (the ratio of surplus labor to necessary labor) is by definition equal to the rate of surplus-value (the ratio of surplus-value to variable capital).

It should be clear from Chapter 9 that the rate of surplus-value is defined as a ratio of money magnitudes, both from the definition of the rate of surplus-value itself, and also from the derivation of the rate of exploitation from the rate of surplus-value. If the rate of surplus-value were defined in terms of labor-times (as the ratio of surplus labor to necessary labor), then it would make no sense to distinguish between the rate of surplus-value and the rate of exploitation, and to derive the latter from the former, as Marx clearly does in Chapter 9.

We could go on, chapter by chapter in Volume I, and the conclusion would be the same. The key concepts of capital, constant capital, variable capital, and surplus-value are all consistently defined as quantities of money. Parts Four through Six are mainly about the various means by which the magnitude of surplus-value, or the increment of money (M) that emerges at the end of the circulation of capital, can be increased: by increasing the working day, by increasing the intensity of labor, or by reducing necessary labor (by means of technological change and increased productivity of labor).

Part Seven is about the 'accumulation of capital'. The accumulation of capital is defined as the reinvestment of money appropriated as surplus-value in one period as additional capital in the next period. In Marx's main example in Chapter 24, the initial capital advanced is a sum of money (£10,000) and it produces a surplus-value of £2,000. This surplus-value of £2,000 is then reinvested as additional capital by purchasing more means of production and labor-power, which produces an additional surplus-value of £400. The main point of this chapter is that the source of the £2,000 that is reinvested as additional capital is the surplus labor of workers, not the capitalist's own labor (as might be supposed of the original capital of £10,000). Thus workers are doubly exploited: not only do they produce more value than they are paid, but the money capital with which they are paid is itself the result of the surplus labor of workers of previous periods.

Thus I conclude that Volume I is clearly all about money. The main variables which are determined in Volume I are monetary variables, especially the increment of money (M) that emerges at the end of the circulation of capital. The main purpose of Volume I is to explain the origin and magnitude of this increment of money. The interpretation that Volume I is about the determination of 'labor-values' and that money is inessential completely misses the main purpose of Volume I.

2. Volume I is about the *total surplus-value*

We have seen above that the main question of Volume I is the origin and magnitude of surplus-value, or ΔM. Now the question is: to what level of aggregation does Marx's theory of surplus-value in Volume I apply: to the surplus-value produced by an individual capital, or by all the capitals in a single industry, or by all capitals together in capitalist production as a whole?

I argue that Volume I is about the *total surplus-value* produced in the capitalist economy as a whole. Volume I in general is about the total class relation between the working class as a whole and the capitalist class as a whole. The most important aspect of this general class relation is the total surplus-value produced by the working class as a whole for the capitalist class as a whole. That is the main question to which Volume I is devoted.

It is not always obvious in Volume I that Marx's theory of surplus-value applies to the total surplus-value produced by the working class as a whole (although I think it is obvious in other places that will be reviewed below), because the theory is often illustrated with a numerical example of an individual capital and even a single, solitary worker. However, the individual capitals in Marx's examples represent the total social capital of the capitalist class as a whole. Each individual capital is considered only as an average, representative 'aliquot part' of the total social capital, rather than as a distinct individual capital, different from other individual capitals. The individual capital is analyzed in terms of what this capital has in common with all other capitals – the production of surplus-value.

One important passage that clearly states that the individual capitals in Volume I represent the total social capital is provided by a key outline of Volumes I and III toward the end of the *Manuscript of 1861-63*. This manuscript is where Marx developed for the first time his theory of the distribution of surplus-value that would later be presented in Volume III. Toward the end of this manuscript, Marx attained sufficient clarity to write outlines of Volume I and Volume III that are very close to their final form. In a detailed outline of the important Part 2 of Volume III, Marx noted that the conclusions of Volume I (on the determination of value and surplus-value), are still valid for the total social capital, although the prices and profits of individual capitals will differ from their values and surplus-values. In Volume I, Marx noted, individual capitals are considered as "aliquot parts" of the total social capital, i.e. not as actual individual capitals that differ from one another.

