Piero Sraffa – Doing 'History in Reverse'

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This article follows a suggestion made by Piero Sraffa in the late 1920s about the writing of his book that was finally published in 1960 – a suggestion he did *not* follow. The suggestion consisted in the writing of a history of political economy, starting with the ideas of the French Physiocrats, and its further development by Adam Smith and David Ricardo. This history was intended as an introduction to the 1960 book. The paper concludes with a brief discussion of the 'central propositions' of the 1960 book, seen as a rigorous theoretical statement of the political economy of these 'old' economists.

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In a note written in the late 1920s, Piero Sraffa outlined the 'Plan of the Book' that was finally published in 1960.[1] He wrote: ' ... the only way is to go through history in reverse; that is, how the theory being offered came to be reached; to explain what he was driving at. There is the danger of ending up like Marx, who started publishing his Capital and later was unable to complete the History of Doctrines [T*heories of Surplus Value*]. And what is worse he was unable to make himself understood without the historical explanation. My plan is: first, treat the history ... ; second, make myself understood, which requires me to proceed from the known to the unknown ...'[2]

When it came to actually writing the book, Sraffa did exactly the opposite to what he had planned nearly thirty years earlier. As Luigi Pasinetti put it, 'it sounds unbelievable that after reproaching Marx ...for not having presented, first, a historical explanation, thus being the case of not being understood, he should do exactly the same.' [3] Little wonder the book, when published, was found to be 'puzzling'. Joan Robinson wrote: 'A casual reader who picked up Piero Sraffa's *Production of Commodities by Means of Commodities* might be fascinated by the crystalline style in which it is written, but he would be puzzled to know why it is considered to be a contribution to theory of the first importance, or even to make out what question is being discussed.'[4]

However, in the preface to the book, Sraffa refers to the 'connection' of his work to the 'standpoint ... of the old classical economists from Adam Smith to Ricardo'. And more importantly, in an appendix to

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[1] *Production of commodities by Means of Commodities: Prelude to a Critique of Economic Theory,* Cambridge University Press, London, 1960.

[2] Quoted in Pier Luigi Porta, 'What remains of Sraffa's economics', DEM Working Papers Series, no. 242, University of Milan, 2013, p.9.

[3] Ibid. p.14.

[4] Joan Robinson, 'Piero Sraffa and the Rate of Exploitation'; *New Left Review*, 1965**-05-01,** (31), p.28.

the book (‘References to the Literature’) he tells the reader a little more about this connection. But he leaves the reader to do his homework himself, to do ‘history in reverse’. What follows is a rather modest attempt to do that.

The birth of modern economics can be traced back to the sixteenth century Europe, a period of early capitalist development.[5] The central issue in the economic literature of the time, referred to as Mercantilist, centred on the concept of wealth, wealth of the king and the state, its origin, and the practical measures by the state that would increase it. The origin of wealth was located in foreign trade, and the means of enhancing it in the achievement of a positive balance. The debate was focused on questions of policy rather than on theoretical issues. Mercantilists advocated strong government intervention in the form of protectionist measures to defend domestic trade and industry.

The credit for the first systematic attempt at the theoretical understanding of capitalism goes to the eighteenth century French school of thought known as Physiocracy (rule of nature).[6] The school had a leader, Francois Quesnay (1694-1774) and a definite doctrine. (In his ‘References to the Literature’, Sraffa mentions Quesnay’s *Tableau Economique* as presenting ‘the original picture of the system of production and consumption as a circular process’, and he contrasts it with the ‘view presented by the modern theory

[5] Karl Marx wrote: ‘World trade and world market date from the sixteenth century, and from then on the modern history of capital starts to unfold.’ *Capital: A Critique of Political Economy* I, Penguin, London, p.247.

[6] There were important suggestions made earlier. For instance, by Sir William Petty (1623-87) and Richard Cantillon (!680-1734).

