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THE VALUE OF MONEY THE VALUE OF LABOR POWER AND THE MARXIAN TRANSFORMATION PROBLEM

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ABSTRACT: An interpretation of the labor theory of value is proposed which retains the proportionality of profit and unpaid labor time in the face of any deviations of prices from labor values. The concept "value of labor power" in the case when prices are proportional to labor values is equal both to the labor value of workers' consumption and to the product of the money wage and the "value of money," that is, the ratio of aggregate direct labor time to aggregate money value added. On the basis of the second definition a consistent interpretation of the labor theory of value is constructed in which surplus value is conserved in the transformation from labor values to prices, but in which the value of labor power is not in general equal to the labor value of workers' consumption. This interpretation can be made operational in terms of accounting data from capitalist firms.

The relevance of the labor theory of value has been challenged on the ground that the prices of commodities in capitalist economies are not proportional to the labor time embodied in them. Many defenders of the theory have argued that imaginary prices of commodities proportional to embodied labor times determine the actual prices of commodities systematically, so that the labor theory of value can be seen as the basis of a theory of actual commodity prices.

In this paper I suggest proceeding in a different way, viewing the labor theory of value as the claim that the money value of the whole mass of net production of commodities expresses the expenditure of the total social labor in a commodity-producing economy (of which capitalist economies are the leading and most highly developed case). This path begins with the global value produced by the expenditure of labor, the value embodied in the whole mass of net commodity product, and then asks how this value comes to be realized in the prices of particular commodities. The concept of value as a property of the whole mass of the net commodity product in this approach is analytically prior to the concept of price, the amount of money a particular commodity brings on the market.

This way of thinking of the labor theory of value requires us to think of a strict relation in a commodity-producing economy between the monetary unit (whether that unit is linked to a general equivalent money commodity or not) and abstract social labor time. A unit of money, in this approach, can be thought of as a claim to a certain amount of the abstract social labor expended in the economy. This path of development of the labor theory of value starts at the global level with the total abstract social labor expended in commodity production, its form as the whole value of the net commodity product, and money as the social expression of this value.

Any particular commodity can be seen as embodying a certain fraction of the total abstract social labor expended in producing commodities; it also exchanges for a certain amount of money (its price), which represents a possibly different fraction of the aggregate abstract social labor expended. This theory thus inherently permits the possibility of a deviation of the price of a com-

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modity from its labor value, that is, the fraction of the aggregate abstract social labor embodied in the commodity.

This line of argument leads to the conclusion that the labor theory of value is valid for *any* commodity-producing economy, no matter what deviations of price from labor values that economy exhibits. It further implies that the labor theory of value is compatible with any theory of price, in the sense that the hypothesis that the aggregate money value of net commodity production is the expression of the aggregate abstract social labor time can be maintained in the face of all the anomalies that arise from particular pressures on particular prices in concrete exchanges. Furthermore, the labor theory of value in this interpretation is operational in the sense that the categories have measurable correlatives in the movement of value and money in actual commodity-producing societies, and in particular in capitalist production.[1]

In the next section I will establish certain definitions to try to minimize the ambiguities that haunt the discussion of price and value. Then I will summarize the propositions that hold true of these categories on the assumption that the prices of commodities are uniformly proportional to labor values. The discussion then turns to the question of how appropriately to generalize these propositions to cases where prices are not uniformly proportional to labor values. This task requires us to pay special attention to the concepts of the *value of money* and the *value* of *labor power.* Here I show what definitions of these concepts are consistent with the idea that the money value of the net commodity product is an expression of the aggregate abstract social labor expended in production. I then discuss the differences between this interpretation and other interpretations of the labor theory of value. The paper ends with a short remark on the "transformation problem," and a discussion of the relation of this interpretation of the labor theory of value to Marx's development of the theory.

I hope the reader will recognize that this paper confines itself to the analysis of *definitions*, and the internal consistency of different systems of definitions, and does not touch on the more difficult problem of the *determination* of the magnitudes in the theory. For example, the question of whether the value of labor power ought to be defined as the amount of labor actually embodied in workers' consumption, or as the amount of abstract social labor which money wages give workers a claim to, is not the same as the question of whether or not wages are *determined* by a given subsistence level of workers' consumption.

Definitions

Consider a closed capitalist commodity-producing economy consisting of a number of different firms producing and selling a number of different commodities. The definitions that follow refer to the operation of this system over a definite time period, say a year, and presumes that all the commodities produced are sold.