> *For the total capital,* however, what has been explained in Chapter I [i.e. in Volume I; FM) holds good. In capitalist production, each capital is assumed to be a unit, an aliquot part of the total capital.
> Marx-Engels 1861-63d (1991): 299; emphasis added

In other words, the theory of surplus-value in Volume I is really about the total surplus-value produced by the total social capital. The individual capitals in Volume I represent the total social capital.[4]

The fact that Volume I is about the total class relation between the capitalist class as a whole and the working class as a whole, and thus is about the total surplus-value produced by the working class as a whole, is especially clear in several key chapters in Volume I that will be reviewed below.

2.1 *Part 2: The General Formula for Capital*

As we have already seen, the question of the origin of surplus-value is first posed in **Chapter 4** in terms of the 'general formula for capital'. Toward the end of Chapter 4, Marx notes that the general formula for capital applies to all types of capital – both capitals in the sphere of production (industrial capital) and capitals in the sphere of circulation (commercial capital and interest-bearing capital). In other words, Marx's question of the origin of surplus-value applies to the total surplus-value appropriated in the capitalist mode of production as a whole, not to individual amounts of surplus-value appropriated in a particular sphere, nor in a particular branch of production. The general formula for capital is just that, a *general* formula, that applies to all capitals together, and thus applies to the total social capital.

The general formula for capital is illustrated in Chapter 4 by an individual capital, a capital in the cotton industry. However, the question of the origin of surplus-value applies, not just to this single capital in the cotton industry, but rather to all capitals together, and hence to the total social capital. The individual capital in the cotton industry represents what all capitals have in common - the production of surplus-value - and thus represents the total social capital. Marx commented on the general formula for capital in a passage in Volume II as follows:

> The capitalist casts less value into circulation in the form of money than he draws out of it, because he casts in more value in the form of commodities that he has extracted in the form of commodities... *What is true for the individual capitalist, it true also for the capitalist class... [T]he capitalist simply personifies industrial capital ...* .
> Marx 1884 (1978): 196-97; emphasis added

As we have seen above, **Chapter 5** argues that it is not possible to explain the emergence of surplus-value if the analysis is restricted solely to the sphere of circulation. This conclusion follows obviously from Marx's assumption that exchange is the exchange of equivalents values. If equivalent values are exchanged, then neither party to the exchange gains a surplus-value ('where there is equality, there can be no gain').

Marx argued further that, even if it is assumed that exchange is the exchange of non-equivalent values, one still cannot explain surplus-value on the basis of exchange alone. If there is an exchange of non-equivalent values (e.g. due to cheating), then one party to the exchange will indeed gain a surplus-value as a result of the exchange, but the other party will necessarily suffer an equal loss. The net gain for both parties is zero. Therefore, for both parties together, exchange alone cannot be a source of surplus-value. Marx then extended this argument to the total surplus-value produced by the capitalist class as a whole: although one could explain the surplus-value of individual capitals by cheating, one cannot explain the profit the surplus-value of the capitalist class as a whole by cheating. Marx concluded: 'The *capitalist class of a country, taken as a whole,* cannot defraud itself.' (p. 266; emphasis added) This argument is a clear indication that Marx's theory is intended to explain the total surplus-value of the "capitalist class as a whole", not the surplus-value of individual capitalists only.[5]

Chapter 6 derives the necessary condition for the appropriation of surplus-value by the capitalist class as a whole - the existence of a *class of wage-laborers* who own no means of production themselves, and therefore must sell their labor-power to capitalists in order to survive. This precondition clearly applies to the capitalist mode of production as a whole. Marx states that capital (and wage-labor) 'announces a new epoch in the process of social production.' (p. 274) Marx is not talking here about individual capitals, nor about individual industries, but rather about the capitalist mode of production in its entirety. The capitalist mode of production requires a class of property-less workers.

In Chapter 6, the theory is once again illustrated by an individual capitalist and an individual worker. But clearly the theory is not only about these two individuals. Rather, the theory is about the capitalist class as a whole and the working class as a whole. The individual capitalist represents the capitalist class as a whole and the individual worker represents the working class as a whole.[6]

Toward the end of Chapter 6, Marx presents the transition from the sphere of circulation to the sphere of production ('the hidden abode of production'). These are the two analytical spheres into which Marx divided the capitalist mode of production as a whole. This analytical distinction between the sphere of circulation and the sphere of production is itself further evidence that Marx's theory in Volume I is about the capitalist mode of production as a whole. The transition to the sphere of production in Chapter 6 is not a transition for an individual capital only, but rather for all capitals together; in other words, it is a transition to the sphere of capitalist production as a whole.

