

# **Ricardo on the Relationship Between Pricing and Distribution: A Survey Of The Secondary Literature**

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## **Summary**

Ricardo's theory of value and distribution has been the subject of intense controversy in recent years. The aim of this article is to review certain themes within this debate, drawing a contrast between interpretations which entail a logical separation of pricing and distribution and those which suggest their interdependence. In addition, the wider implications of this debate, especially for Ricardo's place in the history of economic thought, are explored. The positions of different commentators regarding specific areas of Ricardo's thought which are crucial to an understanding of the relationship between pricing and distribution - the corn-model interpretation of his early theory of profits, the question of whether he held a subsistence theory of wages, and the role of demand and resource allocation mechanisms in his theory - are examined.

## **Introduction**

David Ricardo (1772-1823) is widely regarded as one of the most important figures in the history of economic thought. His significance is reflected in the continuing controversies which are a prominent feature of the large and growing volume of exegetical literature seeking to interpret his theories. The most fundamental of these debates concerns the theory of value and distribution, which occupies a central role in Ricardo's economics: the first chapter of his major treatise (Ricardo, I)<sup>1</sup> is devoted

to value, while he refers to distribution as "... the principal problem in Political Economy" (*ibid.*, 5). In general terms, a distinction can be drawn between interpretations, such as those of Dmitriev (1974), Sraffa (1951), Dobb (1973), Garegnani (1984) and Bharadwaj (1988), which place Ricardo within a tradition of economic thought in which the determination of the distribution of income is logically independent of the process of the determination of product prices, and those, most notably that of Hollander (1979; 1987), which regard distribution and pricing as being simultaneously determined within his system. The latter view emphasises the affinity of Ricardo's theory with the general equilibrium framework of neoclassical economics, while the former suggests closer links with the 'surplus approach' of the Physiocrats and Marx (Garegnani, 1984), and has been used as an inspiration for the development of the contemporary Sraffian school of economic theory. Our review is structured around this fundamental distinction<sup>2</sup>, and has the aim of understanding the sources of these divergent interpretations and of exploring some of their implications.

As our emphasis is on the *relationship* between the theories of value and distribution, we shall not examine debates concerning the theory of value *per se*, or those relating to issues of growth and capital accumulation. Our main areas of interest are the dispute regarding Sraffa's 'corn-model' interpretation of Ricardo's early theory of profits, the question of whether Ricardo is best viewed as having assumed a fixed or a flexible wage, and the role of demand in Ricardian theory. Thus, some of our concerns overlap with those of Peach's (1988) survey. However, we shall concentrate more narrowly on recent literature and utilise the distinction outlined above in order to clarify the theoretical and historiographical points at issue.

This topic is of great importance for a number of reasons beyond the intrinsic value of understanding Ricardo's economics. It poses questions about the nature of his contribution and his place in the history of economic thought - whether he represents a "detour" on the road to modern neoclassical economics, as Schumpeter (1954, 474) asserts, whether he forms part of a 'surplus' approach distinct from mainstream economics, as Garegnani (1984) suggests, or anticipates neoclassical general equilibrium theory, as Hollander (1979) claims. It also has a bearing on our understanding of other economists, such as the 'dissenters' (Hollander, 1977), John Stuart Mill, Marx and Sraffa. More generally, this debate casts light on broader aspects of the history of economic thought - for instance, on the question of whether two streams of economic theorising can be identified, or whether all economic thought can be accommodated within one unified analytical framework. The methodological issue of whether the history of economic thought should be studied from the standpoint of prevailing economic doctrine (the practice followed by Schumpeter and Hollander, among others) or within its historical context (as advocated by Dasgupta (1985)) is also relevant. Finally, this debate also pertains to recent theoretical controversies, especially in the field of capital theory. The substantive issues addressed by Ricardo in his treatment of value and distribution thus remain relevant, as illustrated by the capacity of Ricardian economics to inspire a revival of the classical paradigm in the form of Sraffa (1960)<sup>3</sup>.

We have chosen to stress the question of the independence or interdependence of product prices and income distribution in Ricardo's theory as the most fundamental issue dividing his commentators. We consider the varying responses of different

commentators to the critique of the Ricardian approach to value and distribution advanced by Walras (1954; Hollander, 1979, 9; Porta, 1985, 217f). Walras (1954, 424-5) represents the classical<sup>4</sup> theory of value by an equation of the form

$$P = \Pi + W + R$$

where P = Price,  $\Pi$  = Profits, W = Wages and R = Rent.

Wages are exogenously fixed at the subsistence level, and, at the margin of cultivation, R = 0. Even so, Walras argues, we are left with only one equation with which to determine both P and  $\Pi$ , and, hence the classical system is under-determined. He concludes that "... the English economists are completely baffled by the problem of price determination" (*ibid*, 425). Clearly, Walras' critique would, if accepted, invalidate the entire approach to the theory of value and distribution exemplified by Ricardo.

There have been two main approaches to the defence of Ricardo's theory from the strictures of Walras. The first can be illustrated by the interpretation proposed in 1898 by Dmitriev (1974, 50f). He expresses the theory in the form of a series of equations for the cost of production of each of n commodities (*ibid* 58f). This yields a system of n equations in n+2 unknowns – the n prices, the price of the wage-good (ie corn), and the rate of profit. If one of the prices is set equal to unity (as the *numeraire*), we still have n equations in n+1 unknowns, and Walras' criticism appears to be borne out. However, Dmitriev (1974, 59) notes that one of these n equations – that representing the price of the wage-good – can be used to determine the rate of profit directly, independently of the other equations. Having solved for the rate of profit (which is determined by the technical conditions of production in the wage-goods industry), it is possible to solve the remaining n-1 equations for the n-1 relative prices (Porta, 1985, 218). Thus, Dmitriev's interpretation not only demonstrates the logical consistency of Ricardo's theory, but also involves the separation of distribution and pricing, inasmuch as the determination of the rate of profit is logically prior to that of relative prices<sup>5</sup>.

The famous 'corn-model' interpretation of Sraffa (1951) can also be placed in this tradition. In his interpretation of Ricardo's theory of profits in the 1815 *Essay on Profits* (Ricardo, IV, 1-42), Sraffa (1951, xxxi) suggests that Ricardo's apparent belief in the determining role of agricultural profits had a "rational foundation" (*loc.cit.*) in the idea that, as both the output and input of the agricultural sector consists of corn, its rate of profit can be determined as a physical ratio. Assuming an uniform rate of profit, the prices of products in other sectors of the economy must adjust in order to bring their rates of profit into conformity with that in agriculture. Such a 'corn-model', assuming a given labour force (L) and corn-wage (w), and the absence of fixed capital, can be represented as follows:

$$C = f(L)$$

is the production function for corn (C), where

$$f'(L) > 0 \text{ and } f''(L) < 0$$

Rent (R) is determined by the "marginal principle" (Kaldor, 1955-6, 84):

$$R = C - L \cdot f'(L)$$

The wage bill (W) equals the stock of circulating capital (K):

$$W = K = Lw$$

The level of profits ( $\Pi$ ) is determined as a residual:

$$\begin{aligned} \Pi &= C - R - W \\ &= L \cdot f'(L) - L \cdot w \end{aligned}$$

Hence, the corn rate of profit ( $r$ ) is:

$$r = \Pi/K = (f'(L)Aw) - 1$$

In a two-sector model (corn, gold)  $L$  is replaced by  $L_1$ , where  $L_1$  is the quantity of labour devoted to corn production. Thus,  $r$  depends only on the technical conditions of production in the wage-goods industry (*ibid*, 11), a result very similar to Dmitriev's. Moreover, the 'corn-model', in Sraffa's (1951, xxxiii) words, "... rendered distribution independent of value", and this feature generalises to Pasinetti's model, which represents the mature thought of Ricardo in the *Principles*. Pasinetti (1974, 1-28) generalises the model to the two-sector case. In his formulation, the economy is divided into a sector producing the wage-good (corn) and another producing a luxury good (gold). Accordingly, we can classify the interpretations of Dmitriev, Sraffa and Pasinetti together as being reconstructions of Ricardo's thought which are both logically coherent (and, in particular, free of the error attributed to it by Walras) and entail the separation of pricing and distribution.

