

**PRODUCTION, EXPLOITATION AND CONTROL:  
VALUE RELATIONS IN CAPITALIST SOCIETY**

Alfredo Saad-Filho  
Department of Development Studies  
SOAS, University of London  
Thornhaugh Street, Russell Square  
London WC1H 0XG, UK  
as59@soas.ac.uk

**Abstract**

This paper contributes to the development of a class interpretation of Marxian value theory. In advanced capitalism, the labour process and its outcomes are determined primarily by the monopoly of the means of production by the capitalist class, the transformation of labour power into a commodity, and the commodity form of the products of labour. In these circumstances, the products of labour generally take the value form, and economic exploitation is based upon the extraction of surplus value. Wage labour is normalised in production, through mechanisation and direct authority, in order to maximise the surplus value extracted and the capitalist control. However, these objectives are not always compatible, and worker resistance may scupper capitalist strategies.

**Resumo**

Este paper contribui para o desenvolvimento de uma interpretação de classe da teoria Marxista do valor. No capitalismo desenvolvido, o processo de trabalho e seus resultados são determinados pelo monopólio dos meios de produção pelos capitalistas, a transformação da força de trabalho em mercadoria, e a forma mercantil dos produtos do trabalho. Nessas circunstâncias, os produtos do trabalho geralmente tomam a forma de valor, e a exploração econômica se baseia na extração de mais-valia. O trabalho assalariado é normalizado na produção, através da mecanização e da autoridade direta, para maximizar a mais-valia extraída e o controle do capitalista. Entretanto, esses objetivos não são sempre compatíveis, e a resistência dos trabalhadores pode frustrar as estratégias capitalistas.

Recent literature has contributed significantly to our understanding of four critical aspects of Marx's value analysis, abstract labour, exploitation, the labour process, and the critique of technology (see, for example, Foley 1982, 1986, Freeman and Carchedi 1996, Mohun 1994, 1995, Slater 1980 and Spencer 2000). However, the relationship between them remains insufficiently developed. More worryingly, certain well known interpretations of value theory have difficulty even recognising that there is a close relationship between these aspects of Marx's analysis. This article contributes to the development of a class interpretation of value theory, in which the elements identified above are closely bound together.

This article has four sections. Section one shows that capital has a double nature; on the one hand, it is a relation of production in which labour power, the products of labour, and goods and services more generally, tend to become commodities. On the other hand, capital is a class relation of exploitation defined by the ability of the capitalists to compel the working class to produce more than it consumes or controls, and by the capitalist command of the surplus.

Section two analyses exploitation from three angles, at distinct levels of complexity, the physical (surplus), macro-monetary and value levels. This section shows that value analysis is especially powerful, because it can reveal the relationship between the mode of labour and the structures of exploitation better than other approaches.

Section three demonstrates that wage labour employed by capital is normalised (averaged out) in production, by direct authority and mechanisation, in order to maximise the surplus value extracted and capitalist control of the workforce. However, these objectives are not always mutually compatible, and workers' resistance on the shopfloor can frustrate capitalist strategies. Section four summarises the argument and concludes this article.

## **1 – Value and Capital**

### **1.1 – The Capital Relation**

Capital is a social relation between two classes, capitalists and workers, that takes the form of things. This social relation is established when the means of production are monopolised by the capitalist class, which employs wage workers in production for profit. The workers must sell their labour power regularly because they do not own means of production, cannot produce independently, and need money in order to purchase the use values that they covet. Once this class relation is posited, capital exists *in and through* the commodities, money and other assets employed in the self-expansion of value, that Marx called valorisation:

capital is not a “factor of production” earning a return in virtue of its “productive contribution” at the margin. It is a social relationship; it is the way production is organized and the product appropriated. The existence of capital as self-expanding value depends upon the exploitation of wage-labor ... so when multinational capital moves into new areas, formerly organized non-capitalistically, new institutional arrangements must be created. A proper “climate for investment” must be established. This means a labor force, labor discipline, protection for property in the means of production, suitable finance, and so on. These can involve major upheavals and political changes (Nell 1992, p.53; see also *Capital 1*, pp.1005-1006, *Capital 2*, p.185 and *Capital 3*, pp.953-954, 965-968).

In other words, capital is a *class relation of exploitation*, allowing capitalists to live off the surplus value extracted from the working class. In capitalist societies, the social output typically takes the commodity form and, more importantly, labour power also takes this form (see *Capital 3*, pp.1019-1020). Because this is the form of social labour under capitalism, wage labour performed for capital in order to produce commodities for profit *is* abstract labour, and it *produces value* (see below):

For Marx the value of a commodity expresses the particular historical form that the social character of labour has under capitalism ... This suggests first, that the generalisation of the commodity form of human labour is quite specific to capitalism and that value as a concept of analysis is similarly so specific. Secondly, it suggests that value is not just a concept with a mental existence; it has a real existence, value relations being the particular form

taken by capitalist social relations (Mohun 1991, p.564; see also *Theories of Surplus Value* 3, pp.131, 253, *Grundrisse*, pp.104-105, Arthur 2001, Cleaver 1979, p.108, Colletti 1972, pp.22-23, 80-84, Fine 1989 p.10 and Shaikh 1981, p.273, 1982, p.70).

