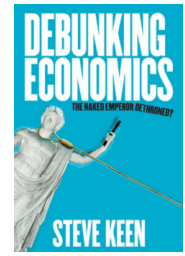
17 | NOTHING TO LOSE BUT THEIR MINDS



Why most Marxists are irrelevant, but most of Marx is not

Marxian economics is clearly one of the alternatives to the neoclassical way of 'thinking economically,' and by rights I should be discussing it in the next chapter, which looks at alternatives to conventional economics. However, in an illustration of the fact that conservative economists do not have a monopoly on unsound analysis, Marxian economics, as conventionally understood, is hobbled by a logical conundrum as significant as any of those afflicting neoclassical economics.

This conundrum has split non-orthodox economists into two broad camps. One tiny group continues to work within what they see as the Marxian tradition, and spends most of its time trying to solve this conundrum. The vast majority largely ignore Marx and Marxian economics, and instead develop the schools of thought discussed in the next chapter.

I find this ironic, since if Marx's philosophy is properly understood, the conundrum disappears, and Marx provides an excellent basis from which to analyze capitalism – though bereft of the revolutionary message that makes Marx both so appealing to his current followers, and anathema to so many others.

The kernel

One defining belief in conventional Marxian economics is that labor is the only source of profit: while machines are necessary for production, labor alone generates profit for the capitalist. This proposition is a key part of the radical appeal of Marxism, since it argues that capitalist profit is based upon exploitation of the worker.

Marxists argue that labor is the only source of profit because it is the only commodity where one can distinguish between 'commodity' and 'commodity-power.' When any other commodity is sold, the purchaser takes it lock, stock and barrel. But with labor, the capitalist 'purchaser' does not own the worker. Instead, he pays a subsistence wage, which can be represented by a bundle of commodities; this is the cost of production of the ability to work, which Marxists describe as the commodity 'labor-power.' The capitalist then puts the laborer to work for the length of the working day, during which time the worker produces a different bundle of commodities that is worth more than his subsistence wage. The difference between the output of labor and the cost of maintaining labor-power is the source of profit.

Since no such distinction can be made for machinery, the capitalist 'gets what he paid for' and no more when he buys a machine, whereas with labor, he gets more than he paid for. Therefore machines transfer their value only to the product.

This proposition has been shown to lead to severe logical problems, so the vast majority of critical economists have in practice abandoned Marx's logic. However, a minority of economists continue to swear allegiance to what they perceive as Marx's method, and continue to strive to invent ways in which the proposition that labor is the only source of profit can be maintained.

The critiques which have been made of this notion on mathematical grounds are cogent, but have been challenged by Marxian economists on philosophical or methodological grounds.

However, there are philosophical reasons why the proposition that labor is the only source of profit are invalid, and these reasons were first discovered by Marx himself. Unfortunately, Marx failed to properly understand his own logic, and instead preserved a theory that he had in fact shown to be erroneous.

Once Marx's logic is properly applied, his economics becomes a powerful means of analyzing a market economy – though not one which argues that capitalism must necessarily give way to socialism. Unfortunately, given the ideological role of Marxism today, I expect that Marxian economists will continue to cling to an interpretation of Marx that argues for capitalism's ultimate demise.

The roadmap

In this chapter I explain the classical economics concept of 'value,' and the manner in which Marx developed this into the labor theory of value. I illustrate the logical problems with the proposition that labor is the only source of value. I then outline Marx's brilliant philosophical analysis of the commodity, and show that this analysis contradicts the labor theory of value by arguing that all inputs to production are potential sources of value.

Marxian economics and the economics of Marx

If a nineteenth-century capitalist Machiavelli had wished to cripple the socialist intelligentsia of the twentieth century, he could have invented no more cogent weapon than the labor theory of value. Yet this theory was the invention, not of a defender of capitalism, but of its greatest critic: Karl Marx.

Marx used the labor theory of value to argue that capitalism harbored an internal contradiction, which would eventually lead to its downfall and replacement by socialism. However, Marx's logic in support of the labor theory of value had an internal contradiction that would invalidate Marx's critique of capitalism if it could not be resolved. Consequently, solving this enigma became the 'Holy Grail' for Marxist economists. Whereas nineteenth-century revolutionaries spent their time attempting to overthrow capitalism,

twentieth-century revolutionaries spent theirs attempting to save the labor theory of value. Capitalism itself had no reason to fear them.

Despite valiant efforts, Marxist economists failed in their quest – and they achieved little else. As a result, while Marx's thought still has considerable influence upon philosophers, historians, sociologists and left-wing political activists, at the beginning of the twenty-first century, Marx and Marxists are largely ignored by other economists.[1] Most non-orthodox economists would acknowledge that Marx made major contributions to economic thought, but it seems that overall Samuelson was right: Marx was a 'minor Post-Ricardian' – someone who took classical economics slightly farther than had David Ricardo, but who ultimately led it into a dead end.

This conclusion is false. Properly understood, Marx's theory of value liberates classical economics from its dependence on the labor theory of value, and makes it the basis for a deep and critical understanding of capitalism. But in a truly Machiavellian irony, the main factor obscuring this richer appreciation of Marx is the slavish devotion of Marxist economists to the labor theory of value.

To see why Marx's theory of value is not the labor theory of value, we have to first delve into the minds of the great classical economists Adam Smith and David Ricardo.

Value – a prelude

The proposition that something is the source of value raises two questions: what is 'value' anyway, and why should any one thing be the source of it?

A generic definition of value – one which encompasses the several schools of thought in economics which have used the term – is that value is the innate worth of a commodity, which determines the normal ('equilibrium') ratio at which two commodities exchange. One essential corollary of this concept is that value is unrelated to the subjective valuation which purchasers put upon a product. In what follows, I'll use 'value' in this specific sense, not in any of its more colloquial senses.

The classical economists also used the terms 'value in use' (or 'use-value') and 'value in exchange' (or 'exchange-value') to distinguish between two fundamental aspects of a commodity: its usefulness, and the effort involved in producing it. Value in use was an essential aspect of a commodity – why buy something which is useless? – but to the classical economists, it played no role in determining price.

Their concept of usefulness was also objective, focusing upon the commodity's actual function rather than how it affected the user's feelings of well-being. The use-value of a chair was not how comfortable it made you feel, but that you could sit in it.

1 Though economists from several other schools of thought still pay great attention to Marx's original writings on economics, and see Marx as the father of many important concepts in economic analysis.

In contrast, the neoclassical school argues that value, like beauty, is 'in the eye of the beholder' – that utility is subjective, and that the price, even in equilibrium, has to reflect the subjective value put upon the product by both the buyer and the seller. Neoclassical economics argues that the equilibrium ratio at which two products exchange is determined by the ratio of their marginal utilities to their marginal costs.

As we have seen in Chapters 3 and 4, there are serious problems with the economic theory of pricing. But it has some appeal in comparison to the classical approach, since it seems reasonable to say that price should be determined both by the innate worth of a product, however that is defined, and by the buyer's subjective valuation of it.

The general classical reply to this concept was that, sure, in the short run and out of equilibrium, that would be true. But the classical school was more interested in 'long run' prices, and in the prices of things which could easily be reproduced.

In the long run, price would be determined by the value of the product, and not by the subjective valuations of the buyer or seller. For this reason, the classical school tended to distinguish between price and value, and to use the former when they were talking about day-to-day sales, which could be at prices which were above or below long-run values.

As well as having some influence out of equilibrium, subjective utility was the only factor that could determine the value of rare objects. As Ricardo put it:

> There are some commodities, the value of which is determined by their scarcity alone. No labor can increase the quantity of such goods, and therefore their value cannot be lowered by an increased supply. Some rare statues and pictures, scarce books and coins, wines of a peculiar quality, which can be made only from grapes grown on a particular soil, of which there is a very limited quantity, are all of this description. Their value is wholly independent of the quantity of labor originally necessary to produce them, and varies with the varying wealth and inclinations of those who are desirous to possess them. (Ricardo 1817)

Thus where scarcity was the rule, and the objects sold could not easily be reproduced, price was determined by the seller's and buyer's subjective utilities. But this minority of products was ignored by the classical economists.

Marx gave an additional explanation of why, in a developed capitalist economy, the subjective valuations of both buyer and seller would be irrelevant to the price at which commodities exchanged.

This was the historical argument that, way back in time, humans lived in small and relatively isolated communities, and exchange between them was initially a rare and isolated event. At this stage, the objects being exchanged would be items that one community could produce but the other could not.

