On the Exploitation of
Cotton, Corn and Labor

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There is no more intriguing or provocative argument in the Marxian corpus; it is the theoretical and rhetorical heart of *Capital*; not surprisingly, it is the locus of endless controversy: capitalist profit is possible, Marx argues, only because the capitalist is able to find on the market a unique commodity that possesses 'the specific use-value ... of being *a source not only of value, but of more value than it has itself*.'[1] This commodity is labor power, the *capacity* to work, which, Marx insists, must be sharply distinguished from the *activity* of laboring, since it is precisely this distinction that lays bare capitalism's essence, revealing it to be—exploitation.

The mathematical Marxism that began to develop in the early 1970s at first seemed to vindicate Marx's analysis. Morishima proved the 'fundamental theorem of Marxian analysis': for quite general models, profits are positive if and only if the rate of exploitation is also positive.[2] That is to say, profit is possible if and only if workers contribute more labor during the production period than is required

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1 Karl Marx, *Capital*, vol. 1 (New York: International Publishers 1967), 193. Emphasis in the original.

2 Michio Morishima, *Marx's Economics* (Cambridge: Cambridge University Press 1973), ch. 5. Cf. also John Roemer, *Analytical Foundations of Marxian Economic Theory* (Cambridge: Cambridge University Press 1981), ch. 2,4.

to produce the products they consume. However, the mathematical formalism that established this result had an unexpected consequence. It was soon realized that an argument paralleling the proof of the Fundamental Theorem could be constructed for *any* basic commodity (a 'basic' commodity being one that enters directly or indirectly into the production of all other commodities). Analogously 'fundamental theorems' could be proven: profit is possible if and only if corn is exploited, if and only if steel is exploited, if and only if petroleum is exploited. In each case there is more x produced during the production period than is consumed, directly and indirectly, in producing that x.[3]

Perhaps the most common Marxist response to this argument has been to ignore it, which is not surprising, given the intimidating nature of the proof. Those who have not ignored it have generally distanced themselves from Marx's original formulation. Some claim that Marx's basic insights do not depend on a labor theory of value.[4] Some adduce reasons for being interested in the labor values of commodities that are independent of Marx's theory. John Roemer, for example, suggests that labor is more appropriate than corn (or any other basic commodity) as a measure of value because it is more evenly distributed throughout society, and hence 'embodied labor' correlates more directly with real wealth than does 'embodied corn' or any other 'embodied' basic commodity.[5]

Such responses seem to me inadequate. They do one or both of the following. On the one hand, they fail to appreciate just how

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3 A number of writers have proposed such proofs, among them Robert Paul Wolff in his 'A Critique and Reinterpretation of Marx's Labor Theory of Value,' *Philosophy and Public Affairs* 2 (1981) 89-120 and again in his *Understanding Marx* (Princeton: Princeton University Press 1984), 205-6; also John Roemer, *A General Theory of Exploitation and Class* (Cambridge: Harvard University Press 1982), Appendix to chapter 7.

4 Cf. Geoff Hodgeson, 'A Theory of Exploitation Without the Labor Theory of Value,' *Science and Society* 44 (Fall 1980) 257-73. Also see G. A. Cohen, 'More on Exploitation and the Labor Theory of Value,' *Inquiry* 26 (1983) 309-31.

5 John Roemer, 'New Directions in Marxian Theory of Exploitation and Class,' in John Roemer, ed., *Analytical Marxism* (Cambridge: Cambridge University Press 1986), 100-1

damaging the corn-exploitation argument really is—if it is sound. On the other hand, they grant that the argument *is* sound. Roemer, for example, concedes, 'Marx was completely wrong about one thing. Labor power as a commodity is not unique in its magical property of producing more value than it embodies. Indeed, in an economy capable of producing a surplus any commodity has this magical property ... There is absolutely nothing special about labor power in this regard.'[6] It is Roemer, I submit, who is wrong. In what follows I shall attempt to establish two propositions. (1) If the corn-exploitation analysis that is commonly given is correct, then it is extremely detrimental to the claim that capitalism is morally perverse. (2) The analysis is not correct. Specifically, it does not support the conclusion that 'there is nothing special about labor power ... in producing more value than it embodies.'