The second approach to exonerating Ricardo from Walras' charge can be traced back to Marshall (1959; Porta, 1985, 219-20), who emphasised the role of demand in Ricardo's value theory. His denial that Ricardo could adequately be represented as holding a cost of production theory renders Walras' critique inapplicable. Hollander (1979) has recently revived this interpretation, claiming "... that Ricardo is better defended against Walras's charge that his system is underdetermined along Marshallian lines than those suggested by Dmitriev" (*ibid*, 271). This defence is based on the argument that Ricardo did not in fact separate pricing from distribution (*ibid*, 10) and that, consequently, his economic theory is best viewed as a general equilibrium system, analogous to that of Walras, in which prices are determined simultaneously with wages and profits. This 'general equilibrium' reading of Ricardo has been endorsed by Morishima (1989), using a mathematical approach.

## Ricardo's Early Theory of Profits

In this section, we focus on the theory of profits developed by Ricardo in the 1813-14 correspondence with Malthus and in his *Essay on Profits*. In particular, we shall compare Sraffa's (1951) 'corn-model' interpretation with the alternative reconstruction, in terms of money variables, offered by Hollander (1973; 1975; 1979; 1983a; 1985). This issue is of central importance for our wider inquiry into the relationship between pricing and distribution in Ricardian theory, not only because the 'corn-model' in itself separates the two, but also due to the light the debate can shed on Ricardo's mature theory of profits. As Eatwell (1975, 182) suggests, "... it is the interpretation of Ricardo's whole theory of value and distribution that is at issue..." in this debate.

Sraffa's formulation of the 'corn-model' interpretation (introduced above) implies that the general rate of profit, given the margin of cultivation<sup>6</sup>, is determined by the conditions of production in agriculture. Sraffa marshalled considerable evidence for this view, expressed in Ricardo's (VI, 104) statement that: "...it is the profits of the farmer which regulate the profits of all other trades". Malthus seems to be refuting a 'corn-model' argument when he suggests that: "In no case of production, is the produce exactly of the same nature as the capital advanced. Consequently we can never properly refer to a material rate of produce..." (*ibid*, 117).

Further corroboration is provided by Ricardo's statement that "the rate of profits ... must depend on the proportion of production to the consumption necessary to such production" (*ibid*, 108), and by his use of a numerical example in the *Essay* (IV, 17) which relies on the expression of both capital and output in terms of corn. Thus, while conceding that this argument is never stated by Ricardo in any of his extant letters and papers (Sraffa, 1951, xxxi), Sraffa felt justified in regarding the 'corn-model' as "a rational foundation" (*loc.cit*) for Ricardo's early theory of profits. Later, in the *Principles*, the determining role of agriculture is abandoned for a more general theory in which the wage-goods sector performs this function, and labour, rather than corn, appears as both input and output.

Hollander's critique of the 'corn-model' interpretation is based largely on his view of Ricardo's theory of wages<sup>7</sup>: not only does he argue that the wage basket includes manufactured goods (1977, 134), but maintains that, in general, Ricardo took it to be variable rather than fixed (*ibid*, 11). On these grounds, he rejects the determining role of the profit rate in agriculture within the early theory of profits (*ibid*, 132). In the absence of such a role, the 'corn-model' becomes redundant. In its place, Hollander (1973; 1979, 113ff) presents an alternative reconstruction of Ricardo's thought in this period, stressing "... a consistent emphasis upon the role of the money-wage rate in determining the *general rate of profit*" (*ibid*, 129, italics in original). In this reconstruction, Ricardo initially appears as an adherent of Adam Smith's theory that the rate of profit is determined by the "competition of capitals" (ie by the interaction of the supply of and demand for capital). It was on this basis that he rejected the concept of diminishing returns put forward by Trotter (*ibid*, 113). Subsequently, however, Ricardo abandoned the Smithian doctrine because of its incompatibility with the quantity theory of money<sup>8</sup>. He then incorporated the principle of diminishing returns into his own analysis, combining this with the constancy of price derived from the quantity theory (*ibid*, 118). As cultivation is extended, the cost of producing corn rises, causing its price to rise. Consequently,

money wages must rise<sup>9</sup>. Assuming a constant volume of money, this increase in costs cannot be passed on in the form of higher prices, and thus the general rate of profit falls. This, in essence, is Hollander's (1973, 268; 1979, 132) rationalisation for Ricardo's assertions about the regulatory role of the agricultural sector. Whether agricultural productivity will *determine*, rather than merely influence, the general profit rate then depends on the composition of the wage basket (*loc. cit.*; 1973, 264-5).

Hollander's thesis has been subjected to intense criticism by defenders of the 'corn-model' approach. The distinction between money wages and real wages drawn by Hollander has been questioned by Eatwell (1975, 182-3) and Roncaglia (1985, 184) on the grounds that, for Ricardo, 'money' refers to commodity-money (such as gold), the value of which depends on its cost of production. The logic of Hollander's reconstruction has also been challenged, most notably by Garegnani (1982; 1983a) and Bharadwaj (1983). For instance, they dispute the role of the quantity theory of money in Ricardo's rejection of Smith's belief in a general price rise following an increase in the price of corn. Hollander (1979, 111) refers to the statement by Ricardo that an increased money supply is unnecessary when taxation of bread causes higher prices, and derives the implication that, in all other cases, a rise in the money supply would be required for an increase in the price level. This derivation<sup>10</sup>, it is argued (Garegnani, 1982, 75-6; Bharadwaj, 1983, 16-17), is dubious, especially as Ricardo seems to leave other possibilities open (*loc. cit.*). Ricardo's rejection of a general price rise, according to Garegnani (1982, 76), was based not on the quantity theory, but rather on the difficulty of production of gold remaining unchanged. Bharadwaj (1983, 17, 26-7) makes the cogent point that Ricardo lacked a theory of value during the period under consideration, and thus could not have formulated an analysis in terms of prices and money wages, as Hollander alleges. The 'corn-model', on the other hand, determines the rate of profit independently of valuation.

In Sraffa's interpretation, profits are initially determined as a physical residual. While the 'corn-model' disappears after the *Essay* (Sraffa, 1951, xxxi), the separation between pricing and distribution is retained on different grounds. On the other hand, Hollander's interpretation introduces prices into the analysis *ab initio*, thereby imbuing it with a 'general equilibrium' character. Moreover, Ricardo insists in the *Principles* that the profit rate depends only on the conditions of production in the wage-goods industry: "It has been my endeavour to show throughout this work, that the rate of profits can never be increased but by a fall in wages, and that there can be no permanent fall of wages but in consequence of a fall in the necessaries on which wages are expended" (I, 132). This has suggested to many commentators that Ricardo generalised the results of the 'corn-model' to the economy as a whole. Hollander (1979, 255f) firmly rejects this view on the grounds that Ricardo never subscribed to the 'corn-model' theory in the first place.

There are two attempts to develop interpretations which espouse neither Sraffa's nor Hollander's view. Particularly interesting is the contribution of Faccarello (1982), who rejects the 'corn-model' interpretation on the basis of the textual evidence that wages do not consist entirely of corn, and suggests viewing the 1813-14 correspondence within the context of the clash between the natural price and supply and demand theories of Ricardo and Malthus respectively. He explains Malthus' remarks implying that Ricardo had used 'corn-model' reasoning as a misattribution

to Ricardo on the part of Malthus, due to the latter's inability to grasp the former's natural price approach (*ibid*, 134-5). Regardless of the validity of his interpretation, Faccarello's emphasis on the historical context of the debate is noteworthy.