[neoclassical economics] of a one-way avenue that leads from ''Factors of production'' to ''Consumption'' goods.')[7]

The Physiocrats rejected the Mercantilist notion that wealth is created in exchange. Instead (they maintained) wealth is created in production, seen as a process in time. It consists of the surplus of gross production over and above the workers' subsistence and other necessary inputs used up in production. They referred to it as *produit net.* (This is Adam Smith's wealth of the nation and Marx's surplus value.) However, the Physiocrats confined this notion to agricultural produce and considered its origin to lie in the fertility of the soil. It was seen as a gift of nature.[8]

In their model of production, society is divided into three classes. They are landowners, farmers, and manufacturers (including artisans and traders). Workers are not distinguished from farmers and manufacturers. Farmers are designated as the productive class, that is, producers of *produit net.* Manufacturers are a sterile, unproductive class. Though they produce useful goods, they simply alter the form of the materials they purchase from the farmers, adding no value to them.

Farmers, who have accumulated capital, lease land from the landowners, invest in buildings, implements, etc, (*avances primitives*), and in raw materials, advances of wages to workers and themselves (*avances annuelles*). At the end of the year the quantity

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[7] *Production of Commodities*, p.93. Marx referred to the Physiocrats as 'the true fathers of modern economics'. *Theories of Surplus Value*, one volume edition translated from German by G. A. Bonner and Emile Burns, Lawrence and Wishart, London, 1951, pp.44-45.

[8] Sraffa in his lecture notes (1928-31) wrote: 'This idea of the 'net produce... is the cornerstone of the Physiocratic system. But while their view that only agriculture produces a net surplus ... was soon discarded, the notion of the surplus product plays an important part in classical economics.' Quoted by Rodolfo Signorino, 'Piero Sraffa's Lectures on the Advanced Theory of Value 1928-31 and the Rediscovery of the Classical Approach.' *Review of Political Economy*, vol. 17, no. 3, 2005, p.373.

of output is greater than the inputs. (As both the output and inputs consist of the same product, its evaluation is not necessary.) This net product – the surplus - goes entirely to the landowners in the form of rent, farmers receiving only wages. Although profits do not appear explicitly, it is obvious this is a model of capitalist production. Farmers have accumulated capital which they advance to landowners as rent and used over the year as wages. Profits seem to be hidden in farmers' wages.[9]

Added to this picture of the production process is Quesnay's *Tableau Economique* [1758). The *Tableau* is designed to show how the annual social product is distributed between the three classes such that the production system reproduces itself, that is, its operations are repeated on the same scale the following year. The *Tableau* is not dealing with individual transactions, but only with the aggregates. And the circulation process embraces the movement of both products and money, in opposite directions.

The model shows that the capitalist economy has a logic of its own, that is, it works on its own accord without any need for state intervention. The production of wealth is an objective phenomenon that can be theoretically modelled

Whether the economy expands, remains stationary or declines depends of on the state of agriculture, the sector that produces *produit net*. The Physiocrats' policies were thus aimed at facilitating flow of capital into agriculture, particularly, into large-scale farming.

[9] According to one historian of economic thought, Quesnay, to protect farmers' profits against claims of rapacious landowners and an extravagant government has dressed them up as peasants, workers. I. I. Rubin, *A History of Economic Thought*. Ink Link Ltd., London, 1979, p.121.

In Adam Smith’s *An Inquiry into the Nature and Causes 0f the Wealth of Nations* (1776) separate discourses dealing with different aspects of the capitalist economy are brought together in a single treatise, and the subject matter of political economy is clearly laid out. With the publication of *The Wealth of Nations* one could speak of the school of classical political economy, and political economy as a science. Though Smith raises important theoretical issues, he is not always able to resolve them. But by raising them he prepares the ground for Ricardo and Marx.

The title of Smith’s book captures neatly the central problem classical political economy is dealing with. The leading theoretical ideas arise during this discourse. The discourse includes a great deal of historical material and what Marx referred to as the material aimed at the ‘unscientific’ observer and the ‘practical man’.[10] There are incidental remarks (e.g. ‘toil and trouble’ experienced by labour) that appeared to point in the direction of the supply and demand theory – remarks that were picked up by JB Say in France and Nassau Senior in England. [11]

The concept of national wealth is defined in the first paragraph of *The Wealth of Nations*: ‘The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes ...’ Distancing himself from the Physiocratic notion of wealth being only the product of agriculture, Smith emphasises the notion of general production, and wealth being the product of labour rather than a gift of nature.

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[10] *Theories of Surplus Value*, as cited, p.202.