Each firm knows at the end of the year the following magnitudes for each commodity: the money value of its sales; the money cost of non-labor inputs purchased from other firms; the money depreciation allowance it must make to replace long-lived means of production worn out during the year; the wages it has paid workers directly involved in production; and its gross profit, the remainder when costs of purchased inputs, depreciation, and wages of productive workers are subtracted from the value of sales. I will call the value of sales divided by the quantity of the commodity sold the *price* of the commodity; the sum of cost of purchased inputs and depreciation divided by the quantity sold the *non-wage cost* of the commodity; the production wages divided by the quantity sold the *wage cost* of the commodity; and the gross profit divided by the quantity sold the *profit* on the commodity. The price of the commodity less the non-wage costs of the commodity I will call the *value added* to the commodity, which is by definition equal to the sum of wage cost and profit. (Notice that value added is a money-denominated term.) Marx calls the non-wage cost *constant capital*, the wage cost *variable capital* and the profit *surplus value.*

I will use the word "aggregate" to mean the total of these magnitudes over all the commodities sold in the whole economy. Thus the *aggregate price* of commodities is the total of the sales of all the firms; and similarly for the *aggregate wage cost* or *aggregate non-wage cost*, *aggregate value added*, and *aggregate profit.*

Since the economy is closed, the aggregate value added is equal to the money value of the commodities consumed plus the money value of the change in stocks of commodities held between the beginning of the year and the end of the year, including stocks of long-lived means of production. Thus the aggregate value added is also the value of the net commodity product (since it includes only the value of the change in stocks of commodities over the period). The aggregate price of commodities, on the other hand, is the money value of the total commodity product, without deducting the part of the initial stocks used up during the year.

All these magnitudes are measured in money units, so many dollars per unit of the commodity, or so many dollars (per year) for the aggregates.

During the year, production workers expend a certain quantity of simple, abstract, socially-necessary labor in production. Simple, abstract, social labor is not the same thing as measured labor time in real production, since it is essential to correct measured labor time for differences in the intensity of work, the skill of workers, and the relation of the technique of production to the current social standard. Throughout this paper, I will assume that the necessity for these corrections is constantly in the reader's mind, and will use the word "labor" to refer to "simple, abstract, socially-necessary labor." (See Rubin [1972] for a careful discussion of these issues.)

We can also think of calculating the part of this labor embodied in each commodity, which I will call *labor value* of the commodity, measured in hours of labor per unit of the commodity. The labor value of the commodity consists of the *direct labor* expended by workers in a firm in its production, and *indirect labor*, the labor value of the inputs purchased from other firms and the depreciation of long-lived means of production.

The aggregate direct labor is just the total labor input to production and is equal to the labor value of the net commodity product. The aggregate labor value is the sum of direct and indirect labor over all the firms, and is the labor value of the total commodity product. The aggregate labor value thus includes the labor value of commodities held in stocks at the beginning of the year and used up during the year, as well as the labor value of the commodities produced to replace them. Furthermore, if some inputs are produced within the year, the aggregate labor value will count the direct labor in these commodities twice, once as direct labor and again as indirect labor in the commodities produced with those inputs.

All the labor value measures have the dimension of hours of labor time.

When Prices of Commodities are Proportional to Embodied Labor

In much of his exposition of the labor theory of value as a tool for analyzing capitalist social relations, Marx adopts the assumption that money prices of commodities are proportional to their labor values. On the basis of this assumption he develops a transparent and powerful account of the workings of the capitalist mode of production. There is considerable controversy, however, about whether this account can be generalized to situations where prices of commodities are not, for one reason or another, proportional to labor values.

In the case where prices of commodities are proportional to labor values, the idea that money is a form of value has a special simplicity and directness. The expenditure of labor creates value, which is expressed in the price of the commodity. A quantity of money under these assumptions is the expression of a certain amount of labor time (for example, 1 hour of labor equals 10 dollars). Thus the ratio of the labor value of the commodity to its price is a coefficient that allows us consistently to translate back and forth between labor time and money value. I will call this ratio the *value of money*. Its dimensions are hours of labor per dollar.[2] The value of money in this sense is not conceptually the same as the *value of the money commodity* in situations where a commodity, like gold, serves as the socially accepted general equivalent. The value of money expresses the social equivalence of money and labor time which is inherent in commodity production, and would be meaningfully defined even if money were an abstract unit of account. If there is a money commodity, and prices are proportional to labor values, then the value of money will tend to be equal to the labor value of the money commodity multiplied by the amount of the money commodity in the monetary unit. It is not my aim in this paper to discuss the general determinants of the value of money in the case where money is not closely linked to a commodity standard, but to show the theoretical role the concept of the value of money plays in interpreting the labor theory of value.

Under the assumption that the price of every commodity multiplied by the value of money equals the labor value of the commodity, the following propositions hold.

1. The value added in any production process or any collection of production processes multiplied by the value of money is equal to the direct labor expended in the production of the commodity or collection of commodities. The aggregate price of commodities, however, does not correctly measure the direct labor expended in their production. This is because the indirect labor embodied in one commodity is the direct labor expended on the commodities which are inputs to its production. When we aggregate over all produced commodities, the total labor expended is just the direct labor deployed in all the sectors of social production, but the aggregate prices of commodities count this labor many times over as the outputs of one stage of production become inputs to the next. The value of money, then, correctly translates the value added in any commodity or group of commodities into direct labor time, when all commodities have prices proportional to their labor values. But the value of money does not, even under these strong assumptions, translate the price of collections of commodities into the labor actually expended in their production, because of double counting.

   a) If the economy has a commodity money system, where one produced commodity (say, gold) is the general equivalent commodity and serves to represent abstract value, then the monetary unit will be a certain quantity of the money commodity. As a consequence of the last observation, the value of money will equal the labor value of the standard unit of the money commodity. We can view gold, for instance, as being produced like other commodities with the help of purchased inputs by direct labor. The labor value of the amount of gold contained in the dollar will then be the value of money in the sense defined, and a dollar's worth of gold will exchange for commodities having the same labor value.

