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## Efficiency Under Capitalist Production: A Critique and Reformulation

*WILLIAM MITCHELL and MARTIN WATTS*

**ABSTRACT:** We claim that, within the radical paradigm Gordon's (1976) two dimensions of efficiency are meaningless. His dichotomy is consistent with neo-Ricardian theory. Qualitative efficiency is redefined in value terms and the concept of quantitative efficiency is scrapped. Marglin's (1974) work is re-examined. The authors consider whether the choice of production technology reflects the imperatives of capitalism.

### INTRODUCTION

Since Braverman's important book (1974) the theoretical and empirical study of the capitalist labor process has returned to the radical research agenda (see, for example, Marglin 1974; Stone 1974; Edwards, Reich and Gordon 1975; Brighton Labor Process Group 1977; Friedman 1977; Brecher 1978; Gartman 1978; Lazonick 1978; Rubery 1978; Stark 1980; Walker 1981; Gordon, Edwards and Reich 1982).<sup>1</sup>

One issue in this literature which has received little formal attention since Gordon (1976) is the concept of efficiency under capitalist production. Gordon identifies two concepts of efficiency, namely quantitative and qualitative efficiency. Marglin (1974) implicitly utilized this distinction in his earlier work. Several authors, notably Rubery (1978), Reich and Devine (1981), and Walker (1981), have uncritically accepted Gordon's dichotomy. We argue that these two dimensions of efficiency have no meaning within the radical paradigm, indeed the former has been borrowed from neoclassical production theory. We claim that a reformulation of the efficiency concept is required which recognizes that capitalist production occurs within a set of antagonistic social relations.

While the value debate between neo-Marxists and neo-Ricardians is framed in aggregate, class terms (see Steedman, Sweezy et al. 1981) the question as to the correct definition of efficiency represents a key microeconomic ingredient of this debate. Acceptance by radical scholars of the efficiency dichotomy is consistent with the adoption of a neo-Ricardian (Cantabrigian) stance (e.g. Robinson and Eatwell 1973; Steedman 1977) in which the two basic theoretical abstractions, the social and technical relations of production are viewed as independent of each other (Roosevelt 1977: 420–423). Consequently the distinction between the paradigms is blurred.

Another issue emerging from our discussion of efficiency relates to the use in socialist systems of technology employed under capitalism. We draw some brief conclusions on this matter at the end of this paper.

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## QUALITATIVE AND QUANTITATIVE EFFICIENCY

The orthodox (maximizing) model is concerned with the manner in which individual choices generate efficient outcomes. Production is construed as a process in which output is the result of combining inanimate factors of production according to relative productivities per dollar, the outcome being determined by some preconceived formula (the production function) which is constrained by relevant technological considerations. The denial that production is a social process justifies the neoclassical characterization of labor as being subject to predetermined productivity.<sup>2</sup>

Gordon (1976: 22) acknowledges the shortcomings of this orthodox concept of efficiency which he labels "quantitative efficiency" and defines as the "greatest possible useful physical output from a given set of physical inputs." He defines a second dimension of efficiency, qualitative efficiency, as "the ability of the ruling class to reproduce its domination of the social process of production and minimize producers' resistance to ruling class domination of the production process." Gordon thus introduces conflicting social relations as an integral component of capitalist development.<sup>3</sup>

Gordon concludes that the production process which is chosen maximizes quantitative efficiency subject to the condition that it is qualitatively efficient (1976: 24).<sup>4</sup> He argues that this hypothesis is consistent with casual empiricism. Quantitative efficiency could be raised in production but social relations would be threatened. Thus capitalists are forced to forego an amount of conceptually available physical output in order to maintain worker discipline in the labor process and reproduce their own positions as controllers of the means of production.

Rubery acknowledges the dichotomy but claims that:

Contrary to Gordon's hypothesis, capitalists may not sacrifice quantitative for qualitative efficiency but, motivated by competition amongst themselves and forced by opposition from organised labor, may sacrifice some of their qualitative control of the labor force, in order to achieve a more rapid introduction of new technology (1978: 23).

The essential point that these writers have missed is that the two aspects of efficiency are not strictly comparable. The former operates in a timeless, ahistorical void while the latter belongs to an historically specific mode of production, capitalism.