I

A significant impediment to appreciating the significance of the corn-exploitation analysis is the formal, mathematical nature of the argument, invoking as it does Perron-Frobenius theorems and the like. The essential point, however, can be made more simply by mimicking Marx's own reasoning. Let us recall the structure of his argument as it unfolds in that crucial section of Volume I of *Capital*, 'The Production of Surplus Value.'[7] It will be useful to what follows to set out the argument somewhat more formally than does Marx.

We recall that at this stage of his analysis Marx is assuming what is often designated the 'labor theory of value'; that is to say, he presupposes that in the case under consideration the prices of all commodities are proportional to the socially necessary labor that has entered directly and indirectly into their production.[8] Specifically,

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6 Ibid., 100

7 Marx, *Capital I*, 186-98. The quotations that follow are taken from these pages.

8 To call the price-value proportionality assertion the 'labor theory of value' is in fact misleading, since Marx does not employ it as a *theory* but as a simplify-

he assumes the constant of proportionality to be 2, i.e., that a commodity selling for x shillings embodies 2x hours of (socially necessary direct and indirect) labor. Marx looks at one capitalist and one worker engaged in the enterprise of turning cotton into yarn. He begins with the technical conditions of production. With the prevailing technology and normal levels of skill and labor intensity,

(T_L) 10lbs. cotton + equipment depreciation + 6 hrs. labor
→ 10lbs. yarn

Marx then specifies the monetary conditions. The capitalist can buy cotton for 1s per pound. He calculates equipment depreciation to be 2s (when used for 6 hours). The going wage is 3s. This information gives us his costs. To determine the selling price of yarn (and hence the capitalist's profit), the value equation must be constructed. The 'labor theory of value' is invoked for the first time. 10llbs. cotton = 10s = 20 hours; 2s depreciation represents 4 hours. Hence, the value equation:

(V_L) 20 hrs. + 4 hrs. + 6 hrs. = 30 hrs.

Appealing to the 'labor theory of value' again, we conclude that yarn will sell for 15s. Thus we can write the monetary relations:

(M_L) 10s + 2s + 3s → 15s

There is a problem here, to which Marx gleefully calls our attention: 'Our capitalist stares in astonishment. The value of the product is exactly equal to the value of the capital advanced. The value so advanced has not expanded, no surplus-value has been created, and consequently money has not been converted into capital' (190). There ensues an indirect dialogue between Marx and the capitalist, Marx quoting Martin Luther against the capitalist's claim to a right

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ing assumption. More will be said about this below. In the interim it will be useful to keep in view both the common designation and its problematic nature, so I will set off 'labor theory of value' with quotes when the term signifies the assumption that prices and labor values are proportional.

to a profit. But after a brief period of discomfiture, the capitalist 'reassumes his usual mien,' declaring that he will leave 'this and all like subterfuges and juggling tricks to professors of Political Economy, who are paid for it. He himself is a practical man, and though he does not always consider what he says outside his business, yet in his business he knows what he is about' (193).

His instinct directs him to a key feature of the original transaction. The going wage is 3s, indicating that the labor value of labor power is 6 hrs., which is to say, the goods that wage will purchase took 6 hrs. to produce. But this fact in no way prevents the worker from working more than six hours. Hence the relevant relations become:

(T^*_L) 20 lbs. cotton + depreciation +12 hrs. → 20 lbs. yarn
(V^*_L) 40 hrs. + 8 hrs. + 12 hrs. = 60 hrs.
(M^*_L) 20s + 4s + 3s → 30s

$(T^*_L$ is T_L doubled. V^*_L is V_L doubled. The left side of M^*_L represents costs, which have all doubled except the wage. The right side of M^*_L is derived from V^*_L.)

'The trick has at last succeeded; money has been converted into capital. Every condition of the problem is satisfied, while the laws that regulate the exchange of commodities have been in no way violated' (194).

What Marx appears to have shown is that profit is possible (under conditions of competitive equilibrium) only because there exists on the market a unique commodity (labor power), the consumption (exercise) of which produces more value than is embodied in it. The superficially egalitarian exchange between capitalist and worker masks an inequality that violates a basic ethical norm: equals should exchange for equals. In the words of Martin Luther that Marx quotes, 'Whoever takes more or better than he gives, that is usury and is not service but wrong done to his neighbor' (192).[9]

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9 As is well known, there exists a large controversy as to whether or not Marx's argument is intended to be a moral argument. This controversy is not relevant.

