

MARXISM AND ENVIRONMENTAL SCIENCE: TOWARDS A LABOUR/NATURE THEORY OF VALUE

1. Introduction

In this essay I propose to critically reflect on the Marxian labour theory of value. For well over a century, activists campaigning worldwide for the liberation of the working class have been guided by the labour theory of value, which Marx formulated on the basis of an extensive review of the writings of his precursors and his contemporary theoreticians. Stated in brief, the theory held that the additional value which is created in course of capitalist manufacturing processes should be ascribed entirely to an enterprise's waged workers, who receive only a part of the value which they create in the course of factory production. Marx's theory indeed constituted an enormous refinement over the theories which had been formulated by his precursors, people like Adam Smith and David Ricardo, who are remembered as Britain's classical economists. Yet below I am going to argue that today there is an urgent need to *extend* Marx's theory of value, which well reflected on the exploitation of factory employees, but insufficiently highlighted the effects of capitalist manufacturing on nature. At a time when the negative environmental consequences of capitalist manufacturing are rapidly reaching a global climax, we need a labour/nature theory of value, which alongside exploitation of waged workers, also admits that nature has been and is being exploited as a part of the drive to build the world capitalist system.

2. Marx's Theory of Value

Let's, to start, recall the way Marx analyzed the value composition of commodities. Like many of his precursors, including the physiocrats and the classical economists, Marx argued that capitalist commodities contain both use-value and exchange-value (1). The first-mentioned concept referred to the concrete utility of commodities for human beings, i.e. their value towards the fulfilment of human needs. Thus, the *use-value* of clothes sold on the market amongst others consist in their function in protecting humans against the effects of heat and cold. Again, the use-value of bread, rice and other food items consists in their function in stilling our hunger, and in helping to sustain our bodily strength. Use-value is a qualitative aspect of capitalist commodities. *Exchange-value* in contrast refers to the quantitative relationship between one commodity and other commodity. It refers to the possibility that commodities be transferred to purchasers on the market, in exchange of other commodities or of money, the general equivalent of all commodities. We may note here in passing, that Marx's value theory, like the theories of his classical precursors, said little about the *intrinsic value* of different species, i.e. of wild animals and of commodified animals, beyond their (potential) 'instrumental' significance for the fulfilment of human needs (2). Though Marx realized that the concept of use-value did not just apply to commodities, but also to non-

commodified elements in nature which historically have been employed to build human communities, his theory of value was rather strictly circumscribed.

Further, Marx devised a particular formula, to explain what is the value composition of capitalist commodities. In his view, the exchange value of whatever commodities can be analyzed, dissected, by looking at three distinct value parts, being constant, variable and surplus value. *Constant value* or constant capital refers to means of production being incorporated into the value of new commodities such as raw materials, fuel, equipment and machinery. This part of a commodity is referred to as **c**. *Variable capital* refers to the value of labour power, to that part of a company's capital which is paid to the workers in the form of wages so as to facilitate the regeneration of the workers' strength. This value part is expressed as **v**. Thirdly, there exists an element of *surplus value* in all traded commodities, which is represented by the letter **s**. Marx's central thesis was that whatever new value is incorporated when commodities are manufactured in capitalist factories, is due to the employment of the labourers' strength. Whereas the value of means of production is incorporated without any change or increment, the commodity labour power is used to produce more than is needed for the regeneration of workers' strength. Hence, the creation of surplus value is entirely dependent on the role of waged workers. This, in brief, is how Marx laid bare the exploitation taking place under capitalism. Marx's was unmistakably a labour theory of labour.

Now, Marx was not the only economist who at the time of the Industrial Revolution or the period thereafter insisted on the contribution of the workers to the creation of commodity value. Yet his theory went well beyond the conceptualisation of his precursors. This can, for instance, be illustrated by comparing Marx's views with those of Adam Smith, who is considered to be the father of the classical school of 'political economists'. Marx himself repeatedly referred to Adam Smith, when presenting his own theory. Thus, in *Capital II*, Marx argued that Smith's view on the value of commodities boiled down to a recognition that their value was always composed of **v** plus **s**, variable capital and surplus value (3). Smith realized that a part of the value of commodities is paid out to the workers in the form of wages, hence **v**, and he also saw that the owners of capital appropriate a part of the value of newly created commodities as profit or rent, hence **s**. However, Smith ignored the fact that the production of commodities is equally dependent on the availability of means of production, and that a part of the value of means of production in course of a manufacturing process is transferred towards the new commodities. He recognized two value parts, **v** and **s**, while skipping the value part **c**. As Marx argued, only a labour theory of value employing the formula $c + v + s$ to describe the composition of commodities could be scientifically valid.