As a result, one community would have no idea how much effort had gone into making the product, and the only basis for deciding how to exchange one product for another was the subjective valuation that each party put upon the products. As Marx put it:

> The exchange of commodities, therefore, first begins on the boundaries of such communities, at their points of contact with other similar communities, or with members of the latter. So soon, however, as products once become commodities in the external relations of a community, they also, by reaction, become so in its internal intercourse. The proportions in which they are exchangeable are at first quite a matter of chance. What makes them exchangeable is the mutual desire of their owners to alienate them. Meantime the need for foreign objects of utility gradually establishes itself. The constant repetition of exchange makes it a normal social act. In the course of time, therefore, some portion at least of the products of labor must be produced with a special view to exchange. From that moment the distinction becomes firmly established between the utility of an object for the purposes of consumption, and its utility for the purposes of exchange. Its use-value becomes distinguished from its exchange-value. On the other hand, the quantitative proportion in which the articles are exchangeable, becomes dependent on their production itself. (Marx 1867)

The most famous example of two products being exchanged on the basis of the perceived utility rather than their underlying value is the alleged exchange of the island of Manhattan for a bunch of beads.[2] This price would never have been set if trade between the Dutch and the Indians had been a long-established practice, or if the Indians knew how little work it took to produce the beads.

In an advanced capitalist nation, factories churn out mass quantities of products specifically for exchange – the seller has no interest in the products his factory produces. The sale price reflects the cost of production, and the subjective utility of the buyer and seller are irrelevant to the price.[3]

There is thus at least a prima facie plausibility to the argument that value alone determines the equilibrium ratio at which commodities are exchanged. The problem comes with the second question: what is the source of value?

Physiocrats

The first economists to systematically consider this question[4] answered that the source of all value was land.

2 This story may or may not be apocryphal. Check the website thebeadsite.com/FRO-MANG.html for one perspective, and www.crazyhorse.org/ for another.

3 Sraffa's critique of the concept of an upward-sloping demand curve, and the critiques of the market demand curve covered earlier, also undermine the neoclassical position and support the classical view.

4 The subject was a bone of contention from the time of Aristotle on. However, predecessors to the physiocrats were quite unsystematic about the determination of value and price.

The argument, in a nutshell, was that land existed before man did. Therefore man – or more specifically, man's labor – could not be the source of value. Instead, value came from the land as it absorbed the energy falling on it from the sun. Man's labor simply took the naturally generated wealth of the land and changed it into a different form. Land generated a surplus, or net product, and this enabled both growth and discretionary spending to occur.

Manufacturing, on the other hand, was 'sterile': it simply took whatever value the land had given, and transformed it into different commodities of an equivalent value. No formal proof was given of this latter proposition, beyond an appeal to observation:

> Maxims of Economic Government. I: Industrial work does not increase wealth. Agricultural work compensates for the costs involved, pays for the manual labor employed in cultivation, provides gains for the husbandmen, and, in addition, produces the revenue of landed property. Those who buy industrial goods pay the costs, the manual labor, and the gain accruing to the merchants; but these goods do not produce any revenue over and above this. Thus all the expenses involved in making industrial goods are simply drawn from the revenue of landed property – no increase of wealth occurs in the production of industrial goods, since the value of these goods increases only by the cost of the subsistence which the workers consume. (Quesnay, cited in Meek 1972)

Since land determined the value of commodities, and the price paid for something was normally equivalent to its value, the ratio between the prices of two commodities should be equivalent to the ratios of the land needed to produce them.

Smith (and Ricardo)

The physiocratic answer to the source of value reflected the school's origins in overwhelmingly rural France. Adam Smith, a son of Scotland and neighbor to the 'nation of shopkeepers,' was strongly influenced by the physiocrats. But in *The Wealth of Nations* (which was published in the year in which the first steam engine was installed) Smith argued that labor was the source of value. In Smith's words: 'The annual labor of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes, and which consist always either in the immediate produce of that labor, or in what is purchased with that produce from other nations' (Smith 1838 [1776]).

The growth of wealth was due to the division of labor, which increased because the expansion of industry allowed each job to be divided into ever smaller specialized sub-tasks. This allowed what we would today call economies of scale: an increase in the size of the market allowed each firm to make work more specialized, thus lowering production costs (his most

famous example of this was of a pin factory; this passage, which is better known than it is read, is reproduced on the web at Marx/More).[5]

Smith therefore had an explanation for the enormous growth in output which occurred during the Industrial Revolution. However, he had a dilemma: for reasons discussed below, Smith knew that, though labor was the source of value, it could not possibly determine price. Yet value was supposed to determine the ratio at which two commodities exchanged.

The dilemma arose because two commodities could exchange only on the basis of the amount of direct labor involved in their manufacture if only labor was required for their production. Smith gave the example of exchange in a primitive hunting society:

> In that early and rude state of society which precedes both the accumulation of stock and the appropriation of land, the proportion between the quantities of labor necessary for acquiring different objects seems to be the only circumstance which can afford any rule for exchanging them for one another. If among a nation of hunters, for example, it usually costs twice the labor to kill a beaver which it does to kill a deer, one beaver should naturally exchange for or be worth two deer. (Ibid.)

However, once there had been an 'accumulation of stock' – once a market economy had evolved – then paying for the labor alone was not sufficient; the price had also to cover profit:

> As soon as stock has accumulated in the hands of particular persons, some of them will naturally employ it in setting to work industrious people, whom they will supply with materials and subsistence, in order to make a profit by the sale of their work, or by what their labor adds to the value of the materials. In exchanging the complete manufacture either for money, for labor, or for other goods, over and above what may be sufficient to pay the price of the materials, and the wages of the workmen, something must be given for the profits of the undertaker of the work who hazards his stock in this adventure. (Ibid.)

So Smith was forced to concede that the price had to be high enough to pay for not just the hours of labor involved in making something, but also a profit. For example, if the deer hunter was an employee of a deer-hunting firm, then the price of the deer had to cover the hunter's labor, and also a profit margin for the firm.

The problem became more complicated still when land was involved. Now the price had to cover labor, profit, and rent. Smith's statement of this reveals that this 'father of economics' was rather more cynical and critical

5 This means that as output rose, costs of production fell. Smith was thus thinking in terms of a 'downward-sloping supply curve' – at least in the medium to long term – in contrast to the upward-sloping supply curve that is so central to economics today, which was debunked in Chapter 5.

of market relations than some of his descendants: 'As soon as the land of any country has all become private property, the landlords, like all other men, love to reap where they never sowed, and demand a rent even for its natural produce' (ibid.).

In the end, Smith was reduced to an 'adding up' theory of prices: the price of a commodity represented in part payment for labor, in part payment for profit, and in part payment for rent. There was therefore no strict relationship between value and price.

Ricardo Though he paid homage to his predecessor, Ricardo was, to say the least, critical of Smith's treatment of the relationship between value and price. He began his *Principles of Political Economy and Taxation* (Ricardo 1817) with an emphatic statement of the belief he shared with Smith, that labor was the determinant of the value of a commodity: 'The value of a commodity, or the quantity of any other commodity for which it will exchange, depends on the relative quantity of labor which is necessary for its production' (ibid.). However, he was much more aware than Smith of the need for precise definitions, and of the difficulties in going from value to price.

Smith had used two measures of the amount of labor contained in a product: 'labor embodied' and 'labor commanded.' Labor embodied was the amount of direct labor time it actually took to make a commodity. Labor commanded, on the other hand, was the amount of labor-time you could buy using that commodity.

If, for example, it took one day for a laborer to make a chair, then the chair embodied one day's labor. However, that chair could well sell for an amount equivalent to two days' wages – with the difference accounted for by profit and rent. The chair would therefore command two days' labor.

Ricardo argued that the former measure was far less volatile than the latter. He believed, in common with most classical economists, that workers received a subsistence wage. Since this would always be equivalent to a fairly basic set of commodities – so much food, clothing, and rental accommodation – it would not change much from one year to the next. The latter measure, however, reflected the profit earned by selling the worker's output, and this would vary enormously over the trade cycle.