Critics of Marx have been quick to discern what seems to be a crucial false premise. Marx's analysis presupposes the 'labor theory of value.' It presupposes that prices are proportional to embodied labor. But this presupposition is in no way realistic. It can easily be shown that even in a stylized model of perfect competition, equilibrium prices, and homogeneous labor, prices will not be proportional to labor values (when profit is positive) *unless* each industry has the same degree of capital intensiveness—the same 'organic composition of capital' where 'organic composition of capital' is the ratio of the capital laid out for raw materials and set aside for depreciation to the capital paid out in wages. Since this ratio may be presumed to vary widely in most economies, even under conditions of competitive equilibrium, the 'labor theory of value' will not generally hold.[10]

As a response to Marx, this is too facile. It is clear that Marx himself, even while composing *Capital 1*, was fully aware that prices would be proportional to values only in the accidental case of equal organic composition of capital.[11] So whatever Marx was doing in his demonstration of exploitation, he was not—as is often alleged—taking over uncritically the prevailing, though erroneous, theory of his day. It is more sensible (and fairer to Marx) to regard the premise that prices are proportional to labor values as merely a simplify-

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vant to the concern of this paper, since, whatever Marx's overt intentions or theoretical commitments, the argument under consideration can be read as a moral argument and often is. It is with that reading that I am concerned.

10 The basic idea is this: Surplus value is generated by workers. If wages and the length of the working day are equal across industries, the more workers employed by an enterprise, the more surplus value created. Thus a labor-intensive enterprise produces more surplus value per unit capital than does a capital-intensive enterprise. Hence, if prices are proportional to labor values, the labor-intensive enterprise will show a higher rate of profit that a capital-intensive enterprise, thus violating the equilibrium assumption that the rate of profit be the same in all enterprises. This contradiction can be avoided *only* if prices cease to be proportional to labor values. See Jon Elster, *Making Sense of Marx* (Cambridge: Cambridge University Press 1985), 133, for a succinct formal proof.

11 Cf. Wolff, *Understanding Marx*, 90 ff.

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ing assumption. Though this assumption does not hold in general (simplifying assumptions never do), the implicit claim is that the basic conclusion does not depend in an essential way on this assumption. Marx may be presumed to be arguing thus: if capitalism is transparently exploitative when the equal organic composition of capital obtains, then it must be exploitative in general, for surely the exploitative nature of an economic system cannot depend on so accidental a feature as the organic composition of capital.

There is nothing peculiar about this form of argument. Most arguments that purport to draw conclusions about the world from stylized, simplified models have this structure. Simplifying assumptions are invoked in the formal proofs—which is why they are labelled 'assumptions'—but they are presumed to be inessential—which is why they are merely 'simplifying.'

In light of the corn-exploitation analysis, however, it would seem that a far more damaging criticism might be made. The *inessential* nature of the labor-value assumption can be called into question. To see how, consider Marx's original example, but now let us assume a *cotton-theory of value*. Suppose it so happens that each industry exhibits an equal cotton-organic composition of capital, i.e., in each industry the proportion of capital laid out for *cotton* relative to other inputs is the same. In this case market forces will compel prices to reflect embodied labor when an equal (labor) organic composition of capital obtains.[12] To be sure, this is not a realistic assumption, but

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12 That the equal organic composition of capital assumption together with the homogeneous labor and equilibrium assumptions require that prices be proportional to labor values can be seen as follows. Suppose two commodities, say a bushel of corn and a ton of steel, sell at the same price. Since market forces equalize the rate of profit in all industries, the costs of production must have been the same for both corn and steel. Since both industries have the same organic composition of capital, each must have made the same outlay for wages and the same outlay for raw materials. (For simplicity, we will ignore equipment depreciation.) The same wage outlay, given the assumption of a single wage rate, implies that exactly the same amount of *direct* labor was expended on each commodity.
To see that the same is true for *indirect* labor, we look at the raw materials that went into producing the corn and steel, and regard them as commodities

neither is the labor-theory assumption. If the labor theory of value' is a legitimate simplifying assumption, then the 'cotton-theory of value' should have the same status.

Let us assume as before that the constant of proportionality is 2, and let us maintain unchanged the technical relation:

(T$_C$)   20 lbs. cotton + depreciation + 12 hrs. → 20 lbs. yarn

Following Marx, we move to monetary considerations, and assume as before that one can purchase 12 hours of labor for 3s, and that equipment depreciation is 4s. Invoking the 'cotton-theory of value,' we construct the value equation:

(V$_C$)   20 lb. + 8 lb. + 6 lb. = 34 lb.