2.2 *Parts Three and Four: The determination of the total surplus-value*

Chapter 7 presents Marx's basic theory of surplus-value, his answer to the most important question in a theory of capitalism: what determines the magnitude of surplus-value? Marx's answer to this question, as we have seen above, is that the magnitude of surplus-value depends on two main variables: (1) the length of the working day and (2) the necessary labor-time required for workers to reproduce an equivalent to their money-wage, which in turn depends on the productivity of labor.[7]

As in previous chapters, the theory is illustrated with a numerical example of a single capital, a capital in the cotton yarn manufacturing industry. The determinants of the magnitude of surplus-value - the length of the working day and the necessary labor-time - are illustrated in terms of the working day a single worker, a spinner of yarn. However, Marx's theory is clearly not only about the surplus-value produced by this single yarn spinner, but rather is about the total surplus-value produced by the working class as a whole. The determinants of surplus-value - the total working day and the necessary labor-time - are the same for all workers. The yarn spinner in Chapter 7 represents the working class as a whole.

This important point is made explicit in **Chapter 11** ("The Rate and Mass of Surplus-value") which provides a summary of Marx's theory of surplus-value to this point (which includes only absolute surplus-value, not yet relative surplus-value). The chapter begins with the same example of a representative individual worker as in earlier chapters, with variable capital = 3 shillings and surplus-value = 3 shillings. Then Marx states that if 100 workers are employed simultaneously by a given capital, then the total variable capital of all workers together will equal 300 shillings and the total surplus-value will also equal 300 shillings; i.e. $V = n\ V_A$ and $S = n\ S_A$ (where V_A and S_A are the average variable capital and the average surplus-value per worker, respectively).

Later in Chapter 11, Marx briefly applies the same method of aggregation to the economy as a whole. Marx states in an important passage:

> The labor which is set in motion by the *total capital of society may be regarded as a single working day*. If, for example, the number of workers is a million and the average working day is 10 hours, the *social working day* consists of 10 million hours. With a given length of the working day, *the mass of surplus-value can be increased only by increasing the number of workers*, i.e. by increasing the size of the working population.
>
> Marx 1867 (1977): 422; emphasis added

This passage is clear evidence that the theory of surplus-value in Volume I applies to the total surplus-value produced by the working class as a whole. Marx's point here is that with a given working day (and given necessary labor), this total surplus-value can be increased only by increasing the size of the working class.

Marx made this same point in the *Grundrisse* (the first draft of Volume I), in the *Manuscript of 1861-63* (the second draft of Volume I, which has recently been published for the first time), and in *Wages, Prices, and Profit* (written in 1866, just before the publication of the first edition of Volume I). In the *Grundrisse*, Marx wrote:

> If a certain limit is given, say e.g. the worker needs only half a day in order to produce his subsistence for a whole day - and if the natural limit has been reached - then an increase of absolute labor time is possible only if more workers are employed *at the same time*, so that the real working day is simultaneously multiplied instead of only lengthened.
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> Marx 1857-58 (1973): 386; emphasis in the original

> *Surplus time* is the excess of the working day above that part of it which we call *necessary* labour time; it exists secondly as the multiplication of *simultaneous working days*, i.e. of the *labouring population*...
>
> A labouring population of, say, 6 million can be regarded as one working day of 6 x 12, i.e. 72 million hours: so that the same laws applicable here.
>
> Marx 1957-58 (1973): 398-99; emphasis in the original

And in the *Manuscript of 1861-63*, Marx wrote again:

> The *amount of surplus value* evidently depends not only on the surplus labour performed by an individual worker above and beyond the necessary labour time; it depends just as much on the number of workers employed simultaneously by capital, or the number of simultaneous working days it makes use of, each of these = necessary labour time + surplus labour time...
>
> In other words: the amount of surplus value - its total amount - will depend on the number of labour capacities available and present in the market, hence on the magnitude of the working population and the proportion in which this population grows.
>
> Marx-Engels 1861-63a (1988): 185-87; emphasis in the original

> This law only implies that with a constant productivity of labour and a given normal day, the amount of surplus value will grow with the number of workers simultaneously employed.
>
> Marx-Engels 1861-63a (1988): 206

And in *Wages, Prices, and Profit*, in which Marx explained his theory of surplus-value at a congress of the International Workingman's Party, Marx remarked:

> There will also be nothing changed if in the place of one working man you put the whole working population, twelve million working days, for example, instead of one
> Marx-Engels 1968a: 218

In these passages, it is clear and explicit that Marx's theory of surplus-value applies to the total surplus-value produced by the working class as a whole.