2. If we have a capitalist system of production based on the appropriation of surplus value by capitalists who hire workers for a wage, then we must distinguish labor power, the commodity sold by workers to capitalists, which is their power to expend labor and thereby to create value, as a separate commodity. Its price is the money wage. The value of labor power is the amount of abstract labor time for which the worker receives on average an equivalent in the wage. Since the value of money allows us to translate money quantities into labor time, the value of labor power will be the money wage multiplied by the value of money. This is a number with the dimension labor time per unit of labor power sold. If we assume that one hour of labor power sold yields one hour of labor time in production, the value of labor power will be a fraction between 0 and 1 and expresses the fraction of expended labor time the workers work "for themselves," or the fraction of labor expended which is "paid labor." The value of labor power is also, under the assumption that an hour of labor power yields an hour of labor time, equal to the wage share of value added.

   a) A direct corollary of the last observation is that the profit of any sector or group of sectors multiplied by the value of money will be equal to the unpaid labor time, that is, the labor expended by workers for which they receive no equivalent in the wage.

   b) A second corollary of these observations is that whatever workers spend their wages on, they receive commodities which embody labor equal to the value of labor power multiplied by the amount of labor-power they sell. This is because the prices of all commodities under these assumptions are proportional to their labor values, the factor of proportionality being the value of money. Thus, if we choose to regard workers' consumption as being equivalent to the production of the commodity "labor power," it makes sense to say that the value of labor power is the value of the commodities which have been used up in its production. While this makes sense, we need to be careful about how far we stretch the analogy between labor power and other commodities, which are "produced" in a more traditional sense of the term. The social relations through which labor power is "produced" are typically very different from those involved in the production of other commodities. If we think of the worker's household as the locus of production of labor power, we have to take account of the possibility that labor is expended there which is completely unpaid; furthermore, the worker does not appropriate a surplus value from the production and sale of labor power as a commodity, as the capitalist does in organizing the production of most other commodities. There is also a danger of reducing a complex process to a simple formula in this analogy: the "production of labor power" viewed in perspective, is nothing else than the complete development of human beings, a phenomenon to which we want to give a different kind of attention and of which we want to have a different kind of knowledge than the production of other commodities.

3. The profits of any sector, assuming that prices of commodities are proportional to labor values, and that the wage is uniform across sectors, will be proportional to the labor power employed in that sector. As a result, unless invested capital is also proportional to labor power employed, profits will not be proportional to invested capital, so that profit rates will differ between sectors.

The Need for a Generalization

While this way of looking at capitalist production is extremely simple and powerful, the assumption that prices are uniformly proportional to labor values of commodities is not acceptable in general for two reasons.

First, if we inspect the accounts of any real system of capitalist firms, we find equivalents for all the categories defined by the theory: value added, profit, wage and non-wage costs. But we will find on looking at such a system of accounts that value added is not uniformly proportional to direct labor expended across sectors.[3] Since the deviations appear to be too large to be explained by differences in the quality of labor, it seems hopeless to try to maintain the position that in reality prices are indeed proportional to labor values.

Second, the idea of competition between capitals strongly suggests that there are forces in a capitalist economy which tend to equalize profit rates on invested capital between sectors.[4] When prices are proportional to labor values and wages are equal across sectors, profits will be proportional to labor time, not to capital invested. If capital invested per unit labor time worked varies from sector to sector, as will almost surely be the case, profit rates will not be equal. Thus, even at the purely theoretical level, we need a generalization of the labor theory of value to allow for cases where prices are not proportional to labor values.

It is impossible in a generalization to maintain all of the propositions listed above. They are consistent with each other only on the assumption that prices are proportional to labor values. Thus any generalization will have to choose some subset of these propositions to maintain. This choice is an important one in any theoretical generalization, because the propositions which are maintained in the generalization act as the essential core of the theory in question. In a certain sense, the choice of which of the propositions listed above to maintain in generalizing the labor theory of value to situations where prices of commodities are not proportional to labor values expresses an understanding of what the labor theory of value means at its core. This is why seemingly technical controversies over the "transformation problem" have so much life and energy; they are in fact controversies over the meaning and coherence of the labor theory of value.

Most of the work done on this problem, though it does not pose the question in precisely the way I have put it in this paper, neglects almost entirely the problem of generalizing the concept of the value of money, and chooses to maintain the proposition that the value of labor power measures the labor value of the commodities workers purchase with the wage.[5]

In this paper I will explore another path, which tries to generalize the concept of the value of money by defining the value of money as the ratio of aggregate direct labor to aggregate value added. In this way it is possible to continue to interpret the value of labor power as the abstract labor represented by the wage, that is, as the money wage multiplied by the value of money.