## **1.2 – Abstract Labour**

In non-capitalist societies, where commodity production and exchange are marginal, value exists only as exchange value, the rate of exchange of one commodity for another. In this case,

The “value-form”, whose final shape is the money-form, is completely without content. The category of exchange-value leads an “antediluvian existence”. One can find exchange-values in ancient Rome, in the Middle Ages and in capitalism; but different contents are hidden behind each of these forms of exchange-value. Marx stresses that “exchange-value” detached from the concrete relations under which it has arisen is an unreal abstraction, as exchange-value “can never exist except as an abstract, one-sided relation to an already given concrete and living whole” (Grossman 1977, p.46; see also *Capital* 1, pp.473, 949-954, *Theories of Surplus Value* 2, p.528, *Grundrisse*, pp.102, 776 and Marx 1989, pp.551-552).

In pre-capitalist circumstances, abstract labour and value are mental constructs for four reasons. First, production aims primarily at the creation of specific use values, rather than valorisation. Second, the labour markets are thin, highly fragmented and often absent, in which case labour is heterogeneous in production (see section 3.1). Third, the division of labour across society and within the workplace remains relatively undeveloped. Fourth, exchange values are highly dependent upon non-market relations, rather than being determined primarily by production and competition. In these societies, the labour process has few social determinations, products take the commodity form only if they find their way into exchange, and the abstraction of labour is contingent upon sale.

In contrast, under capitalism labour generally has a double determination; it is both

concrete and abstract. As concrete labour, work is a transformative activity; as abstract labour, work is subsumed by, or exists in and through, a specific social form, wage labour employed for profit. Abstract labour predominates over concrete labour because the performance of concrete labour generally depends upon the extraction of surplus value rather than, for example, need for the output.

## **2 – Capital and Exploitation**

Capitalist exploitation can be conceptualised and measured at three levels, the physical, macro-monetary and value levels (for simplicity, all workers are presumed productive).

### **2.1 – Physical (Surplus) Analysis**

At the physical level, there is exploitation if part of the social product is expropriated by a class of non-producers by custom or law, or under the threat or use of force, or because refusal to comply might disorganise the social reproduction:

Exploitation is a matter of structural coercion. Circumstances are so arranged that a large mass of people must agree to do as they are told by others in order to support themselves and their families (Nell 1992, p.66).

These conditions are generally mutually reinforcing. For example, in antiquity, slavery was sanctioned by custom and by law. Its viability depended upon the regular use of force including, even in the most paternalistic systems, the torture, mutilation and death of recalcitrant slaves. Finally, slave rebellions would tend to disable the largest and most efficient production units, generate widespread social instability and question the legitimacy of the state, leading to economic hardship and, potentially, to civil war.

The physical or surplus analysis is not wrong but it is excessively general. It applies whenever the producers, as a class, are compelled to produce more than they themselves consume or control, the residual being appropriated by their masters, lords or employers. This level of analysis is important because it highlights the similarities

between different modes of exploitation. However, this approach is unable to distinguish between modes of exploitation, or show how the surplus is pumped from the producers in each case:

The specific economic form in which unpaid surplus labour is pumped out of the direct producers determines the relationship of domination and servitude, as this grows directly out of production itself and reacts back on it in turn as a determinant ... It is in each case the direct relationship of the owners of the conditions of production to the immediate producers ... in which we find the innermost secret, the hidden basis of the entire social edifice (*Capital 3*, p.927; see also pp.344-345, *Capital 1*, p.325, *Theories of Surplus Value 1*, p.390, *Theories of Surplus Value 3*, p.400 and *Grundrisse*, pp.525-527).

Relations of exploitation are determined by the form of extraction of surplus labour from the direct producers. These relations include the structures and processes that compel the producers to produce more than they consume or control, and the mechanisms of appropriation of the surplus by the exploiters. Even when narrowly defined in purely economic terms exploitation is a totality, including several aspects of social life, among them the property relations, the distribution of labour, control over the production process, and the distribution of the output.