His solution for the value/price dilemma was that the price of a commodity included not just direct labor, but also the labor involved in producing any tools. Ricardo took up Smith's deer and beaver example and elaborated upon it. Even in Smith's example, some equipment had to be used to kill the game, and variations in the amount of time it took to make the equipment would affect the ratio in which deer and beavers were exchanged:

> Even in that early state to which Adam Smith refers, some capital, though possibly made and accumulated by the hunter himself, would be necessary

> to enable him to kill his game. Without some weapon, neither the beaver nor the deer could be destroyed, and therefore the value of these animals would be regulated, not solely by the time and labor necessary to their destruction, but also by the time and labor necessary for providing the hunter's capital, the weapon, by the aid of which their destruction was effected.
>
> Suppose the weapon necessary to kill the beaver was constructed with much more labor than that necessary to kill the deer, on account of the greater difficulty of approaching near to the former animal, and the consequent necessity of its being more true to its mark; one beaver would naturally be of more value than two deer, and precisely for this reason, that more labor would, on the whole, be necessary to its destruction. (Ibid.)

Thus the price of any commodity reflected the labor which had been involved in creating it, and the labor involved in creating any means of production used up in its manufacture. Ricardo gave many numerical examples in which the labor involved in producing the means of production simply reappeared in the product, whereas direct labor added additional value over and above its means of subsistence – because of the difference between labor embodied (which equaled a subsistence wage) and labor commanded (which included a profit for the capitalist).[6]

However, Smith and Ricardo were both vague and inconsistent on key aspects of the theory of value.

Though he generally argued that labor was the source of value, on several occasions Smith counted the work of farm animals as labor.[7] Though he failed to account for the role of machinery in the creation of value, he also argued that machines could produce more value than it took to produce them – which would mean that machinery (and animals) would be a source of value, in addition to labor: 'The expense which is properly laid out upon a fixed capital of any kind, is always repaid with great profit, and increases the annual produce by a much greater value than that of the support which such improvements require' (Smith 1838 [1776]).

Ricardo more consistently implied that a machine added no more value to output than it lost in depreciation, but he also occasionally lapsed into completely ignoring the contribution of machinery to value.[8]

Marx's labor theory of value

Where his forebears implied and were vague, Marx stated and was emphatic: labor was the only source of value, in the sense that it could

6 All these examples were hypothetical, of course: Ricardo did not go out and measure the labor involved in producing the means of production in any industry, and then present his findings.

7 'Not only his labouring servants, but his labouring cattle, are productive labourers' (Smith 1838 [1776]).

8 'By the invention of machinery [...] a million of men may produce double, or treble the amount of riches, [...] but they will on no account add anything to value' (Ricardo 1817). Marx commented that 'This is quite wrong. The value of the product of a million men does not depend solely on their labor but also on the value of the capital with which they work' (Marx 1968 [1861]: Part II, p. 538).

add 'more value than it has itself' (Marx 1867). Marx called this difference between the value embodied in a worker and the value the worker added to production 'surplus value,' and saw it as the sole source of profit.

He was critical of Ricardo for not providing an explanation of why this difference existed – in Ricardo's terms, for not having a systematic explanation of why labor embodied differed from labor commanded. As Marx put it:

> Ricardo starts out from the actual fact of capitalist production. The value of labor is smaller than the value of the product which it creates – The excess of the value of the product over the value of the wages is the surplus-value – For him, it is a fact, that the value of the product is greater than the value of the wages. How this fact arises, remains unclear. The total working-day is greater than that part of the working-day which is required for the production of wages. Why? That does not emerge. (Marx 1968 [1861]: Part II)

The best that Ricardo could offer, Marx claimed, was that:

> [t]he value of labor is therefore determined by the means of subsistence which, in a given society, are traditionally necessary for the maintenance and reproduction of the laborers.
>
> But why? By what law is the value of labor determined in this way?
>
> Ricardo has in fact no answer, other than – the law of supply and demand – He determines value here, in one of the basic propositions of the whole system, by demand and supply – as Say notes with malicious pleasure. (Ibid.)

Similarly, Marx rejected Smith's musings on the productivity of machinery, and concurred with Ricardo that a machine only added as much value to output as it lost through depreciation:

> The maximum loss of value that they can suffer in the process, is plainly limited by the amount of the original value with which they came into the process, or in other words, by the labor-time necessary for their production. Therefore, the means of production can never add more value to the product than they themselves possess independently of the process in which they assist. However useful a given kind of raw material, or a machine, or other means of production may be, though it may cost £150, or, say 500 days' labor, yet it cannot, under any circumstances, add to the value of the product more than £150. (Marx 1867)

Marx likewise concurred with Ricardo's definition of value, cited above, that it 'depends on the relative quantity of labor which is necessary for its production.' Value in turn determined the price at which commodities exchanged, with commodities of an equivalent value – commodities containing an equivalent quantity of labor[9] – exchanging for the same price (in equilibrium).

9 Marx qualified this as 'socially necessary labor-time,' to take account of the possibility of out-of-equilibrium situations in which more labor-time might be lavished on a product than could be recouped by its sale.

This exchange of equivalents nonetheless still had to enable capitalists to make a profit, and Marx was disparaging of any explanation of profits which was based on 'buying cheap and selling dear':

> To explain, therefore, the general nature of profits, you must start from the theorem that, on the average, commodities are sold at their real values, and that profits are derived by selling them at their values, that is, in proportion to the quantity of labor realized in them. If you cannot explain profit upon this supposition, you cannot explain it at all. (Marx 1847)

Marx gave two explanations for the origin of surplus value. One was a 'negative' proof, by a process of elimination based on the unique characteristics of labor. The other was a 'positive' proof, based on a general theory of commodities. Most Marxist economists are aware of only the negative proof.

The origin of surplus value (I)

This was that labor was a unique commodity, in that what was sold was not actually the worker himself (which would of course be slavery), but his capacity to work, which Marx called labor-power. The value (or cost of production) of labor-power was the means of subsistence, since that is what it took to reproduce labor-power. It might take, say, six hours of labor to produce the goods which are needed to keep a worker alive for one day.

However, what the capitalist actually received from the worker, in return for paying for his labor-power, was not the worker's capacity to work (labor-power), but actual work itself. If the working day was twelve hours long (as it was in Marx's day), then the worker worked for twelve hours – twice as long as it actually took to produce his value. The additional six hours of work was surplus labor, which accrued to the capitalist and was the basis of profit. As Marx put it:

> The laborer receives means of subsistence in exchange for his labor-power; the capitalist receives, in exchange for his means of subsistence, labor, the productive activity of the laborer, the creative force by which the worker not only replaces what he consumes, but also gives to the accumulated labor a greater value than it previously possessed. (Ibid.)

This difference between labor and labor-power was unique to labor: there was no other commodity where 'commodity' and 'commodity-power' could be distinguished. Therefore other commodities used up in production simply transferred their value to the product, whereas labor was the source of additional value. Surplus value, when successfully converted into money by the sale of commodities produced by the worker, was in turn the source of profit.

The labor theory of value and the demise of capitalism This direct causal

relationship between surplus value and profit meant there was also a direct causal relationship between what Marx called the rate of surplus-value and the rate of profit.

The rate of surplus value was the ratio of the surplus labor-time performed by a worker to the time needed to reproduce the value of labor-power. In our example above, this ratio is 1 to 1, or 100 percent: six hours of surplus labor to six hours of what Marx called necessary labor.

Marx defined the rate of profit as the ratio of surplus (which he denoted by the symbol *s*) to the sum of the inputs needed to generate the surplus. Two types of inputs were needed: necessary labor, and the means of production (depreciation of fixed capital plus raw materials, intermediate goods, etc.). Marx called necessary labor variable capital (for which he used the symbol *v*), because it could increase value, and he called the means of production used up constant capital (for which he used the symbol *c*), because it could not increase value.

Taking the example of weaving which Marx used extensively, during one working day a weaver might use 1,000 yards of yarn and wear out one spindle. The yarn might have taken twelve hours of (direct and indirect) labor to make, and the spindle the same. Thus the sum of the direct labor-time of the worker, plus the labor-time embodied in the yarn and the spindle, is thirty-six hours: twelve hours' labor by the weaver, twelve for the yarn, and twelve for the spindle. The ratio of the surplus to $c + v$ is 6:30 for a rate of profit of 20 percent.

Marx assumed that the rate of surplus value – the ratio of s to v – was constant, both across industries and across time.[10] Simultaneously, he argued that the competitive forces of capitalism would lead to capitalists replacing direct labor with machinery, so that for any given production process, c would get bigger with time. With s/v constant, this would decrease the ratio of s to the sum of c and v, thus reducing the rate of profit.