The Value of Money

Suppose, then, we have a commodity-producing system in which, for one reason or another, the money prices of commodities are not proportional to labor values. One reason might be that prices deviate from labor values so that profit rates can be equalized when invested capital per worker varies over different sectors. Other reasons might be monopoly, government regulations, the exploitation of information differentials in markets by middlemen, and so on.

If we want to hold to the idea that labor produces value, and that money is a form of value, the question of how much abstract simple labor a unit of money represents still makes sense. How should we answer this question?

I propose to generalize the concept of the value of money by defining it as the ratio of aggregate direct labor time to aggregate value added.[6] Notice that this definition is consistent with the propositions that hold when prices are proportional to labor values.

If we follow this path, we have a transparent account of the transfer of value in the exchange of commodities. The value added to any commodity multiplied by the value of money is the claim on aggregate direct labor realized in selling the commodity. If this claim is larger or smaller than the direct labor content of the commodity, value has been gained or lost by the commodity seller in exchange. What is important from this point of view is not so much the relation between price and labor value as the relation between value added and direct labor, since the price of a commodity may deviate from its labor value only because the price of some of its inputs deviated from *their* labor values.

The advantage of interpreting the value of money as the ratio of aggregate labor time to aggregate money value added is that the sum of the value gained and lost by all the producers in exchange will be zero. In other words, this interpretation of the value of money corresponds to the idea that value is created in production but conserved in exchange.[7]

In cases where one party gives up more labor value in selling the commodity than it receives in money value added, a value transfer takes place. But the value lost by one party is just the value gained by the other, so that no value is created or destroyed in this situation. It might be appropriate to categorize such cases as *unequal exchanges;* the remarks above show clearly that unequal exchange in this sense cannot be the source of an aggregate surplus value. Another way to express the condition that price is uniformly proportional to labor values is to say that this is the case of *equal exchange,* and that the problem we are facing is the generalization of the labor theory of value from the case of equal exchange to the case of unequal exchange.[8]

To sum up, then, it is possible to generalize the concept of the value of money to situations where commodity prices are not uniformly proportional to labor values. If we interpret the value of money as the ratio of aggregate direct labor to the aggregate value added, we retain at the global level the relation between money and embodied labor which is central to the idea that money is a form of value and that the substance of value is abstract social labor. This interpretation requires us to distinguish in any commodity the labor value produced by the expenditure of direct labor from the money value added realized in the sale of the commodity, the difference being value gained or lost in exchange. With the proposed definition of the value of money, this value gained or lost through unequal exchange may be positive or negative for any particular commodity or group of commodities, but is zero for the system of commodity production as a whole; in this interpretation value is created in production and conserved in exchange.

The Value of Labor Power

In using the labor theory of value to analyze capitalist production, a central role is played by the concept of the value of labor power. As we saw in the first section of this paper, in the case where prices are uniformly proportional to labor values, we can interpret the value of labor power interchangeably as the money wage multiplied by the value of money, as the wage share of value added, or as the labor embodied in the commodities workers purchase with the unit wage. How shall we generalize the concept of the value of labor power in the case where prices are not uniformly proportional to labor values?

The basic insight of the labor theory of value is its claim that value forms, money, commodities, and so on, are expressions of abstract social labor. Thus in any transaction involving value, what is changing hands is control over some part of total abstract social labor time. The value of labor power, in this perspective, is the fraction of the total abstract social labor time claimed by workers in the form of the wage. This is an exchange of abstract labor in the form of money for the particular labor power a worker has to offer on the market. If we follow this path, we would interpret the value of labor power in general as the money wage multiplied by the value of money, even in cases where prices of individual commodities are not uniformly proportional to labor values.

This interpretation of the concept, "value of labor power" is prior to any theory as to what actually determines the value of labor power in real situations. The theory that the value of labor power is regulated by a given subsistence standard of workers' consumption is consistent with the interpretation of the concept as the money wage multiplied by the value of money. The significance of that theory, in this interpretation, would be the claim that the level of money wages is determined by the money cost of an identifiable bundle of commodities which represent workers' subsistence.

Given the definition proposed above for the value of money, the interpretation of the value of labor power as the money wage multiplied by the value of money implies that the value of labor power is equal in magnitude to the wage share in aggregate value added. Since the value of money is the ratio of aggregate direct labor time to aggregate value added, if we multiply it by the average level of money wages, we get the wage bill divided by value added, or the share of wages in aggregate value added, on the assumption that one hour of labor power sold yields one hour of actual labor time.

An immediate corollary of these stipulations is that the aggregate profit in the system of capitalist production as a whole multiplied by the value of money is exactly equal to the unpaid labor time, in the sense of the time worked for which workers receive no equivalent in the wage. With these interpretations the most central of Marx's claims about the "transformation" of values into prices of production, that profit arises from unpaid labor time, is sustained (see [Baumol, 1974] who argues persuasively that this is Marx's central concern in Ch. 9 of *Capital* III).