## **2.2 – Macro-Monetary Analysis**

At the macro-monetary level, capitalist exploitation is revealed by the existence of profits, including interest, rent and other forms of profit. The rate of exploitation is measured by the profit-wage ratio. (There are significant difficulties for the empirical estimation of the rate of exploitation, because of the accounting conventions, taxes, savings, unproductive labour, and so on; see, however, Cockshott and Cottrell 1995, Dunne 1991, Maniatis 1996, Mohun 1996, forthcoming and Shaikh 1998). With their share of the national income, the capitalists appropriate part of the national product, including the investment and luxury goods (by definition, the capitalists command only investment and luxury goods, even if these goods are identical to the necessities consumed by the workers. This *ex post* distinction between luxuries and necessities is similar to the distinction between consumption and investment goods in the national

accounts). The existence of profits is a symptom of exploitation, but the profit-wage ratio is an imprecise measure of exploitation for three reasons. First, profits and wages are originally assessed at the firm level, then aggregated for the entire economy. This does not correspond to the actual process of exploitation, which is determined by the class structure of society, the mode of production that corresponds to it, and the appropriation of part of the social product by the capitalist class. In other words, exploitation takes place at the level of capital in general and it is mediated by generalised commodity relations, in which case wage workers are exploited *qua* workers, regardless of the profitability of the firms where they are currently employed:

exploitation is a social (society-wide) phenomenon ... Thus the quantity and rate of surplus value are in the first instance social or society-wide, not the result of an aggregation of quantities and rates prevailing in each workplace ... To establish a general rate of surplus value by beginning with the relationship between wages and profits in each industry ... negates the socialized nature of capitalist production and its complex division of labor. In effect, it assumes that each worker produces his own means of subsistence in isolation. In reality, each worker labors and receives a claim on the total value produced in society. He then exchanges this claim against a collection of use values that is the result of the combined, cooperative labor of all workers (Weeks 1981, pp.64, 71-72).

Therefore,

The rate of surplus value exists as a social aggregate, independently of any particular industry. This follows from the social nature of the value of labour power, so that it is incorrect to conceive of the rate of surplus value varying across industries and the aggregate to be a mere weighted average of rates in different industries (Weeks 1981, p.170).

Second, transfers create systematic discrepancies between commodity prices and values. Therefore, the profit-wage ratio may be different from the ratio between the abstract labour required to produce the necessities and the surplus, which Marx called

necessary and surplus labour time. Third, wages, prices and profits are measured at market prices, and they can fluctuate widely regardless of changes in the conditions of production, especially after the development of the credit system.

In sum, analysis of exploitation at the physical level shows what distinct modes of exploitation have in common, but it cannot pinpoint the specificities of each mode. In contrast, analysis of the macroeconomic implications of capitalist exploitation is useful because it lends itself to empirical studies. However, it focuses upon one of the consequences (rather than the cause) of exploitation, the inability of the workers to command the entire net product, and it is potentially misleading because the profit-wage ratio is only a rough measure of exploitation.

### 2.3 – Value Analysis

As a totality engaged in self-expansion through the employment of wage labour, capital is primarily *capital in general*. Capital in general is best represented by the circuit of industrial capital,  $M-C-M'$ , where  $M$  is the money advanced to buy commodities (means of production and labour power),  $C$ , for production and, later, sale for more money  $M'$ . The difference  $M' - M$  is the surplus value, which is the foundation of industrial and commercial profit and other forms of profit, including interest and rent. The circuit of industrial capital represents the essence of capital, valorisation through the production of commodities by wage labour. In this circuit, capital shifts between different forms, money, productive and commodity capital, as it moves between the spheres of exchange, production and, upon its completion, exchange. Although this movement is critical for the process of valorisation, profit is due to the surplus labour performed in production only (interest-bearing capital, whose form is  $M-M'$ , money that becomes more money, does not *produce* profit, any more than money left inside a mattress begets more money simply by lying there. The expansion of IBC is due to transfers from productive capital, see Fine 1985-86; 1989, ch.12, Itoh and Lapavistas 1999, ch.3 and Moseley 1997). However, profit is not the only thing that capital produces; at the social level, the outcome of its circuit is the *expanded reproduction* of capital, the growing separation between capitalists and wage workers. In this sense, 'Accumulation of capital is ... multiplication of the proletariat' (*Capital 1*, p.764; see also p.724, *Capital 2*, pp.428-430 and Zarembka



2000).

Value analysis can identify the essence of capitalist exploitation, distinguish it from other modes of exploitation, and guide empirical studies. In common with the surplus approach, value analysis implies that the workers are exploited because they work for longer than what is necessary to produce the commodities that they consume or control. Marx calls *necessities* the goods appropriated by the working class. They are produced by *necessary labour*, and their value is the *value of labour power*. In contrast, the capitalists appropriate the *surplus*, which is produced by *surplus labour* and whose value is the *surplus value*. The latter is that part of the social value product appropriated by the capitalists or, alternatively, the difference between the value produced by the workers and the value of labour power.

The existence of necessities and the surplus, and the division of the social labour time into necessary and surplus labour, are consequences of exploitation in any mode of production. However, the concepts of value of labour power and surplus value, and their manifestation as wages and profits, are typical of capitalism because in this mode of production only exploitation is mediated by value relations and the commodity form.

In contrast with pre-capitalist modes of production, capitalist exploitation does not rely upon overtly political and interpersonal relations. Therefore, it is not determined primarily at the level of the individual farm, firm, or office. Capitalist exploitation is determined at the social level and it is mediated by the market-led distribution of labour and its products (Postone (1993, p.125) rightly argues that in ‘capitalism social labour is not only the object of domination and exploitation but is itself the essential ground of domination.’ See also Chattopadhyay 1994, p.14).