Below, we will repeatedly have to return to Marx's basic formula $c + v + s$, for it is the very cornerstone of Marx's theory. Thus, when developing his views on the circuit of individual capital, meaning the different steps which each entrepreneur or company has to take in order to achieve their aim of producing and selling commodities, Marx relied on the given conceptualisation in order to devise a specific formula, his formula for

the *individual circuit*. This formula started with **M**, money capital, and ended with **M'**, the money capital with added value which remains in a capitalist's hand after completion of the circuit. Whereas during the first phase of the circuit **M ... M'**, **M** is transformed into **C**, commodity capital, - in the third phase of the circuit a retransformation of **C'** into **M'** takes place, with **C'** like **M'** referring to a capital with added value. Again, when Marx analysed the *social process* of production, the production of commodities on a national scale, he similarly elaborated on his formula for the value composition of commodities, $c + v + s$. For when highlighting the exchanges that need to take place between different economic sectors, and between categories of sectors which he termed Departments of Production, Marx argued that the social product of each sector, of each Department, had the value composition $c + v + s$. Thus, this formula summarizes Marx's labour theory of value.

3. Nature and Value Theory

Let's now proceed to bring out some defects in Marx's theory, in particular with regard to the relationship between capitalist manufacturing and our natural surroundings, and see how we can draw on contemporary environmental science in order to enrich Marx's theory. First, Marx's formulas presumed that the production of commodities can always be achieved by depending purely on the presence of previously manufactured commodities. Commodities **C'** which are brought to the market, all consist in three value parts, $c + v + s$, none of which represents or reflects a non-commodity element, either in whole or in part. Yet in reality, no capitalist production process leaves nature unaffected. Surely, the capital in most industrial sectors draws on means of production and labouring strength which are available on the market in the form of commodities. This is true for such sectors as the automobile sector or the machine-making industry, and for all sectors where industrial processing takes place. However, in the case of one particular sector, namely the mining sector, things are quite different. For in this case, the outcome of the industrial process, **C'**, is a commodity which is directly drawn from nature, from the earth, and which had entered the circuit of capital in a non-commodity form. Un-purified gold, raw copper, bauxite – these are all examples of minerals which are not available on the capitalist market from the very start.

Thus, a first extension of Marxian value theory must consist in giving recognition to nature's contribution to industrial processes at their very start, i.e. where nature is drawn upon to contribute parts of its inorganic wealth, the wealth stored at the surface of or inside the earth's soil. This extension does not necessarily require a revision of Marx's basic formula $c + v + s$, for it can be held that at the start of the process of extraction, a capitalist enterprise needs to obtain both constant capital and variable capital, both means of production and labouring strength, which are procured from the market. Again, we can continue to agree with Marx that the commodity which is the result of extraction undertaken by mining companies, i.e. the raw materials which are brought to mills and onwards for further processing, has three value components, i.e. s along with c and v . However, in this case the surplus value of the commodity **C'** cannot exclusively be ascribed to the labour of the workers, the miners – no matter how impressive their toil. For since the minerals in their non-commodified form entered the capital circuit of the

mining company in course of its second phase, the phase of actual extraction, - the surplus value of the new commodity C' was contributed both by the miners and by nature, by the earth. Contrary to other sectors - the value element s here has a double origin.

Further, nature is not only relied upon as a *source*, to get capitalist production going, but also as a *dump*, to get rid of undesired by-products of capitalist manufacturing (4). Here we need to question Marx's habit of characterising the outcome of manufacturing as solely consisting in C' , a new commodity. By arguing thus, Marx had presumed that capitalist production has a single outcome, and that that outcome always embodies an accretion of value. In fact, however, the outcome of capitalist industrial processes – whether these be mining, the processing of raw materials, transportation industries, etc. – always comprises a non-commodity element, which can best be conceptualized as *non-commodity waste*. This waste can obtain different material forms, it can be solid in kind, it can be fluid or gaseous waste, but in all cases is not destined to immediately serve as a commodity, like C' . All non-commodity waste can be designated with the letter code W or ($-W$), a letter code which did not exist in Marx's value theory, but which letter code is essential if we are to properly evaluate the environmental impact of capitalist extraction and manufacturing. W is a stenographic expression for a variety of environmental impacts, it refers to both the toxic gases which are emitted in consequence of the use of coal or other fossil fuel elements, and it also refers to such impacts like the release of toxic chemical effluents by chemical industries, the dumping of radio-active waste by nuclear production sites, etc.