[11] In his lecture notes, Sraffa refers to the ‘toil and trouble’ remark as ‘the Trojan Horse through which phenomena related to the psychological sphere of individual agents involved in production take their first steps into mainstream economic analysis’. Signorino, as cited, p.373.

The progress of the economy depends on the productivity of labour, which in turn is determined by the division of labour, the distribution of general labour between the productive and the unproductive, and the size of the market. Productive labour is defined as that which is employed by capital and produces a surplus, and unproductive labour as that which is employed from 'revenue' and aimed at consumption. A tailor employed by a capitalist in his business establishment is productive, while the same tailor when employed in domestic service is unproductive. Smith devotes a whole chapter (Book II, ch.3) to a discussion of productive and unproductive labour. The chapter is entitled 'On Accumulation of Capital, or of productive and unproductive labour'.[12]

As noted, the discussion of the causes of the increase in the wealth of the nation leads Smith to raise a number of important theoretical issues.

Although division of labour at the level of the plant is an essential element in the mechanism of economic growth, to get a complete picture of the process of development, and of the structure of capitalist society, we have to turn to *social* division of labour.

Smith introduces the concept of social division of labour with the example of an ordinary product, a woollen coat. He writes: 'Observe the accommodation of the most common artificer or day-labourer in a civilized and thriving country and you perceive that the number of people whose industry a part, though but a small part, has been employed in procuring him this accommodation, exceeds all

[12] In his discussion of the subject at certain points, Smith restricts productive labour to those who produce a physical product: For instance: 'The labour of some of the most respectable orders in the society is, like that of menial servants, unproductive of any value, and does not fix or realise itself in any *permanent subject or vendible commodity* ...' (emphasis added.) *An Inquiry into the Nature and Causes of the Wealth of Nations,* Oxford University Press, Oxford, 1993, p.192.

computation.' He starts with the shepherd, the sorter and the carder, etc. Then there are the makers of tools the shepherd used, and further back, the ships that transported them. As if to emphasise the point he takes the example of the shepherd's shears. 'The miner, the builder of the furnace for smelting the ore, the feller of the timber, the burner of the charcoal to be made use of the smelting-house ....'He goes on. It is obvious that the entire economy is indirectly involved in the production of the woollen coat. And he extends this example to other items of subsistence of an ordinary labourer. The woollen coat is the product of 'the joint labour of a great multitude of workmen.'[13] The individual producer, of course, makes his own decisions with respect to what to produce, etc., but to function he depends on other producers; he can function only as part of a network. Under capitalism individual labour has become social labour.

We note that that there is no distinction here between products and inputs, between factors of production and the 'final' product. And if the shepherd wears a woollen coat, it indirectly enters into its own production. Clearly the capitalist economy is characterised by 'production of commodities by means of commodities'.

(Marx observes that social division of labour is an essential feature of capitalist production. He writes in *Wages, Price and Profit*: 'A man who produces an article for his own immediate need, to consume it himself, creates a *product*, but not a commodity. As a self-sustaining producer he has nothing to do with society. But to produce a *commodit*y, a man must not only produce an article satisfying a *social* want, but his labour itself must form part and parcel of the sum total of labour expended by society. It must be subordinate to the *Division*

[13] *Wealth of Nations*, pp.18-20.

of Labour within Society. It is nothing without other divisions of labour, and on its part is required to *integrate* them.') [14]

Another important theoretical issue relates to what we may call the nature of economic resources. After observing that exchange is a pre-condition for social division of labour to develop, Smith begins with his usual method: 'In a tribe of hunters or shepherds a particular person makes bows and arrows, for example, with more readiness and dexterity.' Another becomes a tanner. And so on. People apply themselves to particular occupations and 'bring to perfection' whatever 'talent or genius [they] may possess'.[15]

At this point the reader has the impression that Smith is going to adopt the 'factors of production' approach of the neoclassical theory in which, as Kenneth Arrow puts it, 'Like differences in natural resources, the differences in individual talents are the basis of [specialisation and] trade.'[16] But Smith distances himself from this approach, and writes: [17]

The differences of natural talents in different men is, in reality, much less than we are aware of; and the very different genius which appears to distinguish men of different professions, when grown up to maturity, is not upon many occasions so much the cause, as the effect of the division of labour. The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature, as from habit, custom and education.