This tells us the selling price of yarn will be 17s, and so our monetary relation is:

(M$_C$)   cost of 20 lb. cotton + 4s + 3s → 17s

From M$_C$ it is evident that profit is possible if and only if the cost of twenty pounds of cotton is less that 10s. *But this will be true if and only if the quantity of 'past cotton' ('dead' cotton) embodied in the 20 lbs. of 'living' cotton is less than 20 lbs.* That is to say, if we add to the

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produced in the preceding period. By exactly the same reasoning as before, we conclude that the amount of direct labor expended in that period to produce the raw materials that went into a bushel of corn was the same as the direct labor expended in that period to produce the raw materials that went into a ton of steel. Since we can continue the reduction indefinitely, looking at the direct labor and raw materials that went into producing the raw materials that went into the raw materials, etc., always concluding that the same amount of direct labor went into the predecessors of steel as the predecessors of corn, it follows that the total amount of labor, direct and indirect, must have been the same for both corn and steel.

The same argument can be made, mutatis mutandis, to show that when an equal cotton-organic composition of capital prevails, equal prices entail equal embodiments of direct and indirect cotton.

cotton directly involved in producing a pound of cotton the cotton values of the other inputs, the total will be less than one. Thus the 'fundamental theorem' for cotton.

Does this mean that cotton is exploited? The quick response is 'no, not in an ethically relevant sense, since cotton is a thing, not a person.' But this retort misses the essential point. Strictly speaking, it is not the commodity labor-power that is exploited either, but the owner of that commodity, the worker. So the relevant question is whether the owner of that commodity, the original supplier, is exploited in his exchange with the capitalist.

Well, consider: if a profit has been made, the cotton dealer received less than 10s for his product. Suppose he received 5s. This 5s, by hypothesis, embodies 10 lbs. of cotton. So the cotton dealer can confront the capitalist: 'I gave you 20 lbs. of cotton, but I received in return a sum of money representing only 10 lbs. I have been cheated. Just as the worker contributed 12 hours of labor and received a wage embodying only 6 hours, I have contributed 20 lbs. of cotton, and received payment embodying only 10 lbs.'

Is it not plain that either both the cotton dealer and the worker have been exploited, or neither have? In either case, since the cotton dealer may be presumed to be a capitalist himself, we cannot maintain that capitalist profit depends on the exploitation of workers and not of other capitalists. Marx's fundamental argument collapses.

Or does it? To pursue this question more deeply, we must confront the formal analysis that suggested corn and cotton exploitation in the first place. For if the formal analysis is non-problematic, then the argument just given is sound.

II

The conceptual innovation introduced by the mathematical Marxists is disaggregated input-output analysis. One can avoid making assumptions about prices being proportional to values (labor or cotton) if the economy is conceived of as a self-contained, self-reproducing mechanism producing n commodities. One can use linear algebraic techniques to compute directly the labor values of

commodities. One can then compare the labor value of a worker's wage to the number of hours she is required to work.[13] Let me emphasize this, for the point is often unappreciated: mathematical Marxism *drops* the simplifying assumption that prices are proportional to values. That is to say, it *drops* the 'labor theory of value.'

As one might expect, the analysis becomes more complex when a simplifying assumption is eliminated.

To illustrate the logic of the procedure, let us consider a simple, two-commodity corn and steel model. The analysis begins with a specification of the technical coefficients $[a_{ij}]$ and $[l_j]$, i,j = 1,2, where $a_{11}, a_{12},$ and l_1 are the quantities of corn, steel and labor respectively, required to produce a bushel of corn, and $a_{21}, a_{22},$ and l_2 are the quantities of corn, steel and labor required to produce a ton of steel. This information suffices for the computation of the labor values of corn and steel. If x and y are the respective quantities of labor directly and indirectly required to produce a bushel of corn and a ton of steel (i.e., if x and y are the labor values of corn and steel respectively), then the following two equations must hold:

(*) $a_{11}x + a_{12}y + l_1 = x$

$a_{21}x + a_{22}y + l_2 = y$

This system of two linear equations in two unknowns is readily solved.