There is no such trade off once we discuss any capitalist labor process. By treating inputs as inanimate objects the concept of quantitative efficiency must exclude alienated labor which exists in a capitalist epoch.<sup>5</sup> Once labor in subjective terms becomes important to the objective goals of capital accumulation, then quantitative efficiency has no meaning (see Mitchell 1981: 158).

Underlying this critique is the fundamental Marxian distinction between labor and labor power. The latter is sold to the capitalist for a wage and signifies the abstract capacity to work — in short a worker's productive capacities. The worker's actual performance in the workplace, his/her labor, does not merely reflect these productive capacities but also the social and political environment of the workplace. In this analysis any distinction between the quantitative and qualitative dimensions of performance has no meaning.<sup>6</sup>

Brecher (1978: 7) is quite clear:

Neither "efficiency" nor "control" is an autonomous goal of capital, capitalists are interested in either insofar as it contributes to the basic goal of accumulation. There is not, as some have argued, an independent drive for control; nor is the objective of capital "efficiency" rather than "control," as others have countered (see also Gorz 1978: 56, 169).

Mitchell (1981: 158) concludes that it makes no logical sense to discuss two separate aspects of efficiency, each of which belongs to a separate and conflicting paradigm. Methodological consistency requires that neo-Marxists scrap the concept of quantitative efficiency and revamp the concept of qualitative efficiency. We define qualitative efficiency as the maximal extraction of surplus value subject to alienated labor under the historically specific capitalist mode of production.

The concept of qualitative efficiency does not lend itself to maximization calculus and as such we can only distinguish between different degrees of qualitative efficiency. The relative degrees of qualitative efficiency are represented by the relative rates of surplus value that are achieved by these firms or industries, but these are not measurable. In the exchange sphere they are represented as unequal rates of profit. A capitalist is operating at less than qualitative efficiency to the extent that labor manifests forms of alienation through absenteeism, sabotage, soldiering and trade union militancy, etc.<sup>7</sup> It must be emphasized that capitalists' behavior has to be seen in the context of the conflict between their objectives of accumulation and the subjective motivations of workers in the pursuit of their own needs, interests and desires. But the exercise of control must elicit workers' cooperation in the production process (Cressey and MacInnes 1980). In this respect the social relations of capitalist production are contradictory.

### NEO-MARXIAN VALUE THEORY

The concept of qualitative efficiency directs our attention to the value system and the sphere of production rather than the sphere of exchange which is the main concern of the ahistorical fetishistic concept of quantitative efficiency. In this respect analysis of the sphere of production represents a higher level of abstraction in that the researcher separates the workers' performance within a given set of social relations in the sphere of production from intercapitalist competition and such phenomena as realization crises in the sphere of exchange (Fine and Harris 1979).

Neo-Marxian value theory is framed in aggregate class terms. Efficiency in capitalist production represents the underlying microfoundations of neo-Marxian value theory, in the sense that, given decentralized decision-making, the maximization of the mass of surplus value implies the maximization by individual capitalists of their respective rates of surplus value. Thus efficiency under the capitalist mode of production is founded in the value sphere, but the outcome of capital's strategies is observed in the sphere of exchange through prices and profits. Thus, the notion of capitalist efficiency signifies the integration of the spheres of production and exchange.

It should be noted that the degree of qualitative efficiency achieved by a capitalist (relative to others) is only manifested in the price sphere in the form of costs, prices and the money rate of profit. Perhaps this is why the confusion exists. In the exchange world, in ex-post terms, quantitative calculations are the sole means by which the capitalist measures the performance of his/her firm or industry. For all intents and purposes, the degree of qualitative efficiency is summarized by a "quantitative" result. While this emphasis on the price sphere is understandable it does not mean that neoclassical logic is vindicated. Underlying the price sphere is a set of value relations. The ex-post numbers used by capitalists have a history, a history which is embedded in the struggle between antagonistic social classes in production. Efficiency is about the mediation of this struggle "to get the appropriate numbers."