Another original contribution has been made by Peach (1984; 1986), who argues that Ricardo continued to hold to Smith's proposition regarding a general rise in prices following a rise in the price of corn throughout the 1813-14 correspondence. He denies that Ricardo's notion of "regulation" (of the profit rate by agricultural profits) is equivalent to "unique determination" (1984, 735) and hence rejects the 'corn-model' interpretation as "... a figment of Sraffa's imagination" (*ibid*, 750). Peach's interpretation has been criticised (Hollander, 1986; Prendergast, 1986) on the grounds of a lack of textual support. In particular, Hollander (1986, 1093) points out that less-than-proportional price rises are assumed by Ricardo in the 1814 correspondence. This is inconsistent with the Smithian view, which required that increases in the price of corn be passed on in full: otherwise, the price of corn cannot determine the general price level, as Smith believed. Prendergast (1986) claims that Peach's interpretation cannot explain the fall in manufacturing profits, which is clearly one of Ricardo's major conclusions. In addition to these weaknesses, Peach's interpretation abandons the search for logical consistency in Ricardo's thought and thereby violates the principle of charity in textual interpretation.

Although many commentators have abandoned the view that Ricardo ever adhered to a 'corn-model' theory of profits, studies (Langer, 1982; De Vivo, 1985) show that such a concept was in widespread use among his contemporaries. Indeed, Skourtos (1991, 226) concludes that "...the idea of determining the rate of profit in agriculture on the ground of the assumed homogeneity of input and output was deeply rooted in the classical tradition." In view of this, it may be argued that the 'corn-model' remains an helpful conceptual tool in understanding Ricardo, especially as even Hollander (1975, 201) does not question the model's usefulness.

Bharadwaj's (1983) objection to Hollander's reconstruction was that Ricardo formulated his theory of profits before developing a theory of prices which would have enabled him to reason in terms of money variables. That Ricardo's thought followed such a sequence is supported by his preoccupation with the determination of the profit rate in the 1813-14 correspondence and the 1815 *Essay*, and from his statement (in a letter written at the end of 1815) that "I know I shall be soon stopped by the word price" (VI, 348). It is argued then that the fundamental problem addressed by Ricardo was the determination of the profit rate, rather than the relative price structure (as Young (1991, 167) asserts). Price determination became a major concern for Ricardo because of the need for valuation *in order* to determine the profit rate in a multi-commodity economy. To many commentators, this reveals a temporal priority of distribution over pricing, and the analytical separation of the two in Ricardo's economics.

## **Ricardo's Theory of Wages**

In our discussion of the debate over the 'corn-model' interpretation, the composition of the wage basket and the variability of the wage were major points of contention. In this section, we shall examine the issue of whether Ricardo held a subsistence

theory of wages, or one in which the demand for and supply of labour play a major role. The relevance of this question for our wider concerns is obvious; a wage rate fixed at the subsistence level, combined with the determination of profit as a residual, leaves no scope for any influence of the demand for final products on income distribution. On the other hand, if the wage is flexible, then it (together with the level of profits) will be determined simultaneously with the prices of final products, as in neoclassical economics.

Ricardo defines the natural wage rate as that "... which is necessary to enable the labourers, one with another, to subsist and perpetuate their race, without either increase or diminution" (I, 93). He proceeds to clarify this by explaining that the natural wage is not a biological subsistence level, but is historically and socially determined (*ibid.*, 96-7). Although Ricardo conceded that the market wage (determined by supply and demand) could diverge from this "natural" level, he stressed the tendency of the former to converge towards the latter (*ibid.*, 91-2; 94). This has led most commentators to espouse what Peach (1988, 110) terms the "traditional" account of Ricardo's theory, in which the wage rate adjusts very rapidly to the natural level (via the Malthusian population mechanism) and hence can be regarded as being fixed at this level<sup>11</sup>. A rigorous formulation of this view is provided by Pasinetti<sup>12</sup> (1974), who claims that "... he [Ricardo] always speaks of a process which will operate 'ultimately' but the emphasis on it is so strong that his analysis is always carried on as if the response were almost immediate" (*ibid.*, 5, italics in original). This subsistence-wage interpretation of Ricardo has also been endorsed by a wide range of other commentators, including Stigler (1965a; 1981; 1990), Blaug (1985a, 117) and O'Brien (1981).

The preceding account of Ricardo's theory of wages can be contrasted with that embodied in the 'New View' of Ricardo. This term refers to a number of interpretations (eg Hicks and Hollander, 1977; Casarosa, 1978; 1982; Hollander, 1984; 1990a) which seek to develop models of Ricardo's theory of growth incorporating wage flexibility. In such formulations, the importance of the market wage is stressed, and its adjustment to the natural level takes place slowly, being completed only when the economy reaches its long-run stationary-state equilibrium. In essence, the real wage falls during the process of economic growth. The 'New View' was anticipated by Levy (1976), who suggested that the natural wage is endogenously determined. It includes two types of models (Rosselli, 1985, 250-1) - one (eg Casarosa, 1978) involving a dynamic equilibrium wage which equates the supply of and demand for labour, and the Hicks-Hollander (1977) version, which concentrates on the market wage rate to the virtual exclusion (prior to the stationary state) of the natural wage.

The flexible-wage interpretation has been defended (e.g. by Casarosa, 1982, 22-7) with reference to Ricardo's statement that "Notwithstanding the tendency of wages to conform to their natural rate, their market rate may, in an improving society, for an indefinite period, be constantly above" (I, 94-5). Hollander presents further evidence suggesting (1979, 128) that, in his 1814 correspondence with Malthus, Ricardo conceded the possibility of a declining average corn wage. He (1983b, 315) also points to Ricardo's (I, 101) reference to a falling real wage over the course of "... the natural advance of society" (*loc. cit.*), and concludes (1979, 309, italics in original) that "... it was precisely the *variation of real wages* that is the focus of attention" in Ricardo's analysis of growth. In response to the emergence of the 'New View',



Rosselli (1985) has attempted to identify the origins of Ricardo's natural-wage concept, carefully specifying the properties it requires in order to play the role that he envisaged (*ibid.*, 244). In her view (*loc. cit.*), Ricardo's theory requires an exogenous natural wage that is constant over time. She argues (*ibid.*, 250) that dynamic models based on the 'New View' lack this *desideratum*, and concludes that, hence, they are inconsistent with Ricardo's premises (*ibid.*, 252).

Caravale (1985) also emphasises the central importance of the natural wage in Ricardo's thought (*ibid.*, 133-4), but distinguishes between two different versions of the concept to be found in Ricardo's writings (*ibid.*, 135-7) - that found in the *Principles* and that in the *Essay* (Ricardo, IV, 12), which defined the natural wage as that real wage which equates the rates of growth of population and capital. He claims that the latter version is compatible with Ricardo's analysis of growth, while the former is not (1985, 141). Thus, using the dynamic definition implies that Ricardo's "natural equilibrium" analysis can be applied generally, rather than being restricted to the stationary state. Caravale (*ibid.*, 178) differentiates his approach sharply from the 'New View', which he criticises for its neglect of the natural wage. A similar criticism is made by Pasinetti (1982, 241) in defending his original (1974) formulation.

A variety of other objections have also been made to the 'New View'. Stigler (1981) defends the subsistence-wage interpretation on the basis that it is required for the Fundamental Theorem on distribution, and for Ricardo's proposition that only net revenue can be taxed or saved, to hold strictly. By an extension of his (1965b) principle of textual exegesis, he also appeals to the interpretation of Ricardo's contemporaries, who understood Ricardian theory as one in which wages were fixed (*ibid.*, 768). In reply, Hollander (1983b, 316) reiterates what he regards as a fundamental feature of Ricardo's method - his tendency to make simplifying assumptions for analytical convenience. In Hollander's view, this procedure is responsible for the apparent inconsistency between the assumption of fixed wages and the more general models which involve flexible wages. He also claims that the Fundamental Theorem and the taxation theorems were intended to apply in the general case, and thus do not require the fixed-wage assumption (*loc. cit.*; 1979, 254-5, 386).