Finally, the rate of exploitation can increase for at least three reasons. First, if more hours are worked, all else constant. Second, if labour intensity increases, for example, if pliant workers replace their less subordinate fellows. Third, if the necessary labour time declines because of productivity growth in the sectors producing necessities (given the real wage). Marx calls the first two cases the production of absolute surplus value, while the third produces relative surplus value (see section 3.3, *Capital 1*,

pp.430-437, 645-646, *Theories of Surplus Value 1*, p.216, *Theories of Surplus Value 2*, p.266, Aglietta 1979, p.55, Foley 1986, p.50, and Lapides 1998, p.192). The extraction of absolute surplus value is limited because it is impossible to increase the working day or the intensity of labour indefinitely, and the workers gradually learn to resist against these forms of exploitation. In contrast, relative surplus value is more flexible and harder to resist, because productivity growth can outstrip wage increases for long periods.

### **3 – Abstract Labour in Capitalist Production**

Production of absolute and relative surplus value, the subordination of labour by capital in society, and capitalist control on the shopfloor, are social processes that often depend upon the state of technology. This section reviews three aspects of economic exploitation under capitalism. First, additional productivity and averaging out of labour through mass production. Second, the relationship between competition and technical change. Third, their relationship with mechanisation and control.

#### **3.1 – Mass Production**

Pre-capitalist production is characterised by small scales and fragmentation. In contrast, under developed capitalism firms produce an extraordinarily varied assortment of goods and services, in large quantities:

Capitalist production only really begins ... when each individual capital simultaneously employs a comparatively large number of workers, and when, as a result, the labour-process is carried on an extensive scale, and yields relatively large quantities of products ... This is true both historically and conceptually (*Capital 1*, p.439).

Underlying the large variety of models, colours, types and commodities available for sale, there is a highly developed system of production, including finance, accounting, design, planning, logistics, hiring, training and managing the workforce, manufacturing, marketing, transport, distribution and other activities. These aspects of capitalist production are managed meticulously and professionally, often by large

organisations, both within and across the chains of activities connecting production and consumption.

Mass production necessitates the employment of millions of workers:

The simultaneous employment of a large number of wage-labourers in the same labour process ... forms the starting-point of capitalist production. This starting-point coincides with the birth of capital itself (*Capital 1*, p.453).

Even when individual firms are small, or downsize, or spin-off independent companies, the production process remains integrated vertically into systems of provision that employ large numbers of workers in order to produce food, clothes, autos, TV shows and other commodities. Within each system of provision, the labour of individual workers exists, and can be analysed, only as part of the whole. This labour is performed according to the rhythm dictated by technology, management, machinery and competition, limited by collective resistance on the shopfloor.

Two important implications follow from mass production. First, mass production and collective work increase the productivity of labour. The extraordinary power of collective (co-operative) work is created by capital, and appropriated by the capitalist:

any co-operation and combination of labour in production generates a combined, social productivity of labour which exceeds the sum of individual, isolated productivities ... Thus, in capitalism, the productive forces of social labour – collective unity in co-operation, combination in the division of labour, the uses of the forces of nature and the sciences – appear as productive forces of capital, the mediator ... [C]apital secures ... the productive power of socially combined labour, which appears as a productive power inherent in capital (Lebowitz 1992, pp.67, 69, emphasis omitted).

Second, the organisation, integration and mechanisation of production for profit averages out the labour of wage workers *in production*:

each worker, or group of workers, prepares the raw material for another

worker or group of workers. The result of the labour of the one is the starting-point for the labour of the other ... [T]he direct mutual interdependence of the different pieces of work, and therefore of the workers, compels each one of them to spend on his work no more than the necessary time. This creates a continuity, a uniformity, a regularity, order, and even an intensity of labour, quite different from that found in an independent handicraft or even in simple co-operation ... In manufacture ... the provision of a given quantity of the product in a given period of labour is a technical law of the process of production itself (*Capital 1*, pp.464-465; see also pp.468-469, 548, 1012).

Therefore,

The labour objectified in value is labour of an average social quality, it is an expression of average labour-power ... The law of valorization therefore comes fully into its own for the individual producer only when he produces as a capitalist and employs a number of workers simultaneously, i.e. when from the outset he sets in motion labour of a socially average character (*Capital 1*, pp.440-441; see also pp.442, 453, 468, 953-954, Aumeeruddy, Lautier and Tortajada 1978, p.54, Elson 1979, pp.137-138 and Thompson 1967).

Averaging out the labour of wage workers by capital creates the *collective worker*:

The collective worker, formed out of the combination of a number of specialized workers, is the item of machinery specifically characteristic of the manufacturing period (*Capital 1*, p.468).

Typically, capitalist production is collective production, whether it is carried out in distinct locations or under the control of small firms, industrial and financial conglomerates, or transnational corporations (the correct unit of analysis can be identified only concretely). However, the tendency towards averaging out labour in production does not imply unambiguous outcomes, because it can be counteracted by workers' resistance, changes in work practices, technical innovations within firms, demand shifts, and other factors.