The point Smith is making is that at any given time we find labour in its *concrete* form (philosophers and street porters) but for

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[14] Karl Marx and Frederick Engels, *Selected Works,* Foreign Languages Publishing House, Moscow, 1958, vol. 1, pp. 417-18.
[15] *Wealth of Nations*, p.23
[16] K. J. Arrow, 'The division of labour in the economy, the polity and the society', in G. P. O'Driscoll (ed.) *Adam Smith and Modern Political Economy: Bicentennial Essays on the Wealth of Nations*,: Iowa State University Press, Ames, 1979, p.115.
[17] *Wealth of Nations*, pp.23-24.

theoretical purposes we consider labour in its *abstract*, *homogeneous,* reproducible, social form. Thus, for instance, when labour moves from one industry to another they do not retain their concrete form, they take the form as required by the economy; that is, the skills of the philosopher and porter can be reproduced. This applies to all except the natural resources. Capital moves across industries not in its concrete form (specific type of machines) but in its abstract (money) form. The point is that with abstract labour the mobility of resources between industries takes a particular form that is different from that of the ‘factors of production’ approach that assumes concrete labour. For example, when Smith talks of the exchange between beaver and deer hunters[18], he is thinking of this exchange taking place in terms of *labour time,* that is, in the form of abstract labour. The exchange takes place on the assumption that beaver hunters can *become* deer hunters, and similarly the latter can *become* beaver hunters. If the deer and beaver hunting skills were based on natural differences the exchange (with labour in its concrete form) would take place on the basis of supply and demand. As noted by Arrow, the neoclassical model would be the appropriate one.

(It will be noted that Marx’s labour theory of value is centred on the concept of abstract, social labour. When we have abstracted the material content of labour what remains is abstract labour. Marx equates this abstract labour with value. He writes in *Capital* I ‘Now we know the *substance* of value. It is *labour.’*[19] And in *Theories of Surplus Value,* he writes: ‘Their [commodities’] substance is labour. That is why they are value’. Value is nothing but abstract labour materialised in the commodity.[20])

[18] Ibid. pp.45-46
[19] As cited, p.131..
[20] As cited, p.201.

Related to this is Smith's equally important distinction between 'value in use' and 'value in exchange'. Value in use expresses 'the utility of some particular object', and refers to the concrete, physical attributes of that object, while value in exchange expresses 'the power of purchasing other goods which the possession of that object conveys.'[21] . In other words, value in exchange abstracts from the physical attributes of the object. In the utility approach the relationship is between the individual and the object; in value in exchange the relationship is between the products and through that, between producers.

(Soon after completing the final draft of *Capital* I, Marx wrote to Engels that one of the two 'best' points in his book was the 'double character of labour, according to whether it is expressed in use value or exchange value (*all* understanding of the facts depends on this.))[22]

We turn to other theoretical issues raised by Smith**. C**onsideration of social division of labour leads Smith to discuss exchange, and this to the theory of value and this to the distribution of value between landowners, capitalists and the workers. Smith realises that the theory of distribution is important for understanding the process of economic growth. But he is unable to develop a coherent account of the process of value determination and income distribution – a task that will be taken up by Ricardo.

The discussion of value opens with the (already mentioned) example of the beaver and deer hunters. In the pre-capitalist state, the worker appropriates the entire value that it creates, he has no one to share it with. But when capital has been accumulated, labour must

[21] *Wealth of Nations*, p.35.

[22] The second point referred to is the 'treatment of *surplus value independently of its particular* forms as profits, interest, ground rent, etc.' Marx, K. and Engels, F., *Selected Correspondence 1846-1895,* International Publishers, New York, 1942, pp.226-27.

share the value it has created with the capitalist. And 'the value which the workmen add to the materials therefore resolves itself in this case into two parts', profits and wages. And he adds that the capitalist who 'hazards his stock' would have no interest in undertaking production unless he expected back something more than his investment.[23] The suggestion here is that capital is a productive element and therefore the capitalist is entitled to a share of the product. And when land has become private property, the same principle applies to the landowner – even though he reaps when he never sowed.[24] He also says that wages, profits, and rent, are the three original sources of exchange value.

This was interpreted by Ricardo and Marx as that the value of a commodity was determined by *adding up* the three components of wages, profits and rent that were determined *independently* of each other.