In his attempt to evaluate the debate between the supporters and opponents of the 'New View', Peach (1988, 111f) decides firmly in favour of the latter. While conceding that many passages in Ricardo appear to lend themselves to a 'New View' interpretation (*ibid.*, 112), he notes that, equally, many other passages support the traditional view (by, for instance, invoking the Malthusian population mechanism). Thus, in deciding between them, he finds it necessary to consider the compatibility of each view with Ricardo's general conclusions, and suggests that

... if the natural wage is not a potent center of gravity at all times - Ricardo's position according to the new view - his general thesis, that permanent movements in profitability are given *exclusively* by changed conditions of producing wage-goods, loses the significance it was evidently thought to possess ... This is a compelling reason for being chary of the new view ... (*ibid.*, 113, italics in original).

This verdict has given rise to a continuing debate, with Hollander (1990a; 1990b) vigorously defending his position. He claims that Peach's judgement involves a confusion between the secular trend of falling real wages and fluctuations about that trend (*ibid.*, 733). The trend is caused by diminishing returns, which also causes the

secular decline in the profit rate, and is logically distinct from the fluctuations, which may temporarily raise the profit rate (*ibid.*, 737). Thus, Ricardo often suppresses the latter for analytical convenience, without thereby subscribing to a fixed-wage hypothesis (*ibid.*, 733). Drawing on this distinction, Hollander asserts that there is no incompatibility between Ricardo's result regarding permanent changes in profitability and the 'New View' - diminishing returns in agriculture act both on the wage level and the profit rate and constitute the only cause of changes in the latter when we abstract from wage fluctuations. Peach (1990), in response, develops a distinction between 'discrete' and 'continuous' analysis (*ibid.*, 752), where the former method involves a given real wage, in relation to which permanent changes in profitability are defined. Peach maintains that 'discrete' reasoning predominates in Ricardo's early writings, and continues to be significant in the *Principles*. Thus, Hollander's 'continuous' model, it is argued, fails to explain much of Ricardo's thought pertaining to the natural wage.

## The Role of Demand and Allocation Mechanisms in Ricardo's Theory

In this section, we shall examine the role of demand and what Hollander (1979, 270) terms "allocation mechanisms" in Ricardo's theory of value and distribution. The attempt to demonstrate the existence of a significant role for demand in the determination of natural prices and distributive shares is crucial to Hollander's general thesis of the interdependence of pricing and distribution in Ricardo. We shall also examine Ricardo's assumptions about factor proportions in different industries, and his explicit comments on the relationship between pricing and distribution.

The 'traditional' interpretation of the role of demand in Ricardo's theory emphasises the notion of the rapid adjustment of market prices (determined by supply and demand) to natural prices (determined only by the cost of production), which we encountered above. A representative statement of this view is Pasinetti's (1974, 12) claim that Ricardo "... does not find it useful to enter into complicated details ..." about this adjustment process because he "... did not possess a demand theory". Hollander (1979, 270), however, regards such a view as a "grave misunderstanding", and stresses the respects in which Ricardo allegedly anticipated later neoclassical demand theory<sup>13</sup>. He claims (*loc. cit.*) that his interpretation of Ricardo's theory "... demonstrates the interdependence between distribution and pricing, above all the fallacy of the idea that the profit rate is determined prior to the pricing process...". This demonstration forms the core of his general thesis regarding Ricardo.

Hollander (*ibid.*, 271) regards the principle of profit rate equalisation as the basis of Ricardo's theory of resource allocation. This principle is used to distinguish between two types of disturbance - one restricted to a single industry (causing a change in supply to restore the rate of profit to the general level) and one affecting all industries (which leaves relative prices unchanged, but leads to a new general profit rate). Moreover, Hollander (*ibid.*, 273) maintains that the operation of this mechanism relies on a supply and demand theory, going so far as to claim that "Ricardo's treatment of demand turns out to be particularly sophisticated". This

treatment included, in Hollander's view, an appreciation of the concepts of price elasticity of demand (*ibid*, 274) and income elasticity (*ibid*, 276), most notably in the assumption of a low (or zero) income elasticity for corn.

Detracting from this "sophistication", however, are Hollander's concessions that Ricardo did not have any conception of a "substitution effect" (*loc. cit.*) or of marginal utility (*ibid*, 277-8). Nevertheless, he seeks to reconcile Chapter XXX of the *Principles* with a supply and demand framework, arguing that Ricardo, while "formally" (*ibid*, 281; italics in original) objecting to such a theory, actually utilised it in the determination of 'natural' as well as market prices. In particular, Hollander emphasises the role of supply variations in the adjustment of short-run market prices to their long-run ('natural') levels. Thus, he rejects (*ibid*, 280) the view, espoused, for instance, by Schumpeter (1954), that Ricardo drew an analytical distinction between the determination of market and natural prices. Hollander (*ibid*, 285f) illustrates his interpretation of Ricardo's theory of resource allocation by examining the effects of various supply and demand disturbances. After a demand shock, resources are re-allocated through variations in the prices and wage and profit levels in the affected industries. The general profit and wage rates are unchanged. This procedure, which Hollander (*ibid*, 288) concedes "... amounts to the divorce of price formation from the determination of the factor returns", relies in his view on the implicit assumption of an uniform capital-labour ratio across all industries<sup>14</sup>. The question of whether pricing and distribution are independent in Ricardo is thus regarded as depending on the generality of this assumption in his theory. Hollander (*loc. cit.*) argues that the assumption is "...merely a simplifying device", and utilises it again in analysing disturbances which release resources. In this case, capital and labour are released in proportion, and the operation of Say's Law ensures their automatic reabsorption<sup>15</sup>. As before, the general rate of profit is unaffected.

The invariance of the profit rate to a wide variety of disturbances stems, as we noted above, from the assumption of a uniform capital-labour ratio. Hollander (*ibid*, 299-300) proceeds to relax this assumption, on the basis that it did not represent a matter of principle for Ricardo, in order to consider the effects of a change in the pattern of demand ("tastes") under conditions of varying ratios of capital to labour in different industries. He demonstrates that, in these circumstances, the wage and profit rates would change, their new values being determined simultaneously with the new structure of relative prices. This constitutes the basis for his argument that pricing and distribution are interdependent in Ricardo's theory.

Closely related to his demonstration is his rejection of the idea that Ricardo regarded the profit rate in agriculture as the unique determinant of the general rate of profit. He argues that Ricardo implies on several occasions that changes in the conditions of production in agriculture leave the profit rate unchanged (*ibid*, 301). This procedure, however, involves a logical fallacy insofar as Ricardo (e.g. I, 132-3) can be interpreted as claiming that changes in the conditions of production in the wage-goods industry are a necessary, but not sufficient, condition for changes in the rate of profit.

To conclude his account, Hollander (1979, 302f) generalises the 'Fundamental Theorem'. Assuming uniform factor proportions, a change in the wage rate leads to an inverse movement in the profit rate, with relative prices unaltered. In the general case of different factor proportions, such a change leads to a new structure of relative

prices as well as a new equilibrium profit rate. These emerge simultaneously through the reallocation of resources which occurs as firms respond to the profit rate differentials caused by the impact of the wage change on industries with different degrees of labour-intensity (*ibid.*, 302-4). This process is crucial to Hollander's portrayal of the Ricardian theory of value and distribution as a 'general equilibrium' system.