### 3.2 – Competition

Capital exists only as a myriad of capitals in competition:

Capital exists and can only exist as many capitals ... competition is nothing more than the way in which the many capitals force the inherent determinants of capital upon one another and upon themselves ... *competition* is nothing other than the inner *nature of capital*, its essential character, appearing in and realized as the reciprocal interaction of many capitals with one another (*Grundrisse*, pp.414, 651; see also pp.421n, 650-652, *Capital 1*, p.433, Bryan 1985, p.77, Chattopadhyay 1994, p.12, Lebowitz 1992, pp.65-67 and Wheelock 1983).

It is essential to distinguish two types of competition, between capitals in the same sector (producing the same use values) and capitals in different sectors. Marx examines competition within sectors in *Capital 1* (especially chs.12, 16, 17, 25). This type of competition compels firms to introduce new technologies in order to cut costs and, in so doing, increase the value-productivity of their employees. These technical innovations will be copied or emulated elsewhere, eroding the advantage of the innovating firm while preserving the incentive for further technical progress across the economy. Therefore, competition within sectors explains the sources of profit rate *differences* between capitals producing similar goods with distinct technologies, the necessity of technical change, and the possibility of crisis of disproportion and overproduction (see Clarke 1994).

Competition between capitals in different sectors is analysed in *Capital 3* (see chs.8-15). This form of competition explains the possibility of capital migration to other sectors due to profit rate differentials, the tendency towards the *equalisation* of the profit rates of competing capitals, and other equilibrating structures and processes associated with competition and market relations. For example:

What competition within the same sphere of production brings about, is the determination of the value of the commodity in a given sphere by the average labour-time required in it, i.e., the creation of the market-value. What

competition between the different spheres of production brings about is the creation of the same general rate of profit in the different spheres through the levelling out of the different market-values into market-prices, which are [prices of production] that are different from the actual market-values.

Competition in this second instance by no means tends to assimilate the prices of the commodities to their values, but on the contrary, to reduce their values to [prices of production] (*Theories of Surplus Value* 2, p.208).

Simultaneous existence of two types of competition does not lead to static outcomes, either differentiation or equalisation of profit rates across the economy, as may be expected in mainstream microeconomics. Rather, both types of competition interact continually within and between sectors, and they are among the most important factors responsible for the dynamics of capitalism. Attempts to ‘add up’ the impact of competition within and between sectors are analytically illegitimate, because of their distinct levels of abstraction: competition within sectors is relatively more abstract, and more important, than competition between sectors, for two reasons. First, profit must be produced before it can be distributed and equalised, in which case analysis of technologies, strategies and work practices should precede the study of outcomes, both at the level of the firm and the sector. Second, although migration can raise the profit rate of individual capitals, for Marx changes in the profitability of capital as a whole are contingent upon technical progress:

[T]he introduction of technical change into the analysis ... eliminates any concept of equilibrium. At its basis, equilibrium is a concept relevant only to exchange divorced from production. Once one enters the sphere of production, the concept becomes counterproductive to thought (Weeks 1990, p.17).

### **3.3 – Mechanisation**

Mechanisation, or the introduction of new technologies and new machines, can fulfil three objectives for capital; higher profitability, socialisation of labour, and social control.

Let us look at profitability first. Mechanisation is the most important aspect of

competition within sectors. At the level of individual (many) capitals, it maximises the gains from co-operation, reduces unit costs, increases the value-productivity of labour, and raises the profit rate of the innovating capitals. At the level of capital in general, mechanisation facilitates the extraction of relative surplus value (see *Capital I*, p.492). These structures and processes are well known, and they need not be analysed further (see, however, Weeks 1981, ch.6).

Mechanisation socialises production within each firm and, through competition, across society. Mechanisation reduces unit costs, and allows increasingly sophisticated goods to be produced with higher investment. This tends to reduce the scope for competition by independent producers, and their ability to survive except as wage workers or dependent contractors. Within firms, mechanisation socialises production because it imposes production norms that reduce the scope for worker control over the expenditure of their labour power:

An automated labour process is ... a labour process of a completely social scope, social in the terms of a science and a technology resting on the logic of appropriation peculiar to commodity value. The subjectivity of the individual labour-power, the mental, sensorial and nervous functions of an individual while at work, has been replaced by the electronics of automation ...

Automation amounts to the socialisation of the human labour-power which, in certain aspects, it surpasses in its scope of capability, range of action, its speed, reliability and precision, though only in a restricted and set specialisation ... The worker is not freed from labour by the machine, but his labour is emptied of content (Sohn-Rethel 1978, p.176; see also Bahr 1980, pp.102, 108, Brighton Labour Process Group 1977, p.11, Marglin 1974 and Postone 1993, p.332).