Further important evidence that Volume I is about the total surplus-value produced by the working class as a whole is provided by **Chapters 10 - 18**, which are about the two main ways to increase the amount of surplus-value produced by the working class as a whole: (1) increase the length of the working day ('absolute surplus-value') and (2) reduce the necessary labor-time by technological change which increases the productivity of labor ('relative surplus-value').

Chapter 10 is about the first determinant of surplus-value - the length of the working day. This chapter is about the determination of the length of the working day *for the working class as a whole*, not the length of the working day for individual workers or groups of workers. Marx argued that the length of the working day is determined by a *class struggle* between the capitalist class as a whole and the working class as a whole. Since the amount of surplus-value produced depends in part on the length of the working day (and varies positively with the working day), capitalists will strive to lengthen the working day or at least will resist attempts by workers to reduce the working day. Workers, on the other hand, have a vested interest in reducing the length of the working day in order to provide more 'free time' for leisure, recreation, etc. Therefore, the length of the working day will be determined by the class struggle between capitalists and workers, the outcome of which depends on the relative balance of forces between these two classes.

Chapter 12 begins Part Four, which is about the second way to increase surplus-value - by reducing the necessary labor-time through technological change which increases the productivity of labor. Chapter 12 derives technological change as an inherent tendency (an ‘immanent drive’) of the capitalist mode of production from Marx’s basic theory of surplus-value. Once legal limits to the length of the working day are established, the primary means by which surplus-value can be increased is through technological change which increases the productivity of labor and which thereby reduces necessary labor. Marx concluded:

> Capital therefore has an immanent drive, and a constant tendency, towards increasing the productivity of labor ...
>
> Marx 1867 (1977): 436-37

This conclusion of an inherent tendency toward technological change clearly applies to the capitalist mode of production as a whole.

Once again, the theory of relative surplus-value and technological change is illustrated by a single worker. However, this theory clearly applies, not just to a single worker, but to all workers together. The effect of technological change on the price of wage goods, and hence on necessary labor and surplus labor, is a *general* effect, which happens to all workers. Therefore, technological change will not only reduce necessary labor and increase surplus labor for the single worker in this illustration, but will do so for the working class as a whole.

Thus we can see that, by the end of Part Four of Volume I, Marx has presented his basic theory of surplus-value, which provides an explanation of the determination of the total surplus-value produced in capitalist production as a whole. According to Marx’s theory, the total surplus-value depends on: (1) the average working day (L_T),[8] (2) the average necessary labor-time (L_N) (these two together determine the average surplus-value produced by per worker), and (3) the number of workers simultaneously in capitalist production as a whole (n). This theory can be represented by the following equation:[9]

(3) $S = n [m (L_T - L_N)] = n [m (L_S)]$

This basic theory of the determination of the total surplus-value is not revised or modified in the later volumes of *Capital*. No new variables are later added to this basic equation of the determination of the total surplus-value. This theory is amplified by exploring further the complex determination of the key variables on the right-hand side of this equation (L_T and L_N). But the basic theory of surplus-value, as represented by this equation, remains the same.

2.3 *Part Seven: accumulation of the total social capital*

Part Seven provides further important evidence that Volume I is about the total class relation between the capitalist class and the working class, and thus that the theory of surplus-value presented in Volume I is about the total surplus-value produced by the working class as a whole.

The main point of Chapter 23 (on 'Simple Reproduction', which assumes that all the surplus-value produced in each period is consumed and none is accumulated as additional capital) is that the reproduction of the total social capital also accomplishes the reproduction of the working class as a whole, because workers spend all or most of their wages on consumer goods, and therefore must continue to sell their labor-power to capitalists.