This "transformation" allows us to operationalize the concepts of the labor theory of value in terms of the income statements of capitalist firms. In fact, the usual accounting practice of capitalist firms corresponds fairly well to the theoretical concepts, in that most income statements begin by deducting from sales revenue the wage and non-wage costs of goods produced. What is left over, the "gross profit" or "gross margin" corresponds to the concept of surplus value. In the case of any particular capitalist firm, this surplus value includes two components: the value corresponding to the unpaid labor time expended by workers within the firm as the result of its exploitation of labor, and the surplus value which it gains or loses in the market as the result of unequal exchange. As we aggregate more and more widely, the second component comes closer and closer to disappearing altogether, and the profit, or surplus value, reported by capitalist firms comes closer and closer to an exact measure of the unpaid labor time.

This way of looking at the labor theory of value also avoids the criticism [Samuelson, 1971] that the relation between labor values and prices is arbitrary, so that the transformation process amounts to writing down the equations defining labor values and then rubbing them out and replacing them with the equations defining prices of production. Since direct labor and unpaid labor time are rigorously conserved as value added and profit from this point of view, it makes perfect sense to begin the analysis of capitalist production with labor values which correspond to the aggregate or average situation of capitalist firms, and then consider those phenomena, such as differences in the ratio of invested capital to employed labor, which differentiate particular capitals around the average. The study of labor values is not a detour, but the logical and systematic theoretical way to proceed, and the concept of labor value retains a basic explanatory role (as the appropriate category through which to treat the aggregate or average unit of capital) throughout the analysis.

To sum up, then, we can generalize the concept of the value of labor power to the case where prices of commodities are not uniformly proportional to labor values by stipulating that the value of labor power be the money wage multiplied by the value of money as defined in the last section. This is a generalization in the strict sense, since it retains all the analytical results which hold in the case where prices are uniformly proportional to labor values, and it carries with it as a direct consequence the result that aggregate profits are proportional to aggregate unpaid labor time. This is true whatever the source of deviations of prices from labor values may be, not just in the case where the deviations serve to equalize rates of profit in different sectors.

A Comparison With Other Interpretations

While the interpretations of the value of money and the value of labor power proposed here have the virtue of retaining the central ideas of the labor theory of value in the case where prices are not uniformly proportional to labor values, they cannot and do not retain all of the results that hold when prices are proportional to labor values.

To begin with, it is clear that in general the price of any commodity multiplied by the value of money as defined here will not be equal to the labor value of the commodity. There are two reasons for this divergence. First, the commodity in question may have an unusually favourable or unfavourable situation in the market which leads its price to rise above or fall below the level which would make the value added realized in the sale of the commodity multiplied by the value of money equal to the direct labor contained in it. Second, even if the value added in the commodity multiplied by the value of money is equal to the direct labor contained in it, the means of production used up in producing the commodity may themselves have been purchased at prices above or below their labor values. These deviations cascade through the production process, in what can be extremely complex patterns. This fact has several ramifications as it applies to other parts of the theory.

1. The value of labor power as defined here need not be equal to the labor value of the commodities that workers purchase, except in special cases. If, for example, workers buy commodities whose prices are above their labor values, they will receive a smaller fraction of the actual labor time of the society than the value of labor power. The value of labor power is the claim on abstract labor time workers receive for their labor power in the form of a money wage, not an actual physical quantity of commodities embodying some particular quantity of labor.

   This is the most striking deviation from the interpretation of the labor theory of value most often adopted in the modern literature. But it can be argued that this feature of the interpretation is in fact a decisive advantage to it. Workers in capitalist society do not bargain for, or receive, a bundle of commodities as payment for their labor power, they receive a sum of money, the money wage, which they are then free to spend as they wish (though the constraint of survival as a social being at a certain level of development may in fact largely determine their pattern of spending). The usual interpretation, which posits a bundle of subsistence goods whose labor content defines the value of labor power, short-circuits this relation, and makes money disappear as a mediating element in the situation. The interpretation of the value of labor power as the money wage multiplied by the value of money brings the concept of money into the basic account of the capitalist system of production, where it belongs, and shows the specificity of exploitation in capitalism as an appropriation of surplus value in the form of money.

   The analytical danger in the interpretation of the value of labor power as the labor content of the commodities workers consume is that it makes the existence of capitalist exploitation appear to be identical to the existence of a surplus product over the necessary consumption of a society. Arguing in this fashion drastically weakens the explanatory power of the labor theory of value. In the first place, the existence of a surplus product is a far wider phenomenon than exploitation (the appropriation of surplus by a particular class), and is a characteristic of any society capable of development. In the second place, the category of exploitation, the appropriation of the social surplus product by a particular class, is far wider than the specific mode of capitalist exploitation mediated by money and the market. The power of the labor theory of value to explain the real phenomena of capitalist production, accumulation, crises, inflation, unemployment, labor struggles, and so on, depends on its distinguishing the capitalist form of exploitation through money and the market from other forms of exploitation and production of surplus.