If we wish to compute the labor value of labor power, we must add a further specification. We must specify a worker's consumption. For simplicity, let us assume that all workers consume (during a production period) b_1 bushels of corn and b_2 tons of steel. In this case, the labor value of labor power is $b_1x + b_2y$. To determine whether or not workers are exploited, we need one additional piece of information. We need to know how many days a worker is required to work during a production period.[14] If we let this num-

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13 One can also calculate equilibrium prices, and investigate the conditions under which prices will be proportional to labor values, but that is a separate matter.

14 Since I am using corn and steel, its natural to think of the production period as a year, and the units of labor as person-days. In Marx's example, the produc-

ber be k, the Fundamental Theorem asserts that capitalist profit is possible if and only if $b_1x + b_2y < k$.

Now, suppose we repeat the steps in the above analysis, but switch the roles of labor and corn. This idea, original with the mathematical Marxists, is strongly suggested by the formalism of the analysis.

Since a worker requires a consumption bundle (b_1, b_2), we shall regard labor as well as steel as produced commodities, and allow corn to be the numeraire. We can let w and z be the corn values of steel and labor respectively, and compute them by solving:

(**) $a_{21} + a_{22}w + l_2z = w$

$b_1 + b_2w = kz$

So long as corn is a 'basic' commodity, this set of equations will have a unique solution.

The corn-value of corn, i.e., the quantity of corn embodied in a bushel of corn, can now be calculated. It is simply $a_{11} + a_{12}w + l_1z$. The Fundamental Theorem of this system asserts that capitalist profit is possible if and only if $a_{11} + a_{12}w + l_1z < 1$; that is, if and only if corn is 'exploited.' The conclusion usually drawn is some version of Roemer's: 'Marx was completely wrong about one thing. Labor power as a commodity is not unique in its magical property of producing more value than it embodies ....'

III

I contend that there is a basic flaw in this analysis that vitiates entirely its critical thrust. Compare (*) with (**). The former, which determine the labor values of corn and steel, are *technical* equations. At a given stage in the development of productive forces, a certain

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tion period is one day, and the units of labor person-hours. Thus in our analysis, requiring more days of labor during a production period corresponds formally to lengthening the working day in Marx's model.

amount of corn, steel and labor are required for a given output. In the Marxian analysis a *social* factor (worker consumption) is then introduced. This, of course, is not wholly independent of technical considerations. Workers must consume at least enough to survive and no more than the system can maximally produce. But within these limits—which are quite wide in most capitalist societies—considerations other than technical must operate to specify this variable.

At least as technically indeterminate is the variable k. Workers must work long enough to reproduce the products they consume, but how much longer than that is limited only by the physical need for sufficient rest to insure the reproduction of labor power.[15]

In the system (**), quite unlike (*), social and technical conditions are not distinguished. The social variables b_1 and k appear in the equations that determine corn-values. The corn-values of neither steel nor labor, let alone corn, can be calculated from technical conditions alone. The 'exploitation' of corn is thus a *social*, not a *technical*, phenomenon, and one, moreover, that depends on how long workers work relative to the *labor-value* of their consumption.

To see this more clearly, consider the effect of varying k while holding technical conditions and worker consumption constant. If we reduce k from a given level down to the minimum value required for workers to reproduce their own consumption (including replacements for machinery depreciation and raw materials), the degree

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15 The distinction drawn here between technical and social conditions may be regarded as the analogue in Marx's economic theory of the famous distinction in his historical materialism between forces and relations of production. In neither case is distinction meant to imply independence. I noted that both worker consumption and the length of the working day are constrained by technical conditions. Similarly, as Marx himself has pointed out, a society's choice of technology is determined in part by social conditions. (For example, choices of technology might be markedly different in societies of comparable development depending on how much voice the direct producers have in determining the choices and on how easy it is for decision makers to shift negative externality costs onto others.) Despite the interconnection of the technical and the social, the distinction is important, quite as important for Marx's theory of exploitation as the forces/relations distinction is for his theory of history,

of worker exploitation drops to zero. How much k can be reduced to achieve this effect is precisely what is measured by the difference between the labor-value of labor power ($b_1x + b_2y$) and the labor output k.[16] But as the number of days workers are required to work declines, so too does the rate of *corn-exploitation*, it too reaching zero when the workers work only long enough to reproduce their consumption. Conversely, if capitalist power is able to increase k without compensating workers with more consumption, then workers—and also corn—are more intensely exploited.[17]