Similarly, the main point of Chapter 24 ('Accumulation of Capital') is the 'inversion' of the laws of commodity exchange (based on the exchange of equivalent values) to the law of capitalist appropriation (based on the exploitation of workers). When the class relation between capitalists and workers was first analyzed in Chapter 6 of Volume I, that relation appeared to be an exchange of equivalents, in the sense that capitalist paid workers the full value of their labor-power. In Chapter 7, Marx's theory revealed that the relation between capitalists and workers was instead one of exploitation of workers by capitalists in production, because workers produce more value than they are paid. In this chapter, Marx argues (as we have seen above) that workers are "doubly exploited" in the sense that workers not only have to produce surplus-value for capitalists, they also have to produce the variable capital with which they are paid, i.e. the variable capital is itself almost entirely the result of the surplus labor of other members of the working class in previous periods. This conclusion of the double exploitation of workers obviously applies to the working class as a whole.

Finally, the main point of Chapter 25 ('The General Law of Capitalist Accumulation') is the effects of the accumulation of the total social capital on the working class as a whole (as Marx says in the first sentence of the chapter).The main factor in this analysis is the composition of the total social capital (the ratio of constant capital to variable capital for the economy as a whole), and the tendency of this ratio to increase over time as a result of technological change. The increase in the composition of the total social capital reduces the demand for the labor-power of workers, and hence increases unemployment, or the 'industrial reserve army', of the working class as a whole. The 'general law' of capitalist accumulation is that the capitalist mode of production tends to produce both increasing wealth in the hands of capitalists and increasing misery suffered by workers.

Therefore, we can see that Part Seven is about the accumulation of the total social capital and its effects on the working class as a whole. The accumulation of the total social capital is the reinvestment of the total social surplus-value produced by the working class as a whole. The analysis of the accumulation of the total social capital in Part Seven *takes as given* the total surplus-value that is to be accumulated. Part Seven is not about the determination of the total surplus-value, but rather about the division of the total surplus-value into consumption and accumulation. Since the total surplus-value is taken as given, this total surplus-value must have been already determined in previous chapters in Volume I, which is indeed the case, as we have seen.

2.4 Further textual evidence

This section briefly presents further textual evidence from elsewhere in Marx's writings that Volume I is about the total surplus-value produced by the working class as a whole.

In August 1867, soon after the first edition of Volume I was finally published, Marx wrote a letter to Engels in which he stated that one of the two best points of his book was the determination of the total surplus-value prior to its division into the individual parts of profit, interest, and rent.

> The best points in my book are: ... 2) the treatment of *surplus-value independently of its particular* forms as profit, interest, rent, etc... The treatment of the particular forms by classical economy, which always mixes them up, is a regular hash.
>
> Marx-Engels 1968b: 180

Five months later (in January 1868), Marx made a similar comment in another letter to Engels. This time the prior determination of the total surplus-value is described as one of the 'three fundamentally new elements' of his book:

> 1) That in contrast to *all* former political economy, which *from the very outset* treats the different fragments of surplus-value with their fixed form of rent, profit, and interest as already given, I first deal with the general form of surplus value, in which all these fragments are still undifferentiated - in solution, as it were.
>
> Marx-Engels 1968b: 186

Marx's theory of the division of the total surplus-value into these individual parts is presented in Volume III of *Capital* (see Moseley 1997 and 2002 for detailed discussions of Marx's theory of the distribution of surplus-value in Volume III). This theory of the distribution of surplus-value *takes as given* the total amount of surplus-value that is to be distributed. This total amount is taken as given because it has already been determined by Marx's theory of surplus-value in Volume I, as we have seen.