   If we understand exploitation in terms of the monetary relations of the capitalist system of production we can also see a certain sense in Marx's conception of class struggle which is otherwise obscure. Workers and capitalists are forced into a struggle over the level of money wages by the obvious connection between wages, exploitation, workers' consumption, and profits. This is also, under capitalist relations of production, a struggle over what part of the net product will go to workers and what part will constitute the social surplus. If this were the whole content of the workers' struggle, that struggle would be, in the limit, a vain one, since its logical end, the absorption of the whole product by workers' consumption, would be the disappearance of surplus product altogether, and with it the ability of the society to develop. But this is precisely how we must understand class struggle if we identify capitalist exploitation with the production of a surplus. If, on the other hand, we keep clearly in mind the specific form the surplus takes in capitalist society, a surplus *value* appropriated by a particular class, we can see another aspect to the workers' struggle, a struggle not to eliminate the surplus product, but to transform the social relations that make the social surplus take the form of surplus value. This is a more historical conception of class struggle than the notion of a purely distributional conflict, because the idea of changing the form surplus product takes could be realized, while the project of eliminating the social surplus product is evidently self-contradictory.

2. If we are dealing with an economy in which there is a

general equivalent money commodity like gold then the value of money as defined here will not be equal to the labor value of the money commodity except in special circumstances. In this kind of situation an ounce of gold represents a certain quantity of social labor in its function as measure of value and general equivalent for other commodities. It also contains a certain amount of abstract social labor, which may be different from the amount the ounce of gold represents as money.

Thus even in a commodity money economy we would hold to the first definition of the value of money as the ratio of aggregate direct labor to aggregate value added. If the monetary unit is a certain quantity of gold, then this exercise will establish an equivalence between abstract social labor time and an ounce of gold, as so many hours per ounce. We could also inquire as to how much social labor is directly and indirectly embodied in an ounce of gold. The result of this inquiry may very well be a higher or lower number than the value established by the first procedure. The reasons for this difference are exactly the same as the reasons why the money prices of other commodities deviate from their labor values: the ratio of invested capital to employed labor in gold production may deviate from the average, or gold may be produced under monopolistic conditions, or with rents, which force its "price," that is its price relative to the prices of other commodities, away from its value.

3. Does this interpretation of the labor theory of value amount to a "labor commanded" theory of value, since we measure both the value of money and the value of labor power in terms of the abstract social labor equivalent of the monetary unit, or of the money wage? The idea of value as labor commanded rather than labor embodied has two aspects. First, is the idea that the value of a commodity is determined by the amount of social labor in the other commodities for which it can be exchanged on the market. The second is the idea that the measure of the value of commodities is the amount of labor power they can command when they are exchanged against wage labor. This second conception need not detain us too long. It rests on a confusion between labor, the human activity which produces value, and labor power, the power to expend labor, which is a commodity that can be sold. The present interpretation of the labor theory of value does not rest on this confusion, since we interpret the labor value of a commodity to be determined by the direct and indirect labor expended in its production. The trouble with the first way of understanding labor commanded, as the amount of social labor in the commodities for which a given commodity can be exchanged in the market, is that it confuses value and price. If a commodity can, in exchange, change places with another commodity containing a certain amount of social labor, the labor commanded theory identifies this amount of labor, rather than the labor expended in the production of the original commodity, with that commodity's value. The present interpretation of the labor theory of value avoids this conflation of value and price, since it sees the creation of value in the expenditure of labor in production, and clearly differentiates the price of a commodity from its labor value. The price of a commodity in this interpretation is the amount of money for which it exchanges on the market, an amount of money which may represent more or less social labor than is embodied in the commodity itself and which determines its labor value.

The "Transformation Problem"

Marx approached the problem of the formation of an average rate of profit in *Capital* III, Ch. 9 by setting up an equivalence between two economies. In the first prices are uniformly proportional to labor values but profit rates are not equal across sectors. In the second, prices deviate systematically from labor values so that profit rates are equalized across sectors. He claimed that it was possible to construct this correspondence in such a way that aggregate price, aggregate value added, aggregate profit, and the average profit rate were all the same in the two economies.

One striking difference between Marx's treatment of this problem and later treatments is that Marx describes the two economies solely in terms of the accounts of the capitalist firms; he does not specify the actual production and distribution of use-values. Later treatments, perhaps in the name of theoretical rigor, describe both economies in terms of the production and distribution of particular use-values, and *derive* the accounts of the capitalist firms from this assumed data on production and distribution. When one holds constant the production and distribution of use-values, it turns out that the value of money and the value of labor power as defined in this paper are different between the two economies, so that aggregate value added and aggregate profit cannot both be the same in the two.

I want to suggest that Marx had good theoretical reasons for describing the two economies in terms of the accounts of the capitalist firms rather than in terms of the production and distribution of use-values. The social facts relevant to struggle and change in a capitalist society concern the production and distribution of value itself, and the actual production, distribution and consumption of use-values that follow from these struggles take a secondary place. Thus it is more appropriate to compare two economies in which the value of money and value of labor power as defined here are the same, even if the production and distribution of use-values differ between them, than it is to compare economies which have different values of money and labor power, but the same production and distribution of use-values.

If one accepts this argument, Marx's procedure is defensible, and his main results hold. If we compare two economies, one where prices are uniformly proportional to labor values, the other where prices deviate from labor values so as to equalize rates of profit, but which have the same value of money and value of labor power, it will indeed be true that aggregate value added and aggregate profit will be the same in both of them, so that one can view the formation of the average rate of profit as a redistribution of a given surplus value through unequal exchange, as Marx claimed.