Moreover, the existence of W impacts on the value composition of the outcome of capitalist manufacturing. Industrial entrepreneurs and companies may want to ignore the existence of W , of non-commodity waste, - in which case the outcome of production in terms of the ultimate money capital M' is not effected. However, sooner or later – and sometimes as in the case of greenhouse gases after only two centuries of releases of W – the damages wrought onto nature by industries inevitably do effect the size of the capital M' at the end of the circuit. Again the *negative value* which the non-commodity waste embodies should be sharply distinguished from the positive values incorporated in C' , it cannot be subsumed under the heading of $c + v + s$, which are value components of C' . If we are to correctly understand the full outcome of capitalist extraction and manufacturing in value terms, we need to propose a formula which refers to the *dual value outcome* of extraction and production, which formula is $c + v + s (-wu/we)$, with ($-wu/we$) referring to negative use value and negative exchange value. Production can result in negative value in purely use-value terms ($-wu$), in which case it does *not* affect the size of M' . Or it can result in added costs due to the negative value incorporated in W , in which case W does affect the size of the money capital M' , which the entrepreneur is left with at the end of his capital circuit (5).

4. Conclusion

When initiating my discussion on Marxian theory, in the context of the feminist debate on women's labour, I had raised initial questions about Marx's view on the value

of labour power. As argued then, Marx's view was largely derived from the views of his precursors, such as David Ricardo, who had entirely ignored women's contribution to the regeneration of workers' strength. Like his precursors, Marx basically thought that the value of labour power was determined by the value of the commodities, the daily necessities such as food and clothing, which the workers buy with their wage (6). However, in reality, women when undertaking domestic chores, when doing the cooking, the ironing, the cleaning tasks and the child care, do crucially contribute towards the reproduction of workers' labouring strength. As feminist theoreticians have argued: the surplus value incorporated in new commodities C' should not be ascribed to waged workers alone, but at least indirectly to housewives, to women working at home, as well. This, then, was an initial extension of Marx's labour theory of value, an extension which was accomplished without questioning Marx's basic thesis that all surplus value is created by human labour, and by human labour alone.

Above I have formulated a further extension of Marx's theory, on the basis of a compelling critique regarding the 'closed' character of Marx's formulas. Marx, like his classical precursors, at least when devising his basic formulas – for the capital circuit, for the value composition of new commodities – had presumed that all manufacturing can be accomplished exclusively by relying on existing, previously created commodities, and that the outcome of capitalist manufacturing consists in commodities alone. In fact, as argued in this essay, nature contributes value to all industries via the raw materials that enter the accumulation process via the extractive industries, and nature also faces the damaging consequences of manufacturing, in as much as a variety of non-commodity waste ever since the dawn of capitalist production has been dumped onto our environment. These effects on nature, on nature as source and as sink, can only be properly addressed by Marxism, if we incorporate them into the basic formulas of Marx's value theory. They can only be highlighted, if we pose W besides C' , and if we transform the formula $c + v + s$ into the formula $c + v + s (-wu/we)$. To do justice to nature as well as to exploited labourers, to address the environmental crisis which the world faces to day, we need a labour/nature theory of value as an extension of Marx's original and farsighted theory.

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References:

(1) for the distinction which Quesnay, the father of the physiocrats, already drew between use-value and exchange value, see eg. Gianni Vaggi, *The Economics of Francois Quesnay* (MacMillan Press, London, United Kingdom 1987), p.60; for a Marxist source on the same theme, see eg. Paul M. Sweezy, *The Theory of Capitalism Development* (Monthly Review Press/K.P. Bagchi & Company, New York/Calcutta, 1991), p.27;

(2) for the theme of intrinsic value, see eg. Hugh McDonald, *John Dewey and Environmental Philosophy* (State University of New York Press, New York, USA, 2004); and David Pearce, *Blueprint 4. Capturing Global Environmental Value* (Earthscan, London, 1995);

(3) Karl Marx, *Capital. A Critique of Political Economy. Volume II* (Progress Publishers, Moscow, USSR, 1967), Chapter XIX, p.374;

(4) for the environmental discussion on nature as source, and nature as dump or sink, see eg. Donella H.Meadows/Dennis L.Meadows/Jorgen Randers, *Beyond the Limits. Global Collapse or Sustainable Future* (Earthscan Publications Ltd, London, United Kingdom, 1995), p.44, 'The Limits: Sources and Sinks';

(5) for a more elaborate discussion of the concept of negative use-value, see Peter Custers, *Questioning Globalised Militarism. Nuclear and Military Production and Critical Economic Theory* (forthcoming), Chapter Three, 'Towards Elaboration of the Theoretical Concept of Negative Use-Value (*Disvalue*) – Or the Health and Environmental Consequences of Nuclear Production';

(6) Peter Custers, *Capital Accumulation and Women's Labour in Asian Economies* (Zed Books/Sage, London/New Delhi, 1997), p.86.