Hollander's interpretation is based on a series of extensions to Ricardo's analysis, rather than on that analysis alone, and consequently involves a substantial element of speculation (Peach, 1988, 125)<sup>16</sup>. As Porta (1985, 226) suggests, the compatibility of an analytical extension with the Ricardian system does not necessarily imply that it forms a part of that system. In this sense, Hollander's interpretation may be criticised as being ahistorical. This is compounded by his extensive resort to what Groenewegen (1986) terms "Hollander's Vice": the use of modern terminology in the discussion of classical concepts, thereby suggesting a greater continuity over time than in fact exists. Moreover, many of the concessions he makes tend to undermine the thrust of his general thesis. For example, his concession regarding the lack of a concept of marginal utility in Ricardo appears to contradict his argument about the determination of natural prices; in the absence of such a concept, there is no analytically valid way of determining exchange-values (prices) with reference to use-values (utilities)<sup>17</sup>. Ricardo clearly appreciated this, as his comment on Say's theory of value in a letter to Malthus indicates: "In Say's works, generally, there is a great mixture of profound thinking, and of egregious blundering. What can induce him to persevere in representing utility and value as the same thing?" (Ricardo, VIII, 302).

Thus, Ricardo's analysis of value is based on the cost of production (at least in the case of the long-run natural prices of freely reproducible commodities). This necessarily involves a much less significant role for demand than in neoclassical theory. As Ricardo explains, "I do not dispute either the influence of demand on the price of corn and on the price of all other things, but supply follows close at its heels, and soon takes the power of regulating price in his own hands, and in regulating it he is determined by cost of production" (*loc. cit.*). This line of argument is most forcefully expressed by Ricardo in Chapter XXX of the *Principles*, wherein he concludes that "... the price of commodities, which are subject to competition, and whose quantity may be increased in any moderate degree, will ultimately depend, not on the state of demand and supply, but on the increased or diminished cost of their production" (*ibid.*, I, 385). Hollander (1979, 282-3) concedes that this chapter represents a critique of supply and demand theories. Nevertheless, he maintains that the supply variations through which the adjustment of prices to their natural levels occurs constitute a process based on supply and demand. This view is endorsed by Peach (1988, 124), who agrees "... that Ricardo *did* give a supply-and-demand rationalisation for the concept of natural price" (*loc. cit.*; italics in original).

Given such a rationalisation, we are faced with the problem of reconciling it with Ricardo's repeated insistence on the explanation of natural price by the cost of production, and with his rejection of the adequacy of supply-and-demand theories. One approach to such a reconciliation involves drawing a distinction between Ricardo's notion of demand and that of neoclassical economists. In his discussions of demand, Ricardo frequently appears to identify it with the quantity of a good

consumed. Such an identification is evident both in an 1814 letter to Malthus: "I sometimes suspect that we do not attach the same meaning to the word demand... The demand cannot I think be said to increase if the *quantity* consumed be diminished..." (Ricardo, IV, 129; italics added), and in the *Principles*: "The demand for a commodity cannot be said to increase, if no additional *quantity* of it be purchased or consumed..." (*ibid*, I, 383; italics added). This tends to support Garegnani's (1983b) argument that the classical economists, including Ricardo, conceived of demand in a fundamentally different way from neoclassical economists. In particular, they regarded "demand" as a single point in price-output space, rather than as a schedule relating quantity demanded to a range of possible price levels (*ibid*, 312). Such a concept can be used to explain the adjustment of market prices towards their natural level in the manner outlined below.

If we assume, with Ricardo<sup>18</sup>, that demand temporally precedes supply, then, if the quantity supplied happens not to coincide with the (pre-determined) level of demand, the market price will diverge from the natural level, inducing supply variations which tend to move the former towards the latter. However, Ricardo regarded any such explanation of the level of the natural price itself (as distinct from the process of adjustment towards it) as inadequate (Meek, 1977, 158-9) and even vacuous, as his comments to Malthus clearly indicate: "You say demand and supply regulates value - *this, I think, is saying nothing...* it is supply which regulates value - and supply is itself controlled by comparative cost of production" (Ricardo, VIII, 279, italics added).

It can be argued that, while demand played a role in Ricardo's theory, Ricardo himself did not regard that role as being an *explanatory* one with regard to natural prices. This view was based on his adherence to a concept of demand differing significantly from that developed later by neoclassical economists; one which did not enable him to derive long-run prices from the intersection of independently specified demand and supply schedules. Moreover, he rejected an exclusive concentration on market prices in favour of an explanation of long-run price levels in terms of costs of production in order to obtain the 'strong' results required for his analysis (Meek, 1977, 159). In this sense, there exists an analytical dichotomy between his analysis of natural and market prices, even though, as Hollander claims, he invoked the operation of supply and demand mechanisms to explain the process of adjustment to the natural level. This is because the attribution to Ricardo of a "classical" conception of demand along the lines suggested by Garegnani (1983b) resolves the apparent contradiction between Ricardo's implicit use of supply-and-demand mechanisms (pointed out by Hollander (1979)) and his simultaneous rejection of the adequacy of such a framework. Hollander's interpretation (and his conclusion that demand plays a central role in Ricardo's analysis) is seen to rest on the conflation of Ricardo's notion of demand with that developed subsequently by neoclassical economists.

This point has important consequences for the central issue we are examining: the relationship between distribution and pricing. Garegnani (1983b) argues that, within the neoclassical framework, demand functions affect the determination of prices through their influence on distribution. Thus, the absence of demand functions in Ricardo's analysis casts further doubt on the 'New View'<sup>19</sup> of his theory of distribution: to the extent that the analytical tools embodied in Ricardo's conception

of demand are inappropriate for the determination of the natural prices of commodities, they are equally inappropriate for the determination of the natural price of labour. Clearly, this conclusion can be seen to undermine Hollander's (1979) basic thesis regarding the interdependence of pricing and distribution.

The final step in Hollander's attempt to demonstrate this interdependence is his extension of Ricardo's analysis, showing that, in general, a change in the pattern of tastes leads to a change in the wage and profit levels as well as relative prices (*ibid.*, 299-300). The legitimacy of such an 'extension' as an exegetical tool has been questioned by many of Hollander's critics (O'Brien, 1981; Peach, 1988, 125). In addition, many commentators (notably Bharadwaj, 1983) have argued that Hollander's (1979, 6) attribution of an assumption of a uniform capital-labour ratio as a 'special case' to Ricardo suffers from a complete lack of textual support. Nowhere does Ricardo state this assumption (or an analytically equivalent one)<sup>20</sup>. In view of this, it appears reasonable to suppose that, despite the analytical problems which arose due to the possibility of different capital-labour ratios, Ricardo believed in the generality of his results, hoping to resolve those difficulties by means of the 'invariable' standard. Although he never succeeded in finding such a solution, it would be misleading to regard the separation of pricing and distribution in Ricardo as being restricted to a special case, when he himself did not do so. In particular, Ricardo's assumption of unchanged wage and profit rates following a change in the pattern of demand must have been intended in a more general context than Hollander (1979, 300) allows. For example, although this assumption is prominent in the chapter 'On Foreign Trade' (in accordance with Hollander's (*loc. cit.*) suggestion), it is combined with repeated references to machinery (Ricardo, I, 131-2), without any restriction on capital structure. In short, then, Hollander's crucial extension, quite apart from being an extrapolation, is based analytically on the relaxation of a restriction which Ricardo himself never seems to have imposed in the first place. Consequently, it cannot be regarded as decisive in determining Ricardo's own views on the question of the relationship between pricing and distribution.

We have seen above that Ricardo encountered analytical difficulties arising from divergences in the capital-labour ratio between industries which forced him to search for an 'invariable standard' of value in order to determine unambiguously the effect of a change in wages on the rate of profit in the context of a multi-commodity economy (Sraffa, 1951, xl f; Peach, 1988, 117). However, notwithstanding these difficulties, he claims, in a letter to McCulloch, that his theory of distribution remains valid even in the absence of such a standard because "... the great questions of Rent, Wages and Profits must be explained by the proportions in which the whole produce is divided between landlords, capitalists, and labourers, and ... are not essentially connected with the doctrine of value" (Ricardo, VIII, 194; italics added). This appears to be an explicit formulation by Ricardo of the separation of pricing and distribution<sup>21</sup>. However, Hollander (1979, 252) argues that this actually constituted an attempt at "... escaping from the problems created by the 'interdependence' which he only too well appreciated characterises input and output markets" (*loc. cit.*; italics in original). He argues that Ricardo extrapolated from a one-commodity world to a multi-commodity one through an 'act of faith', providing no justification for his assertions regarding the effects of wage rises on the rate of profit.