It is clear, however, that aggregate price in the two economies will generally differ, and that the average rate of profit in the second need not be equal to the average rate of profit in the first. This is because the prices of non-labor inputs to production can deviate from their labor values, thus changing the non-wage costs which enter into the denominator of the rate of profit (assuming a constant rate of turnover of capital).

Marx's Interpretation of the Labor Theory of Value

The main problem for modern students of capitalist economies is to arrive at an interpretation of the labor theory of value that retains its abundant insights into the social relations of capitalism and at the same time can act as an operational tool of quantitative analysis and explanation for the historical development of capitalism. From this point of view the importance of Marx's treatment of the labor theory of value is that his work exhibits just such an understanding of the theory, whatever technical imperfections certain of his arguments seem to have. Still it is useful to consider the relation of the interpretation of the labor theory of value proposed here to Marx's development of that theory.

The greater part of Marx's analysis of capitalist relations of production proceeds on the assumption that commodities exchange at their values, or to put the point more precisely, that prices are proportional to labor values. As we have seen in an earlier section of this paper, under this assumption there is no need to choose between the interpretations of the value of money as the labor value of the money commodity and as the ratio of aggregate direct labor time to aggregate value added, nor to choose between the interpretations of the value of labor power as the labor value of workers' consumption and the wage multiplied by the value of money, since these definitions are mutually consistent and imply each other. It is not surprising, then, that we find Marx using these different conceptions interchangeably in much of his writing. In *Wages, Price and Profit* for example, Marx writes

> What, then, is the value of labouring power? Like that of every other commodity its value is determined by the quantity of labour necessary to produce it. The labouring power of a man exists only in his living individuality. A certain mass of necessaries must be consumed by a man to grow up and maintain his life. But the man, like the machine, will wear out, and must be replaced by another man. Beside the mass of necessaries required for his own maintenance, he wants another amount of necessaries to bring up a certain quota of children that are to replace him on the labour market and to perpetuate the race of labourers. Moreover, to develop his labouring power, and acquire a certain skill, another amount of values must be spent [1968: 210-11].

This is a discussion of the real determinants of the value of labor power. But a few lines later we read

> Now suppose that the average amount of the daily necessaries of a labouring man require six hours of average labour for their production. Suppose moreover, six hours of average labour to be also realized in a quantity of gold equal to 3s. The 3s. would be the Price, or the monetary expression of the Daily Value of that man's Labouring Power. If he worked daily six hours he would daily produce a value sufficient to buy the average of amount of his daily necessaries, or to maintain himself as a labouring man. [1968: 211]

Here the value of money is implicitly assumed to be two hours per shilling.

The parallel passages in *Capital* I are the often-quoted pages which expand on the first quote above [Marx, 1967a: 170-73] and the passage

> We know that the daily value of labour-power is calculated upon a certain length of the labourer's life, to which, again, corresponds a certain length of working-day. Assume the habitual working day as 12 hours, the daily value of labour-power as 3s., the expression in money of a value that embodies 6 hours of labour. [1967a: 539]

Again Marx uses the value of money concept and again the value of money is two hours per shilling.

All that is clear from these passages concerning the interpretation of the value of labor power is that Marx thought a socially and historically determined minimum subsistence consumption was an important real determinant of the value of labor power, and that this value of labor power could be expressed as the money wage multiplied by the value of money. The choice between interpretations could only have posed itself for Marx when he discusses situations where prices are not proportional to labor values, in *Capital* III, Chs. 9 and 10. Unfortunately Marx does not directly discuss this issue in those chapters. If, however, we understand the point of Marx's discussion in *Capital* III to be to show how unpaid labor time comes to appear as profit then Marx ought to have interpreted the value of labor power as the money wage multiplied by the value of money to make his argument consistent, since only with that interpretation will aggregate value added and aggregate surplus value be conserved through deviations of prices from labor values. This interpretation would not prevent him from maintaining the view that an historically and socially determined level of subsistence was an important determinant of money wages and thus of the value of labor power.

In addition to the theoretical advantages we could reap by viewing the value of labor power as the money wage multiplied by the value of money, we have the doctrinal comfort, for whatever it is worth, that such an interpretation does not contradict the most central of Marx's specific theoretical formulations, and is consistent with, and allows us to carry out, his larger theoretical program.

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NOTES

1. This is not to claim that existing accounting categories *directly* correspond to the relevant labor theory of value categories. It is to say that it is not necessary to calculate a whole new system of imaginary accounting prices which are proportional to labor values in order to measure the labor theory of value categories (as, for example, Wolff [1977] attempts to do). The approach taken in this paper supports the methods adopted by Gillman [1957] and Shaikh [1980] to test hypotheses in the labor theory of value framework by looking at the actual accounts of capitalist firms. In this paper I will not address the subtler issues raised by Gillman and Shaikh concerning the division of surplus value and the treatment of unproductive labor.