Capitalists would thus find that, regardless of their best efforts, the rate of profit was falling.[11] Capitalists would respond to this by trying to drive down the wage rate, which would lead to revolt by the politically aware working class, thus leading to a socialist revolution.[12]

Well, it was a nice theory. The problem was that, even if you accepted the premise that labor was the only source of value, the theory still had major logical problems. Chief among these was what became known as the transformation problem.

10 There is no reason why the rate of surplus value should be constant over time in practice, and Joan Robinson used this as the basis of her critique of Marxian economics. She argued that an increase in *c* could cause a rise in *s/v*, the rate of surplus value, so that the rate of profit would not fall over time.

11 There were several counter-tendencies that could attenuate this, but ultimately Marx thought the tendency of the rate of profit to fall would prevail.

12 This is an extremely brief outline of a much more complicated argument. Its purpose is not to provide a detailed exposition of Marx's theory of revolution, but to prepare the ground for critiques of the labor theory of value.

The transformation problem The transformation problem arises from the fact that capitalists are motivated not by the rate of surplus value, but by the rate of profit. If the rate of surplus value is constant across industries, and labor is the only source of surplus, then industries with a higher than average ratio of labor to capital should have a higher rate of profit. Yet if a capitalist economy is competitive, this situation cannot apply in equilibrium, because higher rates of profit in labor-intensive industries should lead to firms moving out of capital-intensive industries into labor-intensive ones, in search of a higher rate of profit.

Marx was not an equilibrium theorist, but this problem was serious because his description of equilibrium was inconsistent. Somehow, he had to reconcile a constant rate of surplus value across industries with at least a tendency towards uniform rates of profit.

Marx's solution was to argue that capitalism was effectively a joint enterprise, so that capitalists earned a profit which was proportional to their investment, regardless of whether they invested in a labor-intensive or capital-intensive industry:

> Thus, although in selling their commodities the capitalists of the various spheres of production recover the value of the capital consumed in their production, they do not secure the surplus-value, and consequently the profit, created in their own sphere by the production of these commodities – So far as profits are concerned, the various capitalists are just so many stockholders in a stock company in which the shares of profit are uniformly divided per 100. (Marx 1894)

He provided a numerical example (ibid.) that purported to show that this was feasible. He first provided a table (Table 17.1) showing the production of surplus value by a number of industries with differing ratios of variable to constant capital (in modern terms, varying labor-to-capital ratios).

In this 'value' table, a higher ratio of labor to capital is associated with a higher rate of profit. Thus 'labor-intensive' industry III, with a labor-to-capital ratio of 2:3, earns the highest 'value' rate of profit of 40 percent, while 'capital-intensive' industry V, with a 1:20 ratio, makes a 'value' rate of profit of just 5 percent.

Then Marx provided a second table in which the same industries earned a uniform rate of profit, now in terms of price rather than value. In contrast to Table 17.1, now all industries earned the same rate of profit.

The numbers in this example appeared feasible. The sums are consistent: the sum of all prices in Table 17.2 equals the sum of the value created in Table 17.1; the sum of surplus value in Table 17.1 equals the sum of the differences between input costs (500) and the price of output in Table 17.2 (610). But this apparent consistency masks numerous internal inconsistencies. The best proof of this was provided by the Sraffian economist Ian

TABLE 17.1 Marx's unadjusted value creation table, with the rate of profit dependent upon the variable-to-constant ratio in each sector

Capitals	Constant capital	Variable capital	Rate of surplus value (%)	Surplus value	Product	Rate of profit (%)
I	80	20	100	20	120	20
II	70	30	100	30	130	30
III	60	40	100	40	140	40
IV	85	15	100	15	115	15
V	95	5	100	5	105	5
Sum	390	110	100	110	610	22

TABLE 17.2 Marx's profit distribution table, with the rate of profit now uniform across sectors

Capitals	Constant capital	Variable capital	Surplus value	Price	Rate of profit	Deviation
I	80	20	22	122	22%	2%
II	70	30	22	122	22%	–8%
III	60	40	22	122	22%	–18%
IV	85	15	22	122	22%	7%
V	95	5	22	122	22%	17%
Sum	390	110	110	610	22%	

Steedman (this next section is unavoidably technical, and can be skipped at first reading).

Marxist economics after Sraffa

We have already seen in Chapter 6 the damage Sraffa's crucible did to the economic theory of price determination and income distribution. In an illustration of the comparatively non-ideological nature of Sraffian analysis, Steedman showed that Sraffa's method could equally well critique Marxian economics.

The basis of Sraffa's system is the acknowledgment that commodities are produced using other commodities and labor. Unlike conventional economics – which has invented the fictional abstraction of 'factors of production' – Marx's system is consistent with Sraffa's 'production of commodities by means of commodities' analysis (indeed, Marx's economics was a major inspiration for Sraffa).

Steedman began with an illustrative numerical model of an economy with just three commodities: iron, corn and gold. Iron and labor were needed to produce all three commodities, but neither gold nor corn was needed to produce anything.[13] Table 17.3 shows the quantities of inputs and outputs in Steedman's hypothetical economy.

TABLE 17.3 Steedman's hypothetical economy

Industries	Inputs		Outputs		
	Iron	Labour	Iron	Gold	Corn
Iron	28	56	56		
Gold	16	16		48	
Corn	12	8			8
Totals	56	80	56	48	8

The numbers in this table represent arbitrary units: the iron units could be tons, the labor units hours, gold units ounces, and corn units bushels – and any other set of arbitrary units would do as well. However, since each input is measured in a completely different unit, the numbers add up only down the columns: they don't add across the rows.

To analyze the labor theory of value, Steedman first had to convert these into the 'labor-value' units which Marx used. For simplicity, he set the labor-value of one unit ('hour') of labor at 1. Converted into value terms, Table 17.4 then says that it takes 28 times whatever the 'labor-value' of a ton of iron

13 This is clearly unrealistic, but the logic is the same even if we incorporate the reality that corn would be needed to produce corn. Steedman's example just made the numerical algebra easier to follow. He then continued his argument using symbolic linear algebra, to establish the generality of his analysis.

is, plus 56, to produce 56 times whatever the 'labor-value' of a ton of iron is. A bit of simple algebra shows that one ton of iron has a labor-value of 2.

TABLE 17.4 Steedman's physical table in Marx's value terms

	c	v	s	Totals
Iron	56	14	42	112
Gold	32	4	12	48
Corn	24	2	6	32
Totals	112	20	60	192

Similar calculations show that the labor-value of an ounce of gold is 1, and the labor-value of a bushel of corn is 4.

The next stage in the analysis is to work out the value of the commodity labor-power. It might appear that this has already been done – didn't he set this equal to 1? No, because this represents the total amount of labor performed, and in Marx's theory, workers get paid less than this. They get paid, not for their contribution to output, but for the commodity labor-power, whose value is equal to the means of subsistence.

Steedman assumed that it took five bushels of corn to reproduce the labor used in this hypothetical economy. Therefore the total value of labor-power in the entire economy was equal to the labor-value of five bushels of wheat. Since a bushel of wheat has a labor-value of 4, this means that the value of labor-power across the whole economy was 20 (and therefore, one unit of labor had a labor-value of 1/4). The difference between this amount and the total labor performed – 80 hours of labor, which we have set to equal 80 units of labor-value – is surplus value. So *v*, in Marx's scheme, is 20, while *s* is 60, for a rate of surplus value of 300 percent.

These numbers now allow the physical input data in Table 31 to be converted into Marx's labor-value terms. Since Marx assumed that the rate of surplus value was the same across all industries, ¼ of the labor input in each industry represents *v*, while ¾ represents *s*. Taking the iron industry, of the 56 labor-value units of direct labor, 14 represent *v* and 42 represent *s*. Since Table 17.5 is now in consistent units (everything is measured in labor-value units), the table adds up both horizontally and vertically.

With this table constructed, we can now calculate the average rate of profit in Marx's terms – which is the ratio of total *s* to the sum of *c* and *v*, or 60/132 (this factors to 5/11, and is equal to a rate of profit of 455Ú11 percent). In equilibrium, this rate of profit will apply across all industries, since otherwise capitalists would be shifting their resources from one sector to another. Steedman then multiplied the input values by 1 plus this uniform rate of profit to yield Marx's 'transformation' of values into prices.

TABLE 17.5 Steedman's prices table in Marx's terms

	Inputs c	v	Total	Profit rate	Markup (%)	Total price	Per unit price
Iron price of production	56	14	70	45	31.82	101.82	1.82
Gold price of production	32	4	36	45	16.36	52.36	1.09
Corn price of production	24	2	26	45	11.82	37.82	4.73
	112	20	132		60	192	

So far, so good. Just as with Marx's table, the sum of values equals the sum of prices, and the sum of profits equals the sum of surplus values. However, all is not as well as it seems.