Socialisation of production is closely associated with capitalist control of the production process:

technology is not merely control over Nature, it also provides control over Man. The division of labor and the factory system provided ways of *controlling* the pace and quality of work, as do modern assembly-line

methods. Technology provides for social control and discipline in the workplace. So the development of technology is not socially neutral; it will reflect class interests and sociopolitical pressures (Nell 1992, p.54).

In other words,

The process of industrialization, as it achieves more and more advanced levels of technological progress, coincides with a continual growth of the capitalist's *authority*. As the means of production, counterposed to the worker, grow in volume, the necessity grows for the capitalist to exercise an absolute control (Panzieri 1980, p.48; see also *Capital I*, pp.526-527, 553-554 and Uno 1980, pp.30-31).

Machines have been often deployed deliberately in order to wrestle both the knowledge and the control of production away from the workers. For example, Frederick W. Taylor famously stated that:

we propose to take all the important decisions and planning which vitally affect the output of the shop out of the hands of the workmen, and centralise them in a few men, each of whom is especially trained in the art of making these decisions and in seeing that they are carried out, each man having his own particular function in which he is supreme, and not interfering with the functions of other men (cited in Sohn-Rethel 1978, p.151).

Many years previously, but along the same lines, Andrew Ure claimed that:

[The industrialists aim to stop any] process which requires peculiar dexterity and steadiness of hand from the cunning workman, and put it in the charge of a mechanism so self-regulating, that a child may superintend it. The grand object therefore of the manufacturer is, through the union of capital and science, to reduce the task of his workpeople to the exercise of vigilance and dexterity [appropriate to a child] (cited in Cooley (1981, p.60).

These powerful statements have wide-ranging implications for our understanding of



machines. More shocking, and surprisingly, machinery is often introduced even *at the expense of profitability*:

machinery does not just act as a superior competitor to the worker, always on the point of making him superfluous. It is a power inimical to him, and capital proclaims this fact loudly and deliberately, as well as making use of it. It is the most powerful weapon for suppressing strikes, those periodic revolts of the working class against the autocracy of capital ... It would be possible to write a whole history of the inventions made since 1830 for the sole purpose of providing capital with weapons against working-class revolt (*Capital I*, pp.562-563, see also pp.489-492; for modern accounts of the role of technology in social conflicts, see Levidow and Young 1981, 1985 and Slater 1980).

More recently,

As the case studies proliferate, the evidence accumulates against a technological-determinist reading of organizational history and in favor of a conflict approach that views organizational structures as embodying strategies for controlling workers' behavior (Attewell 1984, p.119; see also *Capital I*, pp.486, 508, Bowles and Gintis 1977, p.180, Brighton Labour Process Group 1977, Cleaver 1979, 1992, Lebowitz 1992, Marglin 1974, Naples 1989, p.149, Postone 1993, Sohn-Rethel 1978 and Wennerlind 2000).

In sum, capital controls the workers in three ways. First, capital owns the means of production, whereas the workers must seek paid employment in order to survive. Second, having purchased labour power, capital claims the right to control the labour process in its entirety, and machinery helps management to dictate the structure and pace of the labour process. Third, ownership of the means of production and control of the labour process allow capital to influence the state, economic policy, the legislature, interpretation and enforcement of law, and other social institutions.

These forms of domination are invariably contested; for example, the workers constantly strive for alternatives to paid employment and subordination in the

workplace, seek higher wages and better working conditions, and may engage in collective activity in order to defend their interests in the production line and elsewhere (the potential implications of these struggles cannot be analysed here, but see Brighton Labour Process Group 1977, Cleaver 1979, Levidow and Young 1981, 1985 and Slater 1980. Moreover, mechanisation can potentially give workers more control over their job conditions and reduce the drudgery associated with difficult and repetitive tasks, in which case profitability is obtained at the expense of control. Therefore, in spite of the widespread perception that capitalism and productivity growth are inseparable (because of competition within sectors), this relationship is not straightforward for two reasons. First, firms do not select the technologies that are most productive of use values, but those that are most profitable, and these criteria may lead to distinct outcomes. Second, the imperative of social control, in the production line and in society, may introduce further biases in the choice of technology.

#### **4 – Conclusion**

Marx's value theory departs from the ontological principle that human societies reproduce themselves, and change, through labour. Under capitalism, the labour process and its outcomes are determined by the monopoly of the means of production by the class of capitalists, and the transformation of labour power and the products of labour into commodities. In these circumstances, the products of labour generally take the value form, and economic exploitation is based upon the extraction of surplus value. In other words, the capital relation includes the monopoly of the means of production, wage labour, and the continuous reproduction of the two large and mutually conditioning social classes, capitalists and workers.

When analysed from this angle, the theory of value is a theory of class, of class relations and, more specifically, a theory of *exploitation*. The concept of value is useful because it expresses the relations of exploitation under capitalism, and allows it to be explained in spite of the deceptive appearances created by the predominance of voluntary market exchanges.