By contrast Steedman (1977:207) and other neo-Ricardians consider it valid to dichotomize the categories of the formal representation of price formation, and hence the choice of technique and quantitative efficiency, from the underlying analysis of class struggle by freezing the social relations of production.<sup>8</sup> Steedman is unequivocal in his discussion of a firm's choice of technique:

Faced with one or more available methods for the production of each commodity and with a given real wage bundle which must be paid to each worker, capitalists in each industry will seek to adopt that production method which maximises the rate of profit (1977: 64).

His underlying concept of efficiency is unashamedly neoclassical. But the choice of technique does not occur in an ahistorical vacuum. At a point of historical time a particular technology will be in place. Nell (1981) argues that once a new technology is contemplated, relations in the workplace cannot be frozen because a new technology entails new jobs associated with a new workplace environment.<sup>9</sup> Engineers may be able to predict accurately the material inputs per unit of output but workers' productivity will vary according to the length and intensity of their work and the care which they exercise (hence Marx's distinction between constant and variable capital). We do not know whether the new technology is superior at all levels of the existing wage, at some levels, or none at all.<sup>10</sup> What we require to know is the amount of work that is performed per period of time, in short, the rate of exploitation (see Nell 1981: 192–193).

Steedman's error is his relegation of the influence of social, economic, political and technical factors on the rate of profit, rate of accumulation, prices of production, the social allocation of labor, etc. to a secondary level of analysis (Steedman 1977: 207). In so doing he presents a basic framework for analyzing capitalist development which is ahistorical in that it does not embrace the antagonistic social relations between the classes (Fine and Harris 1979: 38).

### EMPIRICAL LITERATURE

Capitalists' initiatives in their pursuit of surplus value cannot be analyzed in a social and political vacuum. As Mitchell notes (1981: 159), on the one hand workers' behavior constrains capitalists but, on the other hand, workers are essential to capitalists' goals (see also Nolan and Edwards 1984: 213). Hence,

an adequate focus on capitalist behavior cannot ignore the role of the workers.<sup>11</sup> It is merely one side of a two-sided coin. Fortunately recent empirical studies are focussing on the interaction of capitalists' initiatives and worker resistance (see, for example, Friedman 1977; Elbaum, Lazonick, Wilkinson and Zeitlin 1979; Rubery and Wilkinson 1981). One element of capitalist control of the labor process is to reduce the awareness of this conflict by obscuring and mystifying the relations of production (see Burawoy 1978).

Once the notion of degrees of qualitative efficiency is accepted as an adequate framework for the analysis of capitalist production then our attention is directed towards firm or industry specific studies.

Historical insights achieved via longitudinal studies into the changing nature of the organization of work under capitalism can also help us understand the manner in which workers can impinge on the goals of the capitalist to be qualitatively efficient and the machinations of management in this regard. One example of this approach is Marglin's work (1974) which investigates the forces underlying the development of the factory system in the United Kingdom and the contemporaneous decline of the putting-out system. He denies that "the development of the central organization which characterizes the factory system... took place primarily for reasons of technological superiority" (1974: 62). He claims that the key to the development of the factory system is the substitution of capitalist control for worker control of the production process. In this paper we argue that capitalist control is not usefully viewed in isolation from the quantitative dimension of workers' performance because this signifies a dichotomization of the efficiency concept as noted above (see Gartman 1978: 108).

The emergence of the factory system should be analyzed in terms of the formal subordination of labor and the extraction of absolute surplus value (see Marx 1954; Gartman 1978). Contradictions emerge within capitalist production which result from workers' ongoing struggle against the objective goals of capital. The development of capitalist production is not the non-problematic outcome of capitalist initiatives in a social and political vacuum. Marglin implies that factory production represents an absolute in control and hence, under capitalist production there is a "unidimensional development" of the labor process towards factory production (Rubery and Wilkinson 1981: 118–119). Rubery and Wilkinson dispute this view by providing evidence of the perpetuation and, indeed, consolidation of outwork which provides counter-vailing power to unions in factories. Such discontinuous development provides the basis for labor market segmentation.