Let us consider this matter from another angle. In Marx's argument the move from (T_L, V_L, M_L) to T^*_L, V^*_L, M^*_L) reveals in dramatic fashion the exploitation of the worker. What does the analogous move from (T_C, V_C, M_C) reveal? Suppose in the M_C equation the cost of cotton were 10s, so that 'our capitalist stares in astonishment. The value of the product is exactly equal to the value of the capital advanced.' What can be done? What is the analogue of our capitalist's earlier insistence that the worker work longer than would be required if she merely had to replace the labor embodied in the goods her wage will buy? The answer is by no means obvious if we stay within the framework within which the problem is posed, i.e., the 'cotton theory of value.' But from the perspective

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16 If such a reduction were to occur over time, industries would not all decline proportionally, since capitalist consumption need not have the same structure as worker consumption. The adjustment process would entail some shifting of the workforce, but in the end each worker would work only $b_1x + b_2y$ days per year.

17 It is easy to prove that in the two-sector model corn exploitation varies directly with k. If we differentiate (**) with respect to k and solve, we get $dw/dk = l_2z/[l_2b_2 - k(1-a_{22})]$ and $dz/dk = z(1-a_{22})/[l_2b_2 - k(1-a_{22})]$. Consider the denominator $l_2b_2 - k(1-a_{22})$. The quantity b_2 represents the quantity of steel one worker will consume during a production period, while $k(1-a_{22})/l_2$ represents the net output of one worker in the steel industry during that period. Clearly, if there is to be any surplus in the economy, the latter quantity must be larger than the former, which implies that dw/dk and dz/dk are both negative. But if w and z both vary inversely with k, so does the corn-value of corn, $a_{11} + a_{12}w + l_2z$. Hence, if the corn-value of corn exploitation increases, and vice-versa.

of Section II the answer is clear. If both technology and worker consumption remain fixed, there is no *analogous* move for the capitalist to make; he must make the *same* move. He must insist that the worker work longer than is required to replace the labor embodied in the goods her wage will buy. This (when done by all capitalists—as must be assumed if the system is to be in equilibrium) will produce a positive rate of labor exploitation, a positive rate of profit, and hence also a positive rate of 'cotton exploitation.' The cotton-value of cotton will become less than one.[18]

We must conclude that the exploitation of labor explains the 'exploitation' of cotton or corn. Better, we should conclude that 'exploitation' is a misleading misnomer when applied in this context to commodities other than labor power. Let me not be unclear. I am not contending that 'exploit' in the non-normative sense of 'using effectively for a particular end' should never be applied to such commodities. But I am contending that 'exploitation of x' is inappropriate as a description of the general situation in which the x-value of a unit of x is less than one.[19]

Nor is it appropriate to assert, simply because the x-value of x is less than one, that x has 'produced more value than it embodies.' The equation $b_1x + b_2y < k$ can be fairly interpreted as revealing

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18   There are two other developments that would allow for our capitalist to make a profit, though each has been excluded by hypothesis. If workers' real wages could be reduced without reducing the length of the working day, the equilibrium profit rate would become positive. It would also become positive if a new technology were introduced in a basic-goods industry that reduced the labor-value of a unit output. In each of these cases the correlation with exploitation is evident. In either case, the worker would be compelled to work longer than is necessary to replace the goods her wages will buy. In both cases the cotton-value of cotton would drop to less than one.

19   Even when x is labor-power, 'exploitation' does not follow simply from the fact that more labor extracted from that commodity than is embodied in it. As Marx makes clear, non-democratic compulsion is implicated in this state of affairs: in the historical process that transformed labor-power into a commodity in the first place; in the maintenance of property relations that restrict workers access to means of production; in the mechanisms of supervision that insure a 'fair day's work for a wage.

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that workers contribute more labor to society during a production period than society contributes to them. The exercise of their labor-power produces more value than is embodied in the products they consume. The equation $a_{11} + a_{12}w + l_1z < 1$ admits of no analogous interpretation. The equation states that the amount of corn that went into producing a bushel of corn—including that which was consumed by the direct producers—is less than a bushel. What the equation entails (but does not show explicitly) is that this is so because workers work longer than they would have to if they were to merely reproduce their own consumption.