There are a number of passages in the important concluding Part Seven of Volume III, in which Marx explicitly states that the quantity of surplus-value that is taken as given in the theory of the distribution of surplus-value in Volume III is determined by the quantity of surplus labor, i.e. that it is determined by the theory of surplus-value presented in Volume I. A good example is the following passage: The *value freshly added each year by new labor* ... can be separated out and resolved into the different revenue forms of wages, profit, and rent; *this in no way alters the limits of the value itself*, the sum of the value that is divided between these different categories. In the same way, a change in the ratio of these individual portions among themselves cannot affect their sum, *this given sum of value*... What is given first, therefore, is the mass of commodity values to be divided into wages, profit, and rent, the absolute limit to the sum of value portions in these commodities. Secondly, as far as the individual categories themselves are concerned, their average and governing limits are similarly given... We have thus an *absolute limit* for the value component that forms *surplus-value* and can be broken down into profit and ground-rent; this is *determined by the excess of the unpaid portion of the working day over its paid portion,* i.e. by the value component of the total product in which this surplus labor is realized. If we call *this surplus-value whose limits are thus determined* profit, when it is calculated on the total capital advanced, as we have already done, then this profit, considered in its absolute amount, is equal to the surplus-value, i.e. it is just as regularly determined in its limits as this is. It is the ratio between the total surplus-value and the total social capital advanced in production. If this capital is 500 ... and the surplus-value is 100, the absolute limit to the rate of profit is 20 percent. The division of the social profit as measured by this rate among the capitals applied in the various different spheres of production produces prices of production which diverge from commodity values and which are the actual averages governing market prices. But this divergence from values *abolishes neither the determination of prices by values nor the limits imposed on profit by our laws...* This surcharge of 20 per cent ... is itself determined by the surplus-value created by the total social capital, and its proportion to the value of this capital; and this is why it is 20 percent and not 10 percent or 100 percent. The transformation of values into prices of production does not abolish the limits to profit, but simply affects its distribution among the various particular capitals of which the social capital is composed ...

Marx 1894 (1981): 998-1000, emphasis added; see also pp. 961, 984-85, 994, and 1002)

There are also several similar passages in the first draft of Volume III in the *Manuscript of 1861-63*. For example,

> "The equalization of the surplus-values in the different spheres of production does not affect the absolute size of this total surplus-value; but merely alters it distribution among the different spheres of production. *The determination of this surplus-value itself, however, only arises out of the determination of value by labor-time*. Without this, the average profit is the average of nothing, pure fancy. And it could then equally well be 1,000% or 10%.
>
> Marx-Engels 1861-61b (1989): 416 emphasis added; see also Marx-Engels 1861-61c (1989): 469 and Marx-Engels 1861-61d (1991): 99

Therefore, I conclude that Volume I of *Capital* is about the determination of the total surplus-value produced by the working class as a whole and appropriated by the capitalist class as a whole. This aggregate nature of Marx's theory of surplus-value in Volume I is not always obvious, but is clear from this review of these key chapters in Volume I and these other writings.

3. Implications

In this paper, I have presented substantial textual evidence to support the macro-monetary interpretation of Marx' theory, according to which Volume I is mainly about money (or the determination of monetary variables), and, more precisely, is mainly about the determination of the total surplus-value, or the total increment of money (ΔM), that emerges in the circulation of the total social capital. This interpretation has important implications for the evaluation of the logical consistency and the explanatory power of Marx's theory.

With regard to logical consistency, this macro-monetary interpretation implies that there is no logical contradiction in Marx's determination of prices of production in Part 2 of Volume III.

There is no contradiction between the 'value rate of profit' in Volume I and the 'price rate of profit' in Volume III. There is only one rate of profit in Marx's theory, the price rate of profit. The price rate of profit is derived in Volume III from the total surplus-value which is determined in Volume I, and is then taken as given in the determination of prices of production in Volume III. Marx did not 'forget to transform the inputs' of constant capital and variable capital from values to prices of production, because the same quantities of money constant capital and money variable capital are taken as given in the determination of both values in

Volume I and prices of production in Volume III (see Moseley 1993 and 2000 for an extensive presentation of this argument). Marx's determination of prices of production is logically consistent. Therefore, the very widespread reason for rejecting Marx's theory - logical inconsistency - is not justified. The further evaluation of Marx's theory should focus on its empirical explanatory power, compared to the explanatory power of other economic theories.

With regard to explanatory power of Marx's theory, according to the macro-monetary interpretation, Marx's theory in Volume I explains a wide range of important phenomena of capitalist economies. To begin with, as discussed above, the 'necessity of money' in capitalist economies is explained in Chapter 1 on the basis of the labor theory of value. This derivation of the necessity of money is an achievement that no other economic theory, before or after Marx, has been able to accomplish. In particular, Sraffa's theory, or the Sraffian interpretation of Marx's theory, provides no explanation of the necessity of money. Money is simply taken as a given feature of capitalist economies, without an explanation of its necessity, and money plays almost no role in this theory. Similarly, neo-classical economic theory also provides no explanation of the necessity of money in capitalist economies. As expressed by Frank Hahn, one of the leading proponents of neoclassical theory: 'The most serious challenge that the existence of money poses to the theorist is this: the best developed model of the economy [i.e. neoclassical general equilibrium theory] cannot find room for it.' (1983, p. 1)