The development of the factory system with its attendant supervision and discipline of workers enabled capitalists to extract increased labor for the same value of labor power (i.e. absolute surplus value), but in terms of input use the factory system was not quantitatively more efficient, using neoclassical logic (see Marglin 1974: 62). Clearly the factory system was a superior *capitalist* organization of production, where the underlying concept of efficiency embraces both the coercive social relations of capitalist production and the technical relationships between the material inputs and outputs, in short, qualitative efficiency.<sup>12</sup> A separation of these dimensions of efficiency is unhelpful.

The Brighton Labor Process Group (1977: 8) is relevant here. They too are critical of Marglin's employment of control and technical efficiency as distinct conceptual categories. Referring to factory production they claim that:

The labor process was, therefore, more efficient as a process of valorisation and only this concept of efficiency can make sense of the aims of capital both in the period of formal subordination and in the period of the revolutionised forces of production and real subordination (see also Palmer 1975: 32; Gartman 1978: 108).

### QUALITATIVE EFFICIENCY AND SOCIALIST PRODUCTION

In neoclassical economics the "material matrix,"<sup>13</sup> namely the organization of production, production technology and the division of labor, is treated as socially neutral. It is merely the material interface between humanity and nature, an engineering construct. A particular production process may or may not be quantitatively efficient but it is certainly free of ethics according to orthodoxy. The choice of a particular production technology implies a particular organization of production and division of labor under cost minimization.

The notion of qualitative efficiency necessarily implies that the organization of the labor process during any historical phase of capitalism reflect the prevailing state of capitalist social relations and is therefore non-neutral. Can we extend the argument and claim that the choice of the production technology reflects the imperatives of capitalist production, and cannot be adopted under alternative modes of production? In other words, is the technology employed under capitalist production tainted in the sense of being authoritarian and ethically loaded, so that such technology would not be employed under socialism?

Gorz (1978: viii–ix) is undecided. Referring to the "collective appropriation" of the means of production by workers, he continues:

If it leaves the organisation and techniques of production *intact*, such a transfer will also leave intact the matrix of hierarchical relations of domination and authority along with the old division of labor — in other words the capitalist relations of production. Power will remain with capital; only those who represent it will be different.

The rest of his discussion suggests an adherence to the view that the technical instruments of production do embody their own imperatives for the organization of the labor process.

Braverman (1974: 228–229, 281–282) takes an opposing view:

It is not the productive strength of machinery that weakens the human race but the manner in which it is employed in capitalist social relations . . . in the factory it is not the machines that are at fault but the conditions of the capitalist mode of production under which they are used.

However, elsewhere he notes that:

The chief advantage of the industrial assembly line is the control it affords over the pace of labor, and as such it is extremely useful to owners and managers whose interests are at loggerheads with those of the workers" (1974: 232).

We argue that hierarchy and authority are embedded in the manner in which technology is employed under capitalism and that some forms of technology,



such as the assembly line, are impregnated with capitalist relations which cannot be expunged. Factories employing such technologies *cannot* become centers of worker freedom and self realization through the development of job enrichment programs.

## CONCLUSION

We argue that the controversy over the definition of efficiency under the capitalist mode is part and parcel of the long running debate in value theory. The radical paradigm has been misrepresented by the incorrect specification of the efficiency concept in the so-called radical literature. We concur with Dow who argues:

The lesson to be drawn from this experience is that it is crucial for the success of scientific revolutions that alternative paradigms be expressed in terms of models and tools quite distinct from those of the ruling paradigm (1980: 378).

The adoption of the orthodox notion of quantitative efficiency makes neo-Marxian theory vulnerable to attack from neo-Ricardians as we have noted. It also allows others to subsume and, in our opinion, debase important aspects of neo-Marxian theory within the orthodox paradigm.