The feature that distinguishes labor power from all other input commodities is the fact that *technical conditions* do not determine the mass of use-values (days of labor) that the capitalist receives when he purchases a unit of the commodity (a worker for the production period). Given a specified technology, when a bushel of corn is purchased as an input for a particular industry, the quantity of other inputs and the quantity of output is determined. When a unit of labor power is purchased (e.g., a worker for the production period), the quantity of other inputs required and the quantity of output remains indeterminate, a 'circumstance [that] is, without doubt, a piece of good luck for the buyer.'[20]

IV

I have argued that one should not speak of the 'exploitation' of corn or of cotton when referring to a state of affairs that bears a certain formal resemblance to the exploitation of workers. But what about the exploitation of the corn or cotton *owner*? Recall our disgruntled cotton dealer, who claims to have been exploited because he contributed to society 20 lbs. of cotton, and yet received in return the equivalent of only 10 lbs.

The above analysis clarifies this case and resolves the difficulty. The analysis demonstrates that the descrepancy between what the

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20 Marx, *Capital* I, 194

cotton dealer 'contributes' and what he receives is due to the fact—concealed when the cotton theory of value is assumed—that workers work longer hours than would be necessary were the economy geared to simply reproducing their consumption. If workers were able to reduce the length of the working day to that minimum, the discrepancy between actual cotton and 'embodied' cotton would vanish.

So as to remove any lingering doubts, it is worth considering once again our cotton case. Our cotton dealer complains because he has exchanged 20 lbs. of 'living' cotton for 10 lbs. of 'embodied' cotton. Let us look more closely at the 'embodiments' of this 'embodied' cotton. If we assume our cotton dealer is a capitalist, then his enterprise must have earned the same rate of profit and had the same cotton-organic composition of capital as the yarn industry, 5/12 and 7/5 respectively. Thus his investment of the preceding period, which resulted in 20 lbs. of cotton, must have been 3.5s (which expanded to 5s), and it must have been apportioned 1.5s to purchase cotton and 2s to purchase other inputs. Let us assume, for simplicity, that the only other input was labor. In this case, since we know both the price of cotton and the wage rate, we can reconstruct the technical relation: 6 lbs. cotton + 8 hrs. labor → 20 lbs. cotton. Thus we see that 8 hours of labor produced a net output of 14 lbs. of cotton—for which the worker received 2s = 4 lbs. of cotton.

We now grasp the 'secret' of the cotton-value discrepancy. The cotton dealer has received a sum for his 20 lbs. of cotton that 'embodies' only 10 lbs. But *part* of what the cotton capitalist perceives as 'embodied' cotton (in this case 4 of the 10 pounds) is *a worker*—who, by working, transformed 6 lbs. of cotton into 20. The capitalist gained control over this worker by advancing her 4 lbs. of 'embodied' cotton as a wage, for which she returned to the capitalist a net 14 lbs. of actual cotton. Therein lies the discrepancy between 'dead' and 'living' cotton. There has indeed been exploitation—but *not* of the cotton dealer.

By way of conclusion, let me stress that even at the level of formal analysis the commodity labor-power is decidedly distinct from all other commodities. Whereas the production coefficients a_{ij} and 1_i may be presumed to be technical coefficients, the consumption

coefficients b_i and the length of the working day may not be.[21] When the formal analysis ignores the distinction between technical and social determination, the source of capitalist profit is obscured. One is then tempted to say with Elster that 'the central fact underlying these [fundamental] theorems is that profit [is] possible only because man can tap external sources of raw materials and energy.'[22] This is wrong. To be sure, there must be a certain fruitfulness in nature for the human race to survive. But the conditions under which a portion of the difference between what we are capable of producing and what we need for survival becomes transformed into capitalist profit are not those technical conditions associated with the beneficence of nature, but those social conditions associated with the historical emergence of a most peculiar commodity, one that is 'a source not only of value, but of more value than it has itself.'[23]

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21 Of course, at the *purely* formal level, that of the mathematical symbolism, one cannot distinguish the a_{ij}'s, say, from the b_i's. But the moment an economic interpretation is proposed the technical/social distinction becomes intelligible.

22 Elster, *Making Sense of Marx*, 141

23 My thanks to Robert Paul Wolff, Richard Schmitt, Julius Sensat, Drew Christie and Paul Wendt for their comments on earlier versions of this paper.