Table 17.5 tells us that the price of the total output of the iron industry is 101.82 (let's call this dollars, even though in these models the price simply means the ratios in which commodities exchange). If we divide this by the physical output of 56 tons of iron, then this means the price per ton is $1.82. If the iron industry pays this price for its iron inputs in the next period, it will pay out $50.91. To hire the workers it needs, it has to buy sufficient corn: the amount works out to 3.5 bushels (this is the total amount of corn consumed by all workers – 5 bushels – multiplied by the fraction of the total workforce employed in the iron industry). This costs $16.55. The iron industry's total outlays are thus $67.46, and yet (if Marx's equilibrium price calculations are accurate), it can sell its output for $101.82, for a profit of $34.36. But this is $2.55 more than the profit in the previous period.

Clearly there is an inconsistency – or rather, at least one. The simplest is that Marx converted the output into price terms, but didn't convert the inputs. However, it's worse than this: even if you amend this error, you get nonsense results: what is supposed to be an equilibrium (and therefore stationary) turns out not to be stationary at all.

Steedman then shows that you don't have to 'transform' physical quantities into values, and values into prices: you can instead derive prices directly from the physical data and the equilibrium assumption of a uniform rate of profit. The basis of this is that, in equilibrium, the prices have to enable each sector to just pay for its inputs and make the average rate of profit. Thus for the iron industry, the price of its 28 tons of iron inputs, plus the price of its 56 hours of labor, plus the standard markup, must just equal the price of its 56 tons of iron output. There are two similar equations for corn and gold, and one final relation linking the wage to the cost of the

subsistence amount of corn. If the gold price is notionally set to $1, this yields the average rate of profit, wage, and prices of iron and corn (in terms of gold) shown in Table 17.6.

TABLE 17.6 Profit rate and prices calculated directly from output/wage data

Variable	Value; price in terms of gold
Rate of profit	52%
Iron price of production	1.71
Gold price of production	1
Corn price of production	4.3

Things don't look so good for Marx's tables now. First, the rate of profit and prices worked out directly from the data (in Table 17.6) differ from those derived by taking Marx's route through the concept of value (in Table 17.5). Worse, whereas Marx's numbers aren't consistent – they are supposed to describe an equilibrium situation, but don't – the numbers derived directly from the data are consistent.

Take iron, for example. The iron sector pays $1.71 per ton for its 28 tons of inputs, for a total of $47.88. It buys 3.5 bushels of wheat for $4.3 a bushel, for an outlay of $15.05. Total expenses of production are therefore $62.93. It then marks this up by the rate of profit to a total of $95.65. Except for the effect of rounding error, this equals the price of iron ($1.71) times the output (56 tons).[14]

Steedman concluded that, far from value determining prices, prices could not be accurately derived from values. Instead, prices could be worked out directly from the physical production data, and knowledge of the real wage: value calculations were both superfluous and misleading. He concluded that

> [t]here is no problem of transforming values into prices, etc., to be solved. The 'transformation problem' is a 'non-problem,' a spurious problem which can only be thought to arise and to have significance when one is under the misapprehension that the rate of profit must be determined in terms of labor quantities. Once it is seen that there is no such necessity, the 'problem' simply evaporates. (Steedman 1977)

Though he did not put his conclusion in this way, Steedman was essentially saying that Marx cannot be right that labor is the only source of surplus. We are better off to forget the whole question of 'where does the surplus come from?' and instead simply accept that it exists, and analyze capitalism on that basis.

14 If I had worked with exact numbers rather than rounded them to two decimal places, the two calculations would have corresponded exactly. The value calculations, on the other hand, differ systematically, and by far more than can be attributed to rounding error.

The inconsistencies Steedman establishes[15] undermined Marx's sequence of claims that labor is the only source of value, that value is the only source of profits, and that value determines price. Marx could also provide no reason why capitalism, possible the most internally competitive social system ever, should ultimately behave so cooperatively, with capitalists sharing in total social profit as 'just so many stockholders in a stock company in which the shares of profit are uniformly divided per 100.'

Thus, though Marx used the labor theory of value to both attack capitalism and predict its downfall, the theory did not even seem to provide a consistent model of capitalism itself – let alone a 'scientific' explanation of why capitalism would wilt and socialism blossom. It appeared that the great revolutionary challenger to capitalism had promised a bang, but delivered a whimper.

The Marxist response This was no great disappointment to his conservative critics, who happily pointed out the flaws in Marx's logic, and turned to developing economics as we know it today. But devoted Marxists tried valiantly to resurrect Marx's program of 'scientific socialism' by showing that, somehow, at some deep level, Marx's theory of value was internally consistent.

Many years before Steedman turned Sraffa's blowtorch onto Marx's economics, leading Marxist economists had applauded Sraffa's methodical critique of neoclassical economics. However, some of them could also see that Sraffa's dispassionate analysis posed serious problems for the labor theory of value. One of the most thoughtful of such responses came from Ronald Meek in his scholarly *Studies in the Labor Theory of Value*. In a section headed 'From values to prices: was Marx's journey really necessary?,' Ronald Meek asked:

> Why did he think that anything had to be 'transformed' in order to arrive at the equilibrium prices characteristic of competitive capitalism? And if something did have to be 'transformed' in order to arrive at them, why did it have to be these mysterious, non-observable, Volume I 'values'? Personally, although I am no longer at all religious about such matters, I find myself leaning much more towards the 'neo-Ricardians' than towards their critics. I think that it is useful to talk in terms of a broad Ricardo-Marx-Sraffa tradition or stream of thought, in which the question of the relation between the social surplus and the rate of profit has always been (and still is) a central theme. (Meek 1972)

In other words, Meek was prepared to abandon the emphasis upon value, and instead develop Marx's analysis of capitalism – minus the insistence that labor is the only source of value, and that value determines profit and prices. Many other scholars followed Meek's lead, and abandoned strict Marxist economics, with its insistence upon value analysis.

15 Similar arguments had been made before, as early as at the end of the nineteenth century. Steedman simply provided the most comprehensive and definitive critique.

However, a minority has persisted, and continue to argue that, somehow, value is an essential part of Marxist analysis. This minority's response to Steedman's critique is best summarized in the title of a paper by Anwar Shaikh: 'Neo-Ricardian economics: a wealth of algebra, a poverty of theory' (Shaikh 1982).

The implication is that, somehow, Marx's philosophy sidesteps the mathematical problems highlighted by Steedman, or it points out a step in the mathematical chain which Steedman missed. To date, no Marxist has been able to put forward an explanation of this rejoinder, which has commanded assent from the majority of Marxists: there are almost as many competing ways to try to avoid Steedman's critique as there are Marxist economists. However, they all assent that there is something in Marx's philosophy which counteracts Steedman's mathematical attack.

Over one century after Marx's flawed solution to the transformation problem was first published, and almost a quarter of a century after Steedman's devastating critique, they are still at it. The latest attempts argue that, since Marx's theory was actually dynamic rather than static, the transformation problem should be solvable in a dynamic model.

Nice try, guys, but you really shouldn't bother. The labor theory of value is internally inconsistent, and perhaps even more flawed than conventional economic theory itself. And far from philosophy saving the labor theory of value from mathematical criticism, philosophy provides further compelling reasons for its rejection. One convincing proof of this was given by the Indian economist Arun Bose.