The analysis of exploitation outlined in this article shows that exploitation is a class

relationship with two aspects, the capitalist command over part of the output, and their exclusive control over its composition, including the investment goods and the sources of growth. Exploitation has clear implications both at the physical and macro-monetary levels. In the former, the existence of exploitation is revealed by the physical surplus, while in the latter it appears through the profit-wage ratio. Analyses of exploitation that focus only upon one of these aspects of exploitation are limited, and they have been criticised heavily. An alternative approach to exploitation, based upon class analysis and a value interpretation of the value of labour power, has greater explanatory power, and it avoids their shortcomings.

Capitalists are locked in competition, both within and between sectors. These types of competition have distinct implications for economic dynamics and they can, for example, lead to technical progress, economic crisis, or both. Mechanisation is one of the main tools of competition. However, there are other dimensions of mechanisation, including the normalisation of labour in production, the extraction of relative surplus value, and social control. This article has shown that these aspects of mechanisation are closely dependent upon the capital relation, and they impinge upon the composition and level of the output. Even more importantly, mechanisation is an arena of conflict, especially on the shopfloor. There, capital appears in its simplest form, as a conflict-ridden social relation of production and exploitation, in which machinery, law, and the threat of unemployment and social exclusion play an essential role in its reproduction.

### **References**

- Aglietta, M. (1979) *A Theory of Capitalist Regulation, the US Experience*, London: New Left Books.
- Arthur, C. (2001) 'Value, Labour and Negativity', *Capital & Class* 73: 15-39.
- Attewell, P.A. (1984) *Radical Political Economy, A Sociology of Knowledge Analysis*, New Brunswick, N.J.: Rutgers University Press.
- Aumeeruddy, A., Lautier, B. and Tortajada, R. (1978) 'Labour Power and the State', *Capital & Class* 6: 42-66.
- Bahr, H.-D. (1980) 'The Class Structure of Machinery: Notes on the Value Form', in P. Slater (ed) *Outlines of a Critique of Technology*, Atlantic Highlands: Humanities Press.
- Bowles, S. and Gintis, H. (1977) 'The Marxian Theory of Value and Heterogeneous Labour, Critique and Reformulation', *Cambridge Journal of Economics* 1, 2: 173-192.
- Brighton Labour Process Group (1977) 'The Capitalist Labour Process', *Capital & Class* 1: 3-26.

- Bryan, R. (1985) 'Monopoly in Marxist Method', *Capital & Class* 26: 72-92.
- Chattopadhyay, P. (1994) *The Marxian Concept of Capital and the Soviet Experience: Essay in the Critique of Political Economy*, Westport, Conn.: Praeger.
- Clarke, S. (1994) *Marx's Theory of Crisis*, London: Macmillan.
- Cleaver, H. (1979) *Reading 'Capital' Politically*, Brighton, The Harvester Press.
- Cleaver, H. (1992) 'The Inversion of Class Perspective in Marxian Theory: From Valorisation to Self-Valorisation', in W. Bonefeld, R. Gunn and K. Psychopedis (eds) *Open Marxism*, London: Pluto Press.
- Cockshott, P. and Cottrell, A. (1995) 'Testing Marx: Some New Results from UK Data', *Capital & Class* 55: 103-129.
- Colletti, L. (1972) *From Rousseau to Lenin*, London: New Left Books.
- Cooley, M. (1981) 'The Taylorisation of Intellectual Work', in L. Levidow and B. Young (eds) *Science, Technology and the Labour Process*, vol. 1, Atlantic Highlands: Humanities Press.
- Dunne, P. (ed) (1991) *Quantitative Marxism*, Cambridge: Polity Press.
- Elson, D. (1979) 'The Value Theory of Labour', in D. Elson (ed) *Value, The Representation of Labour in Capitalism*, London: CSE Books.
- Fine, B. (1985-86) 'Banking Capital and the Theory of Interest', *Science & Society*, 49, 4: 387-413.
- Fine, B. (1989) *Marx's Capital* (3<sup>rd</sup> ed), Basingstoke, Macmillan.
- Foley, D. (1982) 'The Value of Money, the Value of Labour Power and the Marxian Transformation Problem', *Review of Radical Political Economics* 14, 2: 37-47.
- Foley, D. (1986) *Understanding Capital, Marx's Economic Theory*, Cambridge, Mass.: Harvard University Press.
- Freeman, A. and Carchedi, G. (eds) (1996) *Marx and Non-Equilibrium Economics*. Aldershot: Edward Elgar.
- Grossman, H. (1977) 'Marx, Classical Political Economy, and the Problem of Dynamics', *Capital & Class* 2: 32-55.
- Itoh, M. and Lapavistas, C. (1999) *Political Economy of Money and Finance*. London: Macmillan.
- Lapides, K. (1998) *Marx's Wage Theory in Historical Perspective: Its Origins, Development and Interpretation*. Westport, Conn.: Praeger.
- Lebowitz, M. (1992) *Beyond Capital, Marx's Political Economy of the Working Class*, London: Macmillan
- Levidow, L. and Young, B. (1981, 1985) *Science, Technology and the Labour Process, Marxist Studies*, 2 Vols., London: Free Association Books.
- Likitkijsonboon, P. (1995) 'Marxian Theories of Value-Form', *Review of Radical Political Economics* 27, 2: 73-105.
- Maniatis, T. (1996) 'Testing Marx: a Note', *Capital & Class* 59: 37-54.
- Marglin, S. (1974) 'What Do Bosses Do?', *Review of Radical Political Economics* 6, 2: 60-112.
- Marx, K. (1978a, 1969, 1972) *Theories of Surplus Value*, 3 Vols., London: Lawrence and Wishart.
- Marx, K. (1981a) *Grundrisse*, Harmondsworth: Penguin.
- Marx, K. (1976, 1978b, 1981b) *Capital*, 3 Vols., Harmondsworth: Penguin.
- Marx, K. (1989) *Marginal Notes on Adolph Wagner's 'Lehrbuch der Politischen Ökonomie'*, Collected Works, Vol. 24, London: Lawrence and Wishart.
- Marx, K. (1998) *Value, Price and Profit*, in K. Marx and F. Engels, *Classics in Politics* (CD-Rom), London: The Electric Book Company.
- Mohun, S. (1991) 'Value', in T. Bottomore (ed) *A Dictionary of Marxist Thought*, 2<sup>nd</sup> ed, Oxford: Blackwell.