While this last point is indisputable, the general tenor of Hollander's interpretation ignores Ricardo's own confidence in the general validity of his analysis. In particular, as argued above, Ricardo implicitly divorced pricing and distribution by assuming unchanged general wage and profit rates in the face of a changed pattern of demand, without imposing any restrictions on the capital structure of the economy. On this interpretation, he would not have felt any need to "escape" from the problems of interdependence. Moreover, he appears to have been convinced that his argument in the one-product case could be generalised to a world of many products, despite his failure to demonstrate this formally<sup>23</sup>. Such a failure, however, does not permit us to infer that his true position involved the interdependence of pricing and distribution; the opposite inference could be justified.

### The Wider Implications of the Debate

Some commentators<sup>25</sup> have perceived a Ricardian "revolution" in the history of economic thought, and Hutchison (1978, 26) emphasises Ricardo's role in imparting a nomothetic character to economics. Davis (1989, 459) traces the origins of this feature of Ricardo's thought to a "philosophical naturalism", which holds that economic laws are akin to the laws of nature. What is most salient for our purpose is the precise manner in which Ricardo sought to establish such laws. It is evident from the style of reasoning he adopts throughout his *oeuvre* that his method is characterised by an emphasis on long-run equilibrium (Hutchison, 1978, 26f; Davis, 1989, 459-60; Vickers, 1991, 14-15)<sup>24</sup>. This provides the foundation for the importance of such concepts as the natural wage and the natural price in his analysis. Moreover, he explicitly eschews short-run analysis when he states that "Having fully acknowledged the temporary effects which ... may be produced ... by accidental causes ... we will leave them entirely out of our consideration ..." (Ricardo, I, 91-2), and, in a letter to Malthus, "... I put these immediate and temporary effects quite aside, and fix my whole attention on the permanent state of things ..." (VII, 120).

Interpretations such as Hollander's ignore this feature of Ricardo's thought and concentrate on the short-run behaviour of the models attributed to him. Furthermore, Hollander repeatedly (e.g. 1979, 11; 1982a) makes the contention that Ricardo held a general model but used 'strong cases' for analytical convenience. However, it appears more likely that these 'strong cases' actually represent his theoretical models (formulated in such a way as to yield the long-run laws he desired), with the more general 'models' resulting from the relaxation of these assumptions in an *ad hoc* way in dealing with the real world. Such a process may explain the contradictions in Ricardo's writings, especially the co-existence of several 'models' of the same phenomenon, noted by Blaug (1985b; 1988, 134).

Hollander (1979, 271) claims that "[t]he principle of profit rate equalisation provides the key to Ricardo's analysis of resource allocation". Ironically, however, it is precisely this feature of Ricardo's economics which has been highlighted as a point of contrast with neoclassical economics, on the basis of its incompatibility with Walras' general equilibrium theory (Robinson, 1972, 202). Hollander (1979, 683; 1982b, 591) replies that Walras (1954) did in fact incorporate a uniform rate of profit into his theory. However, this appears to have been a peripheral aspect of his general

equilibrium system. Moreover, any attempt to do so would have required him to resort to a notion of capital as being either homogeneous or infinitely malleable, thus contradicting his own assumptions (Blaug, 1985a, 580-3) and encountering the logical difficulties which have come to light in the course of the 'Cambridge controversies' in capital theory (Harcourt, 1972). Hollander fails to adequately address these problems, which undermine his attempt to establish a kinship between Ricardo and Walras.

Arguments regarding the relationship between Ricardian and neoclassical economics play a central role in these controversies. Consequently, they have obvious implications for the continuing debates surrounding the issues of the significance of the 'marginal revolution' of the 1870's and the nature of the transition from classical to neoclassical economics. The pioneers of neoclassical thought, most notably Jevons (1970) and Walras (1954), sharply contrasted their own theories with those of their classical predecessors, although Marshall (1959) constituted an important exception. Since then, the notion of a discontinuity or 'paradigm shift' around 1870 has become standard among historians of economic thought (Schumpeter, 1954; Bharadwaj, 1979; Hutchison, 1978, Ch. 3; Blaug, 1985a, Ch. 8; Dasgupta, 1985). Hollander's interpretation of Ricardo constitutes part of a more general thesis, involving the rehabilitation of the Marshallian view stressing the continuity of economic thought. Thus, for Hollander (1982b, 586-7), the rise of neo-classicism represents a change of emphasis, rather than a 'revolution'. This interpretation, of course, follows directly from his (1979) neoclassical reading of Ricardo.

One of the most conspicuous features of the debates surrounding Ricardo is the extent of the disagreement that exists between the competing schools of Ricardian exegesis. To resolve these, commentators require a principle of textual exegesis to which they can appeal. Stigler (1965b) proposes a principle of scientific exegesis which identifies an author's main conclusions and chooses that interpretation from which the maximum number of these conclusions can be derived (a procedure analogous to maximum likelihood estimation in econometrics). A recent modification (Stigler, 1990) involves establishing these conclusions on the basis of the views of the author's own contemporaries. Hollander (1990a, 730-2) has challenged this principle, arguing instead that 'scientific' and 'personal' exegesis must play complementary roles. This lack of agreement on the criteria for resolving textual inconsistencies clearly contributes to the differences between Ricardo's interpreters.

Another possible reason for these differences lies in the absolutist approach adopted by many commentators, most notably by Hollander<sup>25</sup>. This involves the attempt to read Ricardo in the light of neoclassical orthodoxy, and to assimilate his thought to this tradition. Peach (1984, 733) has suggested that such attempts to establish 'lineages' are "nugatory". In particular, they may place a misleading emphasis on the continuity of economic thought; in the words of Tribe (1981, 463):

[O]ne of the most general reasons for the study of the history of economics is to establish the unevenness and incommensurability of diverse theoretical systems ... Hollander's approach on the other hand results in the steady obliteration of difference, and promotes the view that neo-classicism is a truth to which all other theoretical systems merely tend.

The 'Sraffian' approach,<sup>26</sup> while it may involve an ahistorical element, allows some scope for diversity and pluralism. Nevertheless, this problem suggests a need



to transcend the terms of this debate in order to view Ricardo within an historical context. More generally, this debate can be seen to highlight the conflict between a relativist approach to the history of economic thought and an absolutist approach, which has become standard through such works as Schumpeter (1954) and Blaug (1985a).

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## Notes

1. All references to Ricardo are to Ricardo (1951-73).
2. An alternative formulation of this distinction (adopted by Walsh and Gram, 1980) treats both classical and neoclassical economics as systems of general equilibrium, but retains the idea of their separateness.
3. Some commentators (e.g. Hollander, 1979, 684f; Hicks, 1985; Tosato, 1985), however, question the extent of the kinship between Ricardian and Sraffian theory.
4. He refers (1954, 419) specifically to John Stuart Mill, but his characterisation of the 'English School' applies equally to Ricardo.
5. This interpretation also makes it clear that the separation of pricing and distribution does not depend on the special assumptions under which a labour theory of value holds.
6. It is sometimes suggested (e.g. O'Brien, 1961, 364) that demand enters into the determination of profit through its influence on the margin of cultivation. However, within the framework of a 'com-model', the labour force and the real wage are exogenous, and hence so is the demand for corn.
7. This is dealt with in more detail below.
8. For the general price level to increase following a rise in the price of corn, the volume of money would have to increase proportionately.
9. The real wage, in the long run, must remain constant through the operation of the Malthusian population mechanism (Hollander, 1973, 265).
10. Hollander's implication takes the general form:  
If A (i.e. taxation), then not B (ie increased money supply) implies  
If not A, then B.  
In general, of course, this is invalid.
11. Samuelson (1978) calls this the "polar" Ricardian case. It is equivalent to the assumption (made by Bhaduri and Harris, 1967) that labour supply is infinitely elastic at the natural wage.
12. Morishima's (1989, 51-2) criticism that Pasinetti's model requires labour mobility appears to be based on a misunderstanding, as it ignores the role of the Malthusian population mechanism.