2. See Aglietta [1979] and de Vroey [1981] for a similar approach to the link between labor time and money. De Vroey calls the ratio of the "sum of prices" to the "sum of values" the "monetary expression of social labor time," but does not make clear whether the phrase "sum of prices" refers to aggregate price or aggregate value added as defined here.

3. A good example is the U.S. Annual Survey of Manufactures, which organizes extensive data on U.S. manufacturing capital in these categories. Gillman [1957] makes imaginative use of this data.

4. If there are taxes, payments to unproductive labor, rents, or interest payments, the tendency may be to equalize net profit rates after deducting these items.

5. The main line of discussion flows from Bortkiewicz [1949], through Seton [1957] and Morishima [1973], to Medio [1972]. They all assume that the value of labor power is the labor embodied in a given bundle of commodities representing a subsistence standard of living for workers.

Nuti [1977] raises the question of the value of money (though he does not use that phrase) but identifies it with the value of the money commodity, and winds up repeating the standard argument. Laibman [1973] has an interesting discussion of what ought to be held invariant in the transformation, coming out in favor of holding variable capital constant; this is a step in the right direction, but Laibman does not see that the simultaneous invariance of value added, variable capital and surplus value is both possible and expresses the constancy of the value of money and the value of labor power. Shaikh [1977] makes the interesting point that Marx's treatment of the transformation can be viewed as the first step in an iterative process which will lead to consistent prices of production. This procedure could be applied to the ideas of the present note as well, though Shaikh does not insist that at each stage of the iteration the surplus value and variable capital be held constant in the aggregate, so that his iteration will in general converge at prices for which the value of money and the value of labor power are different from their original levels, given the interpretation of those concepts proposed here.

After an earlier version of this paper was written, I became acquainted with the work of Lipietz [1982] who puts forward essentially the same analysis as this paper, though he does not point out the central role the concept of the value of money plays in the argument. Lipietz's paper contains an excellent systematic analysis of the two methods of solving the "transformation" problem, to which readers of this paper can go who want to see a more complete development of the technical consequences of the point of view put forward here. My own understanding of these issues has been greatly helped by my knowledge of Lipietz's work. Lipietz's work is based on the conceptual and theoretical discussion of Dumenil [1980].

The general notion of what the labor theory of value is about which lies behind the analysis here is close to the points of view expressed by Colletti [1977], Baumol [1974], and Rubin [1972].

6. In certain situations the aggregate value added can be thought of as the price of the net commodity product. As we have seen in the second section, even in the case where prices are proportional to labor values, the price of total output is not equal to the aggregate direct labor expended divided by the value of money. Thus we would not want to measure the value of money as the ratio of aggregate price to aggregate labor value.

7. The idea that value is created in production and conserved in exchange was of great importance to Marx. It appears for example in his discussion of the source of surplus value in Part 2 of *Capital* I, and underlies the whole treatment of the relation between prices of production and value in Ch. 9 of *Capital* III.

8. It is possible, of course, to apply these interpretations consistently to the problem of equalizing profit rates. If we take the usual model of production of commodities by means of commodities without joint production (cf. Pasinetti [1977], Sraffa [1960]), where $\mathbf{A}$ is the matrix of input coefficients, $\mathbf{n}$ the vector of labor inputs into each sector, $\mathbf{p}$ the vector of money prices, w the money wage rate, $\mathbf{I}$ the identity matrix, and r the rate of profit, the requirement that profit rates be equalized across sectors can be formulated as the equation

$$\mathbf{p} = (1 + r)(\mathbf{pA} + w\mathbf{n})$$

For given r and w, we can solve for $\mathbf{p}$ as

$$\mathbf{p}(r, w) = w(1 + r)\mathbf{n}(\mathbf{I} - (1+r)\mathbf{A})^{-1}$$

where $\mathbf{p}$ is a continous positive increasing function of both r and w as long as r lies below the maximum rate of profit which corresponds to the dominant eigenvalue of the matrix $\mathbf{A}$.

If gross output is the vector $\mathbf{Y}$, then our interpretation of the value of money can be expressed

$$m = \mathbf{nY} / (\mathbf{p}(\mathbf{I} - \mathbf{A})\mathbf{Y})$$

or

$$wm = w\mathbf{nY} / (\mathbf{p}(\mathbf{I} - \mathbf{A})\mathbf{Y})$$

If we define the value of labor power w^* as mw, in line with the interpretation proposed in this section, for a given w^* we must have

$$\begin{aligned} 1/w^* &= w(1+r)\mathbf{n}(\mathbf{I} - (1+r)\mathbf{A})^{-1}(\mathbf{I} - \mathbf{A})\mathbf{Y} / w\mathbf{nY} \\ &= (1+r)\mathbf{n}(\mathbf{I} - (1+r)\mathbf{A})^{-1}(\mathbf{I} - \mathbf{A})\mathbf{Y} / \mathbf{nY} \end{aligned}$$

which is a scalar equation relating the value of labor power w^* and the rate of profit r, given the structure of gross output $\mathbf{Y}$. Since the right hand side is 1 when $r = 0$, and is an increasing unbounded function of r, there is a unique r corresponding to any given $w^* \leq 1$. For a complete discussion of this solution to the transformation problem, see Lipietz [1982].

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