- Mohun, S. (1994) 'A Re(in)statement of the Labour Theory of Value', *Cambridge Journal of Economics* 18: 391-412.
- Mohun, S. (ed) (1995) *Debates in Value Theory*, London: Macmillan.
- Mohun, S. (1996) 'Productive and Unproductive Labor in the Labor Theory of Value', *Review of Radical Political Economics* 28, 4: 30-54.
- Mohun, S. (forthcoming) 'Productive and Unproductive Labor: a Reply to Houston and Laibman', *Review of Radical Political Economics*.
- Moseley, F. (1997) 'The Development of Marx's Theory of the Distribution of Surplus Value', in F. Moseley and M. Campbell (eds) *New Investigations of Marx's Method*, Atlantic Highlands: Humanities Press.
- Naples, M. (1989) 'A Radical Economic Revision of the Transformation Problem', *Review of Radical Political Economics* 21, 1-2: 137-158.
- Nell, E.J. (1992) *Transformational Growth and Effective Demand*, New York: New York University Press.
- Panzieri, R. (1980) 'The Capitalist Use of Machinery: Marx versus the "Objectivists"', in P. Slater (ed) *Outlines of a Critique of Technology*, Atlantic Highlands: Humanities Press.
- Postone, M. (1993) *Time, Labour and Social Domination, A Re-examination of Marx's Critical Theory*, Cambridge: Cambridge University Press.
- Shaikh, A. (1981) 'The Poverty of Algebra', in I. Steedman (ed) *The Value Controversy*, London: Verso.
- Shaikh, A. (1982) 'Neo-Ricardian Economics, A Wealth of Algebra, a Poverty of Theory', *Review of Radical Political Economics* 14, 2: 67-83.
- Shaikh, A. (1998) 'The Empirical Strength of the Labour Theory of Value', in R. Bellofiore (ed) *Marxian Economics: a Reappraisal, Essays on Volume III of Capital*, vol. 1, London: Macmillan.
- Slater, P. (ed) (1980) *Outlines of a Critique of Technology*, Atlantic Highlands: Humanities Press.
- Sohn-Rethel, A. (1978) *Intellectual and Manual Labour: a Critique of Epistemology*, London: Macmillan.
- Spencer, D. (2000) 'Braverman and the Contribution of Labour Process Analysis to the Critique of Capitalist Production – Twenty Five Years On', *Work, Employment and Society*, 14, 2: 223-243.
- Thompson, E.P. (1967) 'Time, Work-Discipline, and Industrial Capitalism', *Past and Present* 38: 56-97.
- Uno, K. (1980) *Principles of Political Economy: Theory of a Purely Capitalist Society*, Brighton: Harvester Press.
- Vroey, M. de (1985) 'La Théorie Marxiste de la Valeur, Version Travail Abstrait, Un Bilan Critique', in G. Dostaler and M. Lagueux (eds) *Un Echiquier Centenaire, Théorie de la Valeur et Formation des Prix*, Paris: La Découverte.
- Weeks, J. (1981) *Capital and Exploitation*, Princeton: Princeton University Press.
- Weeks, J. (1990) 'Abstract Labor and Commodity Production', *Research in Political Economy* 12: 3-19.
- Wennerlind, C. (2000) *The Labor Theory of Value and the Strategic Nature of Alienation*, unpublished manuscript.
- Wheelock, J. (1983) 'Competition in the Marxist Tradition', *Capital & Class* 21: 18-47.
- Zarembka, P. (2000) 'Accumulation of Capital, its Definition: A Century after Lenin and Luxemburg', *Research in Political Economy* 18: 183-225.