Arun Bose: Marx's 'capital axioms'

Bose was well aware of the criticism leveled at Steedman that his argument, while mathematically impeccable, was somehow philosophically lacking. Though he disparagingly referred to this as 'a theological tendency to go so strictly by what Marx said as to adhere to the rule: "where logic contradicts Marx's words, go by his words"' (Bose 1980), Bose nonetheless tried to avoid this judgment by looking for textual support in Marx. He called his interpretation of Marx the 'capital theory' approach, and argued that: 'as far as logic goes, there are "two Marxes," the Marx of the "labor value" approach, and the Marx of the "capital theory" approach,' and that the 'second Marx' should be supported in preference to the first (in scientific discussion) (ibid.).[16]

Bose, unlike Steedman, accepted the Marxian position that the concept of value was somehow essential. However, what he argued was that, if value was in some sense the essence of a commodity, then that essence could not be reduced solely to labor. Therefore labor alone was not the essence of value:

16 I dispute Bose's reading of Marx on this subject, but find the logic in his 'essence of value' analysis impeccable.

instead, both labor and commodities were the essence of value. As Bose put it: 'labor is never the only or the main "source of value" in any system which is defined as capitalist on the basis of a reasonable set of axioms. Labor is not, immediately or ultimately, the only or main source of price, surplus or profit. Labor and commodities are the two sources of wealth, value, price, of surplus value and profit' (ibid.). His logic used a concept we saw earlier in Chapter 6: the reduction of commodity inputs to dated labor.[17]

The manufacture of any commodity requires direct labor, machinery, intermediate goods, and raw materials. All the non-labor inputs had to have been produced at some time in the past: even unprocessed raw materials had to have been previously either mined or harvested. They in turn were made using some direct labor, and other commodity inputs (machinery, intermediate goods, raw materials). These again can be reduced to even earlier dated labor, and other commodity inputs.[18]

This process can go on indefinitely, with each step further reducing the commodity content. But no matter how far back you go, you can never eliminate this commodity residue. If you could, then there would be some commodities that can be created with absolutely no commodity inputs – or in other words, by magic.[19] Therefore if value is the essence of a commodity, then that essence consists of both labor and commodities – it cannot be derived solely from labor.

Bose's conclusion probably helped sway some more Marxists to abandon the faith. But generally, his argument was simply not acknowledged by Marxist economists. A similar fate has to date befallen the next argument, which establishes that the labor theory of value is inconsistent, not just with mathematical logic, or with any reductionist notion of the commodity, but with Marx's own philosophy.

The origin of surplus value (II)

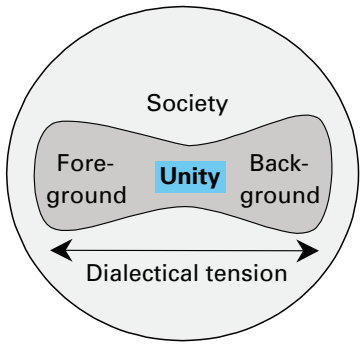
As noted earlier, most Marxists believe that Marx reached the conclusion that labor was the source of value by a 'negative' proof, which eliminated any other possible contenders. This was true up until 1857, when he developed an alternative, and far superior, 'positive' proof. To understand this proof, we have to delve into Marx's 'dialectical' philosophy.[20]

17 He also employed a set of axioms from which his conclusions were derived.

18 At each step in the reduction, one period's capital inputs are reduced to the previous period's direct labor and capital inputs, marked up by the equilibrium rate of profit.

19 Services such as a massage, which might appear to be a commodity-free good, involve commodities directly (massage bench, oil), and if even these are forgone (an oil-free massage while lying on bare ground), they involve it indirectly through the need for the masseur to eat to stay alive. The commodity 'massage' could therefore not be reproduced in the absence of commodity inputs, such as food.

20 Marx's philosophy was derived from Hegel's, with Marx arguing that he replaced Hegel's idealism with realism. Dialectics is popularly known as the trio of thesis-antithesis-synthesis, and though this concept is popularly associated with both Hegel and Marx, it in fact derives from another, lesser-known philosopher, Fichte. For an intelligent discussion of dialectical philosophy in general, and Marx's application of it in particular, see Wilde (1989).



17.1 A graphical representation of Marx's dialectics

In brief, dialectics is a philosophy of change. It begins from the proposition that any entity exists in a social environment (see Figure 17.1). The environment will emphasize some aspect of the entity, and necessarily places less emphasis upon all other aspects of the entity. However, the entity cannot exist without both the foreground aspects (the features the environment emphasizes) and background aspects (the ones it neglects). This sets up a tension within the entity, and possibly between the entity and the environment. This tension can transform the nature of the entity, and even the environment itself.

Marx first applied this logic to the concept of the commodity in 1857. He reasoned that the commodity was the unity of use-value and exchange-value. In a capitalist economy, the exchange-value of a commodity is brought to the foreground[21] while its use-value is pushed into the background. What this means in practice is that the use-value of a commodity is irrelevant to its price: its price is instead determined by its exchange-value. Yet the commodity can't exist without its use-value (something useless can't be a commodity), so that a dynamic tension is set up between use-value and exchange-value in capitalism.

Prior to this realization, Marx had concurred with Smith and Ricardo that use-value was irrelevant to economics. After it, the concept of use-value, in unison with exchange-value, became a unifying concept for his whole analysis of capitalism.

Marx's first exploration of this concept occurred when he was working on the 'rough draft' of *Capital* in 1857: 'Is not value to be conceived as the unity of use-value and exchange-value? In and for itself, is value as such the general form, in opposition to use-value and exchange-value as particular forms of it? Does this have significance in economics?' (Marx 1857).[22]

21 In a different type of economy, use-value could well be brought to the foreground: commodities could be produced for the ruling elite at ostentatious expense, without regard to their cost of production. I well remember seeing a backscratcher in the Forbidden Palace in Beijing, made out of jade, gold, diamonds, emeralds and rubies.

22 This 'discovery' of the application of dialectical philosophy to economics occurred after Marx happened to re-read Hegel while he was drafting the *Grundrisse* (Oakley 1983; Mandel 1971).

The manner in which he first puts the proposition, as questions to himself rather than didactic statements, and especially his comment 'Does this have significance in economics?', shows how novel the concept was to him. From this point on, Marx exclusively used this positive methodology, based on a general axiomatic analysis of the commodity, to explain the source of surplus value. Since this point is appreciated by so few Marxists, it is worth citing several of Marx's many pronouncements on this issue.

I noted earlier that Marx mocked Ricardo for not having an explanation of why labor embodied differed from labor commanded. He notes that Smith fell for the fallacy that, under capitalism, a worker should be paid his full product. He continues:

> Ricardo, by contrast, avoids this fallacy, but how? 'The value of labor, and the quantity of commodities which a specific quantity of labor can buy, are not identical.' Why not? 'Because the worker's product is not = to the worker's pay.' I.e. the identity does not exist, because a difference exists – Value of labor is not identical with wages of labor. Because they are different. Therefore they are not identical. This is a strange logic. There is basically no reason for this other than it is not so in practice. (Ibid.)

Marx then contrasts his easy ability to derive the source of surplus value with Ricardo's struggles to do the same: 'What the capitalist acquires through exchange is labor capacity; this is the exchange value which he pays for. Living labor is the use-value which this exchange value has for him, and out of this use-value springs the surplus value and the suspension of exchange as such' (ibid.).

There are many similar such statements, many of which were written in documents which were either not intended for publication or were never formally completed by Marx. But even in the most well-known passage where Marx derives the source of surplus value, in *Capital* I, this positive derivation takes precedence over the negative proof.

Marx began *Capital* by clearing intellectual cobwebs en route to uncovering the source of surplus, criticizing explanations based upon unequal exchange or increasing utility through exchange. He then restated the classical axiom that exchange involves the transfer of equivalents, and the conclusion that therefore exchange of itself cannot provide the answer. Yet at the same time circulation based on the exchange of equivalents must be the starting point from which the source of surplus value is deduced. Marx put the dilemma superbly:

> The conversion of money into capital has to be explained on the basis of the laws that regulate the exchange of commodities, in such a way that the starting point is the exchange of equivalents. Our friend, Moneybags, who as yet is only an embryo capitalist, must buy his commodities at their

> value, must sell them at their value, and yet at the end of the process must withdraw more value from circulation than he threw into it at starting. His development into a full-grown capitalist must take place, both within the sphere of circulation and without it. These are the conditions of the problem. (Marx 1867)

He began the solution of this dilemma with a direct and powerful application of the dialectic of the commodity. If the exchange-value of the commodity cannot be the source of surplus, then the dialectical opposite of value, use-value, is the only possible source:

> The change of value that occurs in the case of money intended to be converted into capital must take place in the commodity bought by the first act, M-C, but not in its value, for equivalents are exchanged, and the commodity is paid for at its full value. We are, therefore, forced to the conclusion that the change originates in the use-value, as such, of the commodity, i.e. its consumption. In order to be able to extract value from the consumption of a commodity, our friend, Moneybags, must be so lucky as to find, within the sphere of circulation, in the market, a commodity, whose use-value possesses the peculiar property of being a source of value. (Ibid.)