13. Rankin (1980; 1984) independently develops a similar interpretation of Ricardo along supply-and-demand lines.
14. In Marxian terminology, this is equivalent to the assumption of an uniform organic composition of capital.
15. The chapter "On Machinery" in the third edition of the *Principles* constitutes a major exception, as it envisages the release of labour alone in the wake of technical change.
16. Hollander (1979, 299) concedes that "... Ricardo himself did not formally make ..." the crucial extension involving a change in the pattern of demand.
17. This is due to the "paradox of value", which Ricardo, following Smith, points out at the beginning of the *Principles*, concluding that "Utility ... is not the measure of exchangeable value .." (Ricardo, I, 12; italics added).
18. A point he made in correspondence with Trower (Ricardo, VIII, 273-4) and in the *Principles* (I, 385), where he states that "... a commodity is not supplied merely because it can be produced, but because there is a demand for it".
19. Discussed above.
20. This may involve, for instance, the absence of fixed capital combined with equal periods of production across all industries. Indeed, Hicks and Hollander (1977, 368) suggest that most of the analysis of the *Principles* was developed with circulating capital only. Even if this is correct, it does not affect our argument, and even supports it by implying that Ricardo saw no contradiction in combining analyses based on circulating capital with others (such as Chapters I and XXXI) which explicitly consider fixed capital within the same treatise.
21. There is a statement by Ricardo in the *Notes on Malthus* (Ricardo, II, 306) which seems to be another such assertion. However, Hollander (1979, 253-4) argues convincingly that this comment was actually made in a context relating not to the theory of value and distribution, but to the justification of Say's Law.
22. Sraffa (1960) may be regarded as having vindicated Ricardo's belief.
23. An example is Hicks (1976, 211). The term "revolution" is used in the Kuhnian (1970) sense.
24. This emphasis also helps to account for Ricardo's adherence to Say's law in the 'macroeconomic' aspects of his thought (Vickers, 1991, 131).
25. We are not suggesting, however, that Hollander's position necessarily entails an absolutist approach.
26. It should be emphasised that the critique of Hollander's interpretation of Ricardo has also been undertaken by many economists who are critical of the 'Sraffian' school, such as Blaug, O'Brien (1981; 1982) and Stigler (1981; 1990).

## Bibliography

- Baranzini, M. (ed.) (1982) *Advances in Economic Theory*, Oxford, Basil Blackwell.
- Barnes, B. and D. Bloor (1982) "Relativism, Rationality and the Sociology of Knowledge", in Hollis and Lukes (eds.); 21-47.
- Bhaduri, A. and D.J. Harris (1987) "The Complex Dynamics of the Simple Ricardian system", *Quarterly Journal of Economics*, 102; 893-901.
- Bharadwaj, K. (1978) "The Subversion of Classical Analysis: Alfred Marshall's Early Writings on Value", *Cambridge Journal of Economics*, 253-71.
- \_\_\_\_\_ (1983) "On a Controversy Over Ricardo's Theory of Profit", *Cambridge Journal of Economics*, 7; 11-36.
- \_\_\_\_\_ (1988) "Sraffa's Ricardo", *Cambridge Journal of Economics*, 12; 67-84.
- Blaug, M. (1980) *A Methodological Appraisal of Marxian Economics*, Amsterdam: North-Holland.
- \_\_\_\_\_ (1985a) *Economic Theory in Retrospect*, 4th edn., Cambridge: Cambridge University Press.
- \_\_\_\_\_ (1985b) "What Ricardo Said and What Ricardo Meant", in Caravale (ed.); 3-10.
- \_\_\_\_\_ (1988) "Commentary", in Thwaitt (ed.); 132-6.

- Caravale, G. (ed.) (1985) *The Legacy of Ricardo*, Oxford: Basil Blackwell.
- \_\_\_\_\_ (1985) "Diminishing Returns and Accumulation in Ricardo", in Caravale, G. (ed.); 127-88.
- Casarsosa, C. (1979) "A New Formulation of the Ricardian System", *Oxford Economic Papers*, 30; 38-63.
- \_\_\_\_\_ (1982) "The 'New View' of the Ricardian Theory of Distribution and Growth", in Baranzini (ed.); 227-39.
- Chakravarty, S. (1990) Review of Morishima (1989), *Journal of Economic Literature*; 1730-1.
- Dasgupta, A.K. (1985) *Epochs of Economic Theory*, Oxford: Basil Blackwell.
- Davis, J.B. (1989) "Distribution in Ricardo's Machinery Chapter", *History of Political Economy*, 21, 457-80.
- De Vivo, G. (1985) "Robert Torrens and Ricardo's 'Corn-Ratio' Theory of Profits", *Cambridge Journal of Economics*; 89-92.
- Dmitriev, V.K. (1974) *Economic Essays on Value, Competition and Utility*, ed. D. M Nuti, tr. D. Fry, Cambridge: Cambridge University Press. [orig. 1896].
- Dobb, M.H. (1973) *Theories of Value and Distribution Since Adam Smith*, Cambridge: Cambridge University Press.
- Eatwell, J. (1975) "The Interpretation of Ricardo's *Essay on Profits*" *Economica*, 42; 182-7.
- Faccarello, G. (1982) "Sraffa Versus Ricardo: The Historical Irrelevance of the 'Corn-Profit' Model", *Economy and Society*, 11; 122-37.
- Foucault, M. (1970) *The Order of Things: An Archaeology of the Human Sciences*, London: Tavistock.
- \_\_\_\_\_ (1972) *The Archaeology of Knowledge*, tr. A.M. Sheridan Smith, London: Tavistock.
- Garegnani, P. (1972) "Heterogeneous Capital, the Production Function and the Theory of Distribution", in Hunt and Schwartz (eds.); 245-91.
- \_\_\_\_\_ (1982) "On Hollander's Interpretation of Ricardo's Early Theory of Profits", *Cambridge Journal of Economics*, 6; 65-78.
- \_\_\_\_\_ (1983a) "Ricardo's Early Theory of Profits and its 'Rational Foundation': A reply to Professor Hollander", *Cambridge Journal of Economics*, 7; 175-8.
- \_\_\_\_\_ (1983b) "The Classical Theory of Wages and the Role of Demand Schedules in the Determination of Relative Prices", *American Economic Review Papers and Proceedings*, 73; 309-13.
- \_\_\_\_\_ (1984) "Value and Distribution in the Classical Economists and Marx", *Oxford Economic Papers*, 36; 291-326.
- Greenewagen, P. (1986) Review, *Economic Journal*, 96; 576-80.
- Harcourt, G.C. (1972) *Some Cambridge Controversies in the Theory of Capital*, Cambridge: Cambridge University Press.
- Heilbroner, R. (1977) "Modern Economics as a Chapter in the History of Economic Thought", *History of Political Economy*, 11; 192-8.
- Hicks, J. (1976) "Revolutions in Economics", in Latsis (ed.); 207-18.
- \_\_\_\_\_ (1985) "Sraffa and Ricardo: A Critical View", in Caravale (ed.); 305-19.
- Hicks, J and S. Hollander (1977) "Mr Ricardo and the Moderns", *Quarterly Journal of Economics*, 91; 351-69.
- Hollander, S. (1973) "Ricardo's Analysis of the Profit Rate", *Economica*, 40; 260-82.
- \_\_\_\_\_ (1975) "Ricardo and the Corn Profit Model: Reply to Eatwell", *Economica*, 42; 188-202.
- \_\_\_\_\_ (1977) "The Reception of Ricardian Economics", *Oxford Economic Papers*, 29; 221-57.
- \_\_\_\_\_ (1979) *The Economics of David Ricardo*, Toronto; Heineman.
- \_\_\_\_\_ (1982a) "The Economics of David Ricardo: A Response to Professor O'Brien", *Oxford Economic Papers*, 34; 224-246.
- \_\_\_\_\_ (1982b) "On the Substantive Identity of the Ricardian and Neo-Classical Conceptions of Economic Organisation: The French Connection in British Classicism", *Canadian Journal of Economics*, 15; 586-612.
- \_\_\_\_\_ (1983a) "Professor Garegnani's Defence of Sraffa on the Material Rate of Profit", *Cambridge Journal of Economics*, 7; 167-174.
- \_\_\_\_\_ (1983b) "On the Interpretation of Ricardian Economics: The Assumption Regarding Wages", *American Economic Review Papers and Proceedings*, 73; 314-8.