Later in the chapter 'On Wages', Smith takes a position that appears to be different. There he says that there are two kinds of revenue, the 'subsistence' of the worker and the *deduction* from the product of labour that is appropriated either by the capitalist or the landowner or both. This seems to point in the direction of a theory of exploitation. Here we have a long discussion on the determination of wages. This can only be described as a discussion of class struggle

[23] *Wealth of Nations*, p.46.

[24] Ibid. p.47. In the chapter on rent, Smith takes a different position. 'High or low wages and profits are the cause of high or low price; high or low rent is the effect of it.' Ibid. p.147. He has a rather low opinion of landowners: 'That indolence, which is the natural effect of the ease and security of their situation, renders them too often, not only ignorant, but incapable of that application of mind which is necessary in order to foresee and understand the consequences of any publick regulation.' Ibid. p.155.

between capital and labour in which capital ultimately has the upper hand.[25]

Smith does adopt a definite view on the determination of (real, natural) wages. They are determined by social factors – a position that both Ricardo and Marx will also adopt.[26] Notions of what is 'subsistence' ('necessaries') change over time. Necessaries are 'not only those things which nature, but those things which the established rules of decency have rendered necessary to the lowest ranks of people.' His discussion on the subject clearly shows that he thought that what were at one time considered as 'luxuries' become necessaries over time and thus part of labour's 'subsistence'.

Finally, we come to Smith's famous 'theorem'. Free mobility of capital and labour (in their abstract form, of course) across industries will result in the 'natural balance' of the economy.[27] In this situation market prices coincide with natural prices and the same rate of profits prevails across all the industries. Natural price is the 'central price to which the market prices of all commodities are gravitating'. Smith suggests a mechanism for the achievement of the natural balance. When there is excess of supply of a commodity (at its natural price), market price falls below the natural price, profits fall below the normal level, and capital moves out of this industry,

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[25] Ibid. pp,64-66.

[26] Ricardo writes: '... the natural price of labour ... essentially depends on the habits and customs of the people'.. *The Works and Correspondence of David Ricardo*. Edited by Piero Sraffa with the collaboration of M. H. Dobb, Cambridge University Press, Cambridge, 1951-73, vol. I, *Principles*, pp. 96-97
Marx writes in *Capital* I: '...the number and extent of his [worker's] so-called necessary requirements, as also the manner in which they are satisfied, are themselves products of history, and depend therefore to a great extent on the level of civilization attained by a country; in particular they depend on the conditions in which, the class of free workers has been formed.' As cited., p.275. He makes the same point in his *Theories of Surplus Value*: 'Therefore the foundation of modern political economy ...is the conception of *value of labour power* as something fixed, as a given magnitude ...' As cited, p.45.

[27] *Wealth of Nations,* p.56.

industry output falls, the market price gravitates towards the natural price. A similar adjustment takes place in the opposite direction when there is deficiency of supply. In the economy characterised by free mobility of capital and labour, such adjustments are always taking place in the real world and the system is tending towards its natural balance, 'the centre of repose and continuance'.[28]

David Ricardo accepted Adam Smith's sociological and economic framework, his conceptualisation of capitalism with its social classes. And he considered his own work as dealing only with those aspects of *The Wealth of Nations* which in his opinion 'differ from the great authority of Adam Smith.' These aspects referred to 'the principles of Rent, Profit and Wages.'[29] He considered the discovery of these laws 'the principal problem of political economy.'[30] His main task was to discover these laws; it was for others 'to trace them to all their consequences'. [31] With Ricardo's *Principles* the development of classical political economy was complete.

Ricardo entered the domain of political economy in 1815 with an essay on the determination of the rate of profit.[32] He imagined an economy in which there is one sector in which both the output and the input consist of the same product; and all other sectors of the economy also use this product as their capital. This sector is agriculture and the product is corn which makes up workers'

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[28] Ibid., p.56.
[29], Letter to Trower, *Works*, VI, pp.315-16.
[30] *Works* I, *The Principles,* Preface.
[31] Ibid.
[32] *Essay on the Influence of a Low Price of Corn on the Profits of Stock*., *Shewing the inexpediency of restrictions on importation [**check**]*, *Works*, IV. For interpretation, see Sraffa's