Marx then used the quantitative difference between the exchange-value of labor-power and its use-value to uncover the source of surplus value in the transaction between worker and capitalist:

> The past labor that is embodied in the labor power, and the living labor that it can call into action; the daily cost of maintaining it, and its daily expenditure in work, are two totally different things. The former determines the exchange-value of the labor power, the latter is its use-value. The fact that half a [working] day's labor is necessary to keep the laborer alive during 24 hours, does not in any way prevent him from working a whole day. Therefore, the value of labor power, and the value which that labor power creates in the labor process, are two entirely different magnitudes; and this difference of the two values was what the capitalist had in view, when he was purchasing the labor power. What really influenced him was the specific use-value which this commodity possesses of being a source not only of value, but of more value than it has itself. This is the special service that the capitalist expects from labor power, and in this transaction he acts in accordance with the 'eternal laws' of the exchange of commodities. The seller of labor power, like the seller of any other commodity, realizes its exchange-value, and parts with its use-value. (Ibid.)

The one way in which Marx's 'negative' derivation survived was in the claim that labor-power was the only commodity with the property of being 'a source not only of value, but of more value than it has itself.' In *Capital*

I, Marx appeared to successfully reach the conclusion that the means of production could not be a source of surplus value. However, he did so by contradicting a basic premise of his 'positive' proof, that the use-value and the exchange-value of a commodity are unrelated. Properly applied, his 'positive proof' contradicts the negative one by showing that all inputs to production are potential sources of surplus-value.

'Guilty of this or that inconsistency because of this or that compromise' In the course of his attempt to preserve the labor theory of value proposition that labor-power is the only source of surplus value, Marx advanced three propositions which fundamentally contravene his general approach to commodities: that, in the case of the means of production, the purchaser makes use of their exchange-value, not their use-value; that their use-value cannot exceed their exchange-value; and that the use-value of commodity inputs to production somehow reappears in the use-value of the commodities they help create.

Marx began with the simple assertion that the means of production can transfer no more than their exchange-value to the product. He next attempted to forge an equality between the exchange-value and the use-value of the means of production, by equating the depreciation of a machine to its productive capacity.

> Value exists only in articles of utility. If therefore an article loses its utility, it also loses its value. The reason why means of production do not lose their value, at the same time that they lose their use-value, is this: they lose in the labor process the original form of their use-value, only to assume in the product the form of a new use-value. Hence it follows that in the labor process the means of production transfer their value to the product only so far as along with their use-value they lose also their exchange-value. They give up to the product that value alone which they themselves lose as means of production. (Ibid.)

Don't worry if you found that paragraph hard to understand: it is replete with erroneous and ambiguous propositions. First, the two final sentences, which appear to link the transfer of value by the machine to its depreciation, are incorrect (see below). Secondly, the statement that the use-value of a machine reappears in the use-value of the product equates the use-value of the machine to the utility enjoyed by the 'consumers' who purchase the goods the machine produces. But the use-value of a machine is specific to the capitalist purchaser of the machine only. By arguing that the use-value of the machine reappears in the product, Marx is in fact contemplating the existence of abstract utility, with the 'usefulness' of the machinery being transmuted into the 'usefulness' of the commodities it produces. If anything, this is neoclassical economics, not Marx.

The ambiguous statement concerns the transfer of value by the means of production. Which of their two 'values' do machines transfer, their exchange-value or their use-value? If Marx meant that they transfer their use-value, then this sentence would be correct in terms of his analysis of commodities. But later he makes it clear that by this expression he meant that the means of production transfer not their use-value (which is the case with a worker) but their exchange-value. In the clearest illustration of the flaw in his logic, he states that over the life of a machine, 'its use-value has been completely consumed, and therefore its exchange-value completely transferred to the product' (ibid.: 197). This amounts to the assertion that in the case of machinery and raw materials, what is consumed by the purchaser is not their use-value, as with all other commodities, but their exchange-value.

This ambiguity reappears as Marx discusses the example of a machine which lasts only six days. He first states the correct proposition that the machine transfers its use-value to the product, but then equates this to its exchange-value. He says that if a machine lasts six days '[t]hen, on the average, it loses each day one sixth of its use-value, and therefore parts with one-sixth of its value to the daily product.' Initially he draws the correct if poorly stated inference that 'means of production never transfer more value to the product than they themselves lose during the labor-process by the destruction of their own use-value.' However, the ambiguity between exchange-value and use-value is strong, and his conclusion takes the incorrect fork. Stating his conclusion rather more succinctly than his reasoning, he says:

> The maximum loss of value that they [machines] can suffer in the process, is plainly limited by the amount of the original value with which they came into the process, or in other words, by the labor-time necessary for their production. However useful a given kind of raw material, or a machine, or other means of production may be, though it may cost £150 – yet it cannot, under any circumstances, add to the value of the product more than £150. (Ibid.)

Essentially, Marx reached the result that the means of production cannot generate surplus value by confusing depreciation, or the loss of value by a machine, with value creation. The truisms that the maximum amount of value that a machine can lose is its exchange-value, and that a machine's exchange-value will fall to zero only when its use-value has been completely exhausted, were combined to conclude that the value a machine adds in production is equivalent to the exchange-value it loses in depreciation. With the value added by a machine equated to value lost, no net value is transferred to the product, and therefore only labor can be a source of surplus value.

While the argument may appear plausible, in reality it involves a confusion of two distinct attributes of a machine: its cost (exchange-value) and its usefulness (use-value). From a Marxist perspective, depreciation is the

writing-off of the original exchange-value of a machine over its productive life. Consequently, the maximum depreciation that a machine can suffer is its exchange-value. As it wears out, both its residual value and its usefulness will diminish, and both will terminate at the same time. However, it does not follow that the usefulness (the value-creating capacity) of the machine is equal to its cost (its depreciation). Though a capitalist will 'write off' the latter completely only when the former has been extinguished, the two aspects are nonetheless completely different and unrelated. There is no reason why the value lost by the machine should be equivalent to the value added.

An analogy with labor highlights the fallacy involved in equating these two magnitudes. If workers receive a subsistence wage, and if the working day exhausts the capacity to labor, then it could be argued that in a day a worker 'depreciates' by an amount equivalent to the subsistence wage – the exchange-value of labor-power. However, this depreciation is not the limit of the amount of value that can be added by a worker in a day's labor – the use-value of labor. Value added is unrelated to and greater than value lost; if it were not, there could be no surplus.

But don't take my word for it. Take Marx's.

The origin of surplus value (III)

As noted above, Marx first developed his dialectical analysis of the commodity while working on the rough draft of *Capital*. He was initially so enthused with this approach that he explored it freely, with almost no regard for how it meshed with his previous analysis. While doing this, he made a statement that correctly applied this new logic and directly contradicted the old, by stating that a machine could add more value than it lost through depreciation.

Table 1 is typical of Marx's standard numerical examples of value productivity. In that table, surplus value is directly proportional to labor-power ('variable capital'), and the value of the total product is the sum of the value of the means of production, plus variable capital, plus surplus value. In this analysis, the contribution of non-labor inputs to the value of output is exactly equal to their depreciation. However, when referring to a similar table shortly after developing his use-value/exchange-value analysis, Marx comments: 'It also has to be postulated (which was not done above) that the use-value of the machine significantly [*sic*] greater than its value; i.e. that its devaluation in the service of production is not proportional to its increasing effect on production' (Marx 1857).

There then follows the example shown in Table 17.7.

Both firms employ the same amount of variable capital – four days' labor which is paid 40 'thalers' (a unit in the German currency of the time), the value of the labor-power purchased. However, the first firm ('Capital 1'), with older capital, produces surplus value of just 10, while the second, with

TABLE 17.7 Marx's example where the use-value of machinery exceeds its depreciation

Production	Paper	Press	Working days	Wage bill	Surplus	Output	Rate SV (%)	Profit (%)
Capital 1	30	30	4	40	10	30	25.0	10.0
Capital 2	100	60	4	40	13.33	100	33.3	6.7

newer capital, produces a surplus of 13.33. The 3.33 difference in the surplus they generate is attributable to the difference in their machinery, and the fact that 'the use-value of the machine significantly greater than its value; i.e. – its devaluation in the service of production is not proportional to its increasing effect on production.'[23]

Marx without the labor theory of value

Marx's dialectical analysis thus contradicts a central tenet of the labor theory of value, that labor is the only source of surplus value. Having reached the conclusion above, Marx suddenly found himself trapped, as he had argued (in his PhD thesis) that Hegel was, in a compromise with his own principles. The principle of the dialectical analysis of the commodity was powerful, and the conclusions that followed logically from it inescapable: the labor theory of value could be true only if the use-value of a machine was exactly equal to its exchange-value, and yet a basic tenet of this analysis was that use-value and exchange-value are incommensurable.[24]

If Marx had followed his newfound logic, the labor theory of value would have been history. But with the labor theory of value gone, so too would be the tendency for the rate of profit to fall, and with it the inevitability of socialism.