- \_\_\_\_\_ (1984) "The Wage Path in Classical Growth Models: Ricardo, Malthus and Mill", *Oxford Economic Papers*, 36; 200-12.
- \_\_\_\_\_ (1985) "Reply" to Roncaglia, in Wood (ed.); 191-200.
- \_\_\_\_\_ (1986) "On a 'New Interpretation' of Ricardo's Early Treatment of Profitability", *Economic Journal*, 96; 1091-7.
- \_\_\_\_\_ (1987) *Classical Economics*, Oxford: Basil Blackwell.
- \_\_\_\_\_ (1990a) "Ricardian Growth Theory: A Resolution of Some Problems in Textual Interpretation", *Oxford Economic Papers*, 42; 730-50.
- \_\_\_\_\_ (1990b) "A Reply to Professor Stiglitz and Dr Peach", *Oxford Economic Papers*, 42; 769-71.
- Hollis, M. and S. Lukes (eds.) (1982) *Rationality and Relativism*, Oxford: Basil Blackwell.
- Hunt, E.K. and J.G. Schwartz, (eds.) *A Critique of Economic Theory*, Harmondsworth: Penguin.
- Hutchison, T.W. (1978) *Revolutions and Progress in Economic Knowledge*, Cambridge: Cambridge University Press.
- Jevons, W.S. (1970) *The Theory of Political Economy*, ed. R.D. Collison Black, Harmondsworth: Penguin [orig. 1871].
- Kaldor, N. (1955-56) "Alternative Theories of Distribution", *Review of Economic Studies*, 23; 83-100.
- King, J.E. (1979) "Marx as an Historian of Economic Thought", *History of Political Economy*, 11; 382-94.
- Kuhn, T. (1970) *The Structure of Scientific Revolutions*, 2nd ed., Chicago: University of Chicago Press.
- Marx, K. (1965) "Theorien über den Mehrwert, in K Marx and F. Engels, *Werke*, Vol. 26, Part 1, Berlin: Dietz Verlag [orig. 1862-3].
- Meek, R.L. (1977) *Smith, Marx and After*, London: Chapman Hall.
- Mill, J.S. (1900) *Principles of Political Economy*, London: Longman's Green and Co. [orig. 1848].
- Morishima, M. (1989) *Ricardo's Economics: A General Equilibrium Theory of Distribution and Growth*, Cambridge: Cambridge University Press.
- O'Brien, D.P. (1981) "Ricardian Economics and the Economics of David Ricardo", *Oxford Economic Papers*, 33; 352-86.
- \_\_\_\_\_ (1982) "Ricardian Economics: A Rejoinder", *Oxford Economic Papers*, 34; 247-52.
- Parekh, B. (1982) *Marx's Theory of Ideology*, London: Croom Helm.
- Pasinetti, L.L. (1974) *Growth and Income Distribution: Essays in Economic Theory*, Cambridge: Cambridge University Press.
- \_\_\_\_\_ (1982) "A Comment on the 'New View' of Ricardian Theory", in Baranzini (ed.); 240-42.
- Peach, T. (1984) "David Ricardo's Early Treatment of Profitability: A New Interpretation", *Economic Journal*, 94; 733-51.
- \_\_\_\_\_ (1986) "Ricardo's Early Treatment of Profitability: Reply to Hollander and Prendergast", *Economic Journal*, 96; 1105-12.
- \_\_\_\_\_ (1988) "David Ricardo: A Review of Some Interpretive Issues" in Thwait (ed.); 103-31.
- \_\_\_\_\_ (1990) "Samuel Hollander's 'Ricardian Growth Theory': A Critique", *Oxford Economic Papers*, 42; 751-84.
- Porta, P.L. (1985) "The Debate on Ricardo: Old Results in New Frameworks", in Caravale (ed.); 217-38.
- Prendergast, R. (1986) "A Comment on David Ricardo's Early Treatment of Profitability: A New Interpretation", *Economic Journal*, 96; 1098-1104.
- Rankin, S. (1980) "Supply and Demand in Ricardian Price Theory: A Reinterpretation", *Oxford Economic Papers*, 32; 241-62.
- \_\_\_\_\_ (1984) "The Wage Basket in Ricardo's *Essay on Profits*", *Cambridge Journal of Economics*, 8; 83-6.

- Ricardo, D. (1951-73) *The Works and Correspondence of David Ricardo*, ed. P. Sraffa with the collaboration of M.H. Dobb, 11 vols., Cambridge: Cambridge University Press.
- Robinson, J. (1972) "Prelude to a Critique of Economic Theory", in Hunt and Schwartz (eds.); 197-204.
- Roncaglia, A. (1985) "Hollander's Ricardo", in Wood (ed.), Vol. IV; 174-90.
- Rosselli, A. (1985) "The Theory of the Natural Wage", in Caravale (ed.); 239-53.
- Samuelson, P.A. (1978) "The Canonical Classical Model of Political Economy", *Journal of Economic Literature*; 1415-34.
- Schumpeter, J.A. (1954) *History of Economic Analysis*, London: George Allen and Unwin.
- Skourtos, M. (1991) "Corn Models in the Classical Tradition: P. Sraffa Considered Historically", *Cambridge Journal of Economics*, 15; 215-28.
- Sraffa, P. (1951) Introduction to Ricardo (1951-73), vol. I; xlii-bxli.
- \_\_\_\_\_ (1960) *Production of Commodities by means of Commodities*, Cambridge: Cambridge University Press.
- Stigler, G. (1965a) *Essays on the History of Economics*, Chicago: University of Chicago Press.
- \_\_\_\_\_ (1965b) "Textual Exegesis as a Scientific Problem", *Economica*, 32; 447-50.
- \_\_\_\_\_ (1981) Review of Hollander (1979), *Journal of Economic Literature*; 100-02.
- \_\_\_\_\_ (1990) "Ricardo or Hollander?", *Oxford Economic Papers*, 42; 765-8.
- Thweatt, W. (ed.) (1988) *Classical Political Economy*, Amsterdam: Kluwer.
- Tosato, D. (1985) "A Reconsideration of Sraffa's Interpretation of Ricardo on Value and Distribution", in Caravale (ed.); 189-216.
- Tribe, K. (1981) "Ricardian Histories", *Economy and Society*, 10; 451-66.
- Vickers, D.W. (1991) *The Long Run and the Short*, Bateman Memorial Lecture, Department of Economics, University of Western Australia.
- Walras, L. (1954) *Elements of Pure Economics*, tr. W. Jaffe, London: Allen and Unwin [orig. 1874].
- Walsh, V. and H. Gram (1980) *Classical and Neoclassical Theories of General Equilibrium*, New York: Oxford University Press.
- Wood, J.C. (ed.) (1985) *David Ricardo: Critical Assessments*, 4 vols., London: Croom Helm.
- Young, J.T. (1991) Review of Hollander (1987), *History of Political Economy*, 23; 167-70.