## NOTES

1. Lazonick (1978: 1) notes that "Marxian" analyses of capitalist development share Marx's materialist conception of history but they embrace a variety of approaches. These theoretical and empirical developments do not signify the emergence of a coherent paradigm. Elsewhere we attempt to redress this problem within the radical labor market literature (Mitchell and Watts 1983).
2. Leibenstein (1980: 66–73) attempts to incorporate workers' subjectivity into neoclassical analysis through his concept of x-(in)efficiency. He acknowledges that the employment contract is incomplete so that there exists significant elements of choice open to individuals — everyone associated with a firm has to interpret his or her job (1980: 68). The actual supply of effort on the part of the individual depends on their responses to the flow of signals from both within and outside the organization (1980: 66). Leibenstein hypothesizes that the utilization of inputs, based as it is on the supply of effort, may be consistent with the maximal effectiveness of resource utilization. The comparison of these levels of resource utilization defines the degree of x-inefficiency. While the concession that labor exercises some degree of discretion in the workplace is an important development in neoclassical theory, Leibenstein fails to incorporate into his analysis the conflicting social relations which are characteristic of the capitalist mode of production. Indeed, Leibenstein downgrades the role of the firm by assuming that "the basic micro unit . . . is the individual rather than the firm" (1980: 67) (see also footnote 11 below).
3. The term "control" is often used in discussing qualitative efficiency. The system of control is based on the coordination of the direction and evaluation of work tasks and the systems of discipline and reward (Edwards 1979: 18).
4. Somewhat curiously he also cites a weaker hypothesis that capitalists select from quantitatively efficient techniques the technique that is qualitatively efficient (Gordon 1976: 22–24). Given factor prices it is hard to understand how a number of quantitatively efficient techniques could co-exist.
5. Given its failure to analyze class conflict, orthodoxy cannot explain or even attempt to analyze the process of historical change through the consolidation of pre-existing modes of production and the emergence of new modes.
6. We reject the possible neoclassical defense that capitalists maximize profits subject to some form of risk. We deny that the dynamic evolution of antagonistic class relations can be adequately specified within such a framework. In post-Keynesian analysis uncertainty arises in the sphere of exchange over the quantities of goods sold and their corresponding prices. In neo-Marxian thought unquantifiable uncertainty arises in the sphere of production due to the antagonistic class relations.

7. We do not claim that there is an absolute of qualitative efficiency. Rather the extraction of labor by capital is a function of the social relations in the workplace.
8. Mumy (1979: 73) argues that in his defense of the Sraffian system Steedman *should* be arguing the opposite position, namely that this dichotomy does not exist. Mumy claims that Sraffa's system is "simultaneously a theory of price and a theory of value" because a theory of value deals with the social essence of commodity exchanges, namely that they satisfy the reproduction requirements of capitalism. Fine and Harris (1979: 38) disagree claiming that the determinant aspect of the capitalist economic process "is the struggle between capital-in-general and labour" which cannot be analyzed in the neo-Ricardian system.
9. Nell (1981: 192) claims that Steedman is justified in freezing the balance of forces in the workplace in order to analyze the working of the system for a given level of productivity and real wages. We disagree because there appears to be no variable relevant to production whose change could be analyzed without disturbing the prevailing social relations. This observation does not undermine Nell's major point outlined in the text.
10. Palmer (1975: 32–33) referring to capitalist development in the United States from 1903–1922 notes that: "The 'thrust for efficiency' was hence part and parcel of the process Marx referred to as the 'intensification of labor.' Did this intensification give rise to more efficient production? Some of the reforms and innovations did undoubtedly give rise to a more sophisticated refinement of the division of labor and it was these that heightened productive output contributing towards the expansion of capital. Other efficient measures often vociferously claimed to be 'the million dollar savers' were nothing if not farcical; they made no contribution to capital's expansion."
11. By contrast, under orthodoxy, the firm, a central institution under capitalism, plays no essential role. Indeed Wicksell and Samuelson both exhort the neutrality of perfect competition in that workers could equally hire capital as the capitalist hires workers. This raises a contradiction because then neoclassical economics can only justify the introduction of capitalist hierarchy on the basis of its technical superiority (see Marglin 1974: 65–66).
12. Gorz (1978: 169) makes the useful distinction between maximum physical productivity and productivity from the point of view of capital. The pursuit of the former requires the establishment of "the conditions that allow workers to produce the greatest possible quantity of a given kind of product while using the optimal amount of energy in the most rational and efficient manner." By contrast, capitalists wish to maximize the quantity of output produced "by the use of the maximum amount of human energy that can be obtained for the minimum of wages (variable capital)" (see also Gintis and Bowles 1981: 16).
13. Gorz (1978: viii) adopts this terminology.

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