The tendency for the rate of profit to fall was predicated upon the propositions that (a), over time, the capital-to-labor ratio would rise, and that (b), this would cause the rate of profit to fall. But (b) was dependent upon labor being the only source of surplus value, so that a rising capital-to-labor ratio would mean a falling rate of profit. If surplus could instead be garnered from any input to production, not just labor, then an increase in the capital-to-labor ratio would have no necessary implications for the rate of profit: it could fall, rise, or stay the same.

23 Marx's discussion of this example still attributed the increased surplus-value to labor; however, the source of this difference was not any difference in the rate of surplus value with respect to labor employed, but to the postulate that the machine's use-value exceeded its exchange-value.

24 'Exchange-value and use-value [are] intrinsically incommensurable magnitudes' (Marx 1867). Notice that Marx describes use-value as a magnitude in this circumstance. Outside production, when commodities are purchased to be consumed rather than being used to produce other commodities, their use-value will be qualitative, and therefore incommensurable with their exchange-values.

With no necessity for the rate of profit to fall, there was similarly no necessity for capitalism to give way to socialism. Yet Marx had prided himself upon being the 'scientific socialist,' the one who in contrast to 'utopian socialists,' who merely dreamed of a better world, would prove why socialism had to come about. Now he finds that his new logical tool, which is evidently so superior to his old, challenges the basis of his argument for the inevitability of socialism.

It is little wonder that Marx then tried to find a way to make his new logic appear consistent with the old. By the time of *Capital*, he had convinced himself that the two were consistent: that the new positive methodology concurred with the old on the issue of the value productivity of machinery. Marx succumbed to the same flaw that (in his PhD thesis) he once noted in Hegel:

> It is conceivable that a philosopher should be guilty of this or that inconsistency because of this or that compromise; he may himself be conscious of it. But what he is not conscious of is that in the last analysis this apparent compromise is made possible by the deficiency of his principles or an inadequate grasp of them. So if a philosopher really has compromised it is the job of his followers to use the inner core of his thought to illuminate his own superficial expression of it. In this way, what is a progress in conscience is also a progress in knowledge. This does not involve putting the conscience of the philosopher under suspicion, but rather construing the essential characteristics of his views, giving them a definite form and meaning, and thus at the same time going beyond them. (Karl Marx, 1839: notes to his doctoral dissertation, reprinted in McLellan 1971)

So Marx succeeded in compromising his theory in a way which hid 'the deficiency of his principles or an inadequate grasp of them.' But 'success' came at a cost. The new logic, of which Marx was so proud, was ignored by his successors. In part, Marx contributed to this by the obfuscation he undertook to make his positive method appear consistent with the old negative one. But I can't detract from the impressive contribution 'Marxists' themselves have made to the misinterpretation of Marx.

The misinterpretation of Marx

Though much of this occurred after his death, Marx had one taste of how his theories would be misinterpreted by friend and foe alike. He wrote a caustic commentary on the German economist Adolph Wagner's gross misinterpretation of his arguments in *Capital*, yet ironically, Wagner's hostile misinterpretation became the accepted interpretation of Marx by his followers after his death.

Wagner argued that Marx had completely misunderstood the notion of use-value, and that use-value played no part in Marx's analysis. Marx acerbically commented that:

> Rodbertus had written a letter to him – where he, Rodbertus, explains why 'there is only one kind of value,' use value – Wagner says: 'This is completely correct, and necessitates an alteration in the customary illogical "division" of 'value' into use-value and exchange-value' – and this same Wagner places me among the people according to whom 'use-value' is to be completely 'dismissed' 'from science.' (Marx 1971 [1879])

Marx then made an emphatic statement of the role that use-value played in his economics:

> All this is 'driveling.' Only an obscurantist, who has not understood a word of *Capital*, can conclude: Because Marx, in a note to the first edition of *Capital*, overthrows all the German professorial twaddle on 'use-value' in general, and refers readers who want to know something about actual use-value to 'commercial guides,' – therefore, use-value does not play any role in his work. The obscurantist has overlooked that my analysis of the commodity does not stop at the dual mode in which the commodity is presented, [but] presses forward [so] that surplus value itself is derived from a 'specific' use-value of labor-power which belongs to it exclusively etc. etc., that hence with me use-value plays an important role completely different than [it did] in previous [political] economy. (Ibid.)

Marx's protestations were to no avail. Despite such a strident statement that use-value was an essential component of his analytic method, and despite the fact that this document was available to and read by early twentieth-century Marxists, use-value and the 'positive' methodology of which it was an integral part were expunged from mainstream Marxism. Paul Sweezy stated in his influential *The Theory of Capitalist Development* that

> 'Every commodity,' Marx wrote, 'has a twofold aspect, that of use-value and exchange-value.' Use-value is an expression of a certain relation between the consumer and the object consumed. Political economy, on the other hand, is a social science of the relations between people. It follows that 'use-value as such lies outside the sphere of investigation of political economy.' (Sweezy 1942, citing Marx 1859)

Yet ironically, the statement Sweezy used to support the notion that use-value plays no role in Marx's analysis was the very one referred to by Marx (in the reference to the 'first edition of *Capital*,' by which he meant the 1859 work *A Contribution to the Critique of Political Economy*), when he labeled Wagner an 'obscurantist.' In Marx's own words, therefore, twentieth-century Marxism has completely misunderstood the philosophical core of Marx's analysis of capitalism.

A poverty of philosophy Bose's critique and Marx's dialectic of the commodity establish that philosophy can't save the labor theory of value from

Steedman's critique. Philosophical analysis strengthens Steedman's case that the labor theory of value is logically flawed.

Instead, mathematics and Marx's philosophy confirm that surplus value – and hence profit – can be generated from any input to production. There is no one source of surplus: Adam Smith's apparently vague musings that animals and machines both contribute to the creation of new value were correct.

Whither Marxism?

Marxist economics is analytically far stronger once it is shorn of the labor theory of value. The use-value/exchange-value methodology, which was applied above only to the question of the source of surplus value, has application to a huge range of issues on which labor theory of value Marxism is either silent or pedestrian (see Groll 1980 and Keen 1993a, 1993b and 2000 for a discussion of some of these). Marxism becomes the pinnacle of classical economics, rather than its dead end.

However, I am as pessimistic about the chances of this 'new, improved Marxism' being adopted by today's Marxists as I am about the chances of neoclassical economists abandoning the concept of equilibrium.

Their resistance, as with neoclassical economists to the critiques outlined in this book, is due in large part to ideology.

The advantage Marxists have over economists is that at least they are upfront about having an ideology. Marxists are as consciously committed to the belief that capitalism should give way to a socialism as economists are to the often unconscious belief that, if only we could rid ourselves of government intervention in the market, we would currently reside in the best of all possible worlds.

The tendency for the rate of profit to fall is crucial to this belief in the inevitability of socialism, and it is one of the many concepts that evaporate once the labor theory of value is expunged. Marxist economists are likely to continue to cling to the labor theory of value, to hang on to the faith, in preference to embracing logic.

If my pessimism is well founded, then Marxist economics will continue its self-absorbed and impossible quest for a solution to the transformation problem, and will remain irrelevant to the future development of economics.

However, labor theory of value Marxism will continue to be the ideology of choice of the left, particularly in the Third World. The argument that labor is the only source of profit, and that capitalism is thus based upon the exploitation of the worker, is a simple, compelling analysis to the downtrodden in our obscenely unequal world. A specter may no longer be haunting Europe, but Marxism will continue to be the banner of the dispossessed for many a year to come.

However, if non-neoclassical and non-Marxist economists can ignore the

hullabaloo generated by the remaining band of adherents to the labor theory of value, and instead extract from Marx his rich philosophical foundation for the analysis of capitalism, then Marx's dialectical theory of value may yet play a role in the reform of economic theory. At present, however, the various non-neoclassical schools of thought have no coherent theory of value as an alternative to the neoclassical school's flawed subjective theory of value. But even though they lack the central organizing concept of a theory of value, these alternative schools of thought contain the promise of an economic theory that may actually be relevant to the analysis and management of a capitalist economy.