Furthermore, Marx's theory in Volume I explains the *actual* total surplus-value produced in the real capitalist economy, not a *hypothetical* total surplus-value, that is proportional to the 'labor-values' of surplus-goods, as in the Sraffian interpretation. Marx's theory in Volume I does not determine a hypothetical total surplus-value that later has to be transformed into the actual surplus-value, so that its magnitude changes, and no longer depends solely on surplus labor. Instead, Volume I determines the actual surplus-value, as proportional to surplus labor, which is then taken as given and does not change in magnitude in the later analysis of the distribution of surplus-value in Volume III (i.e. the total surplus-value is not affected by the distribution of surplus-value, or the determination of individual component part of surplus-value).

Finally, there are a number of other important phenomena of capitalist economies that are explained on the basis of Marx's 'surplus labor' theory of surplus-value, and that cannot be explained on the basis of other economic theories of profit: inherent conflicts over the length of the working day and over the intensity of labor, inherent technological change, the tendency of the rate of profit to fall, periodic crises, etc. (see Moseley 1995 for an extensive evaluation of the explanatory power of Marx's theory, in response to Mark Blaug's negative appraisal).

Therefore, it would appear that Marx's theory of surplus-value is both logically consistent and has greater explanatory power than either Sraffa's theory or neoclassical theory. Further research obviously need to be done on the relative explanatory power of Marx's theory and these other theories, but this further empirical research should at least recognize and acknowledge that Marx's theory is logically consistent and that it does not contain the "logical flaws" that are widely alleged.

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ENDNOTES

1. This equation is not explicit in *Capital*, but I think it accurately expresses the logic of Marx's theory of value presented in Chapter 1.

2. Again, this equation is not explicit in *Capital*, but I think it accurately expresses the logic of Marx's theory of surplus-value presented in Chapter 7.

3. Total labor (L_T) depends not only on the length of the working day, but also on the intensity of labor. Labor of above average intensity is equivalent, in the determination of the value produced, to a longer working day.

4. Felton Shortall (1994) has emphasized this representative function of the individual capitals analyzed in Volume I. Shortall argues that, in Volume I:

> the individual capital was only considered insofar as it was stripped of all particularity. It stood as the immediate representative of all capitals, as the abstract generality of capital as such. Consequently, the individual capital could be taken as a simple microcosm of the totality of social capital, its direct and immediate individual embodiment. (Shortall, p. 452) (See also Rosdolsky (1977, p. 48) and Foley (1986, p. 6) on the representative nature of individual capitals in Volume I.)

5. In an earlier draft of Volume I in the *Manuscript of 1861-63*, Marx elaborated on this point further:

> If we take all the capitalists of a country and the sum total of purchases and sales between them in the course of a year, for example, one capitalist may admittedly defraud the other and hence draw from circulation more value than he threw in, but this operation would not increase by one iota the sum total of the circulating value of the capital. In other words, the *class of capitalists taken as a whole* cannot enrich itself as a class, it cannot increase its *total capital*, or produce a surplus-value, by one capitalist's gaining what another loses. The sum total of capital in circulation cannot be increased by changes in the distribution of its individual components between its owners. Operations of this kind, therefore, however large a number of them one may imagine, will not produce any increase in the sum total of value, any new or surplus-value, or any gain on top of the total capital in circulation.
>
> Marx-Engels 1861-61a (1988): 25; emphasis added

6 Marx remarked in the "Results" manuscript, written in 1864-65:

> If we think of the whole of capital as standing on one side, i.e. the totality of the purchasers of labour-power, and if we think of the totality of the vendors of labor-power, the totality of workers on the other, then we find that the worker is compelled to sell not a commodity but his own labour-power as a commodity.

Marx 1867 (1977): 1003; thanks to Riccardo Bellofiore for pointing out this passage to me.

7. As mentioned above in footnote 3, the value produced, and hence also the surplus-value produced, also depends on the intensity of labor.

8. As mentioned above, the total labor also depends on the intensity of labor.

9. Again, this equation is not explicit in *Capital*, but I think it accurately expresses the logic of Marx's theory of surplus-value presented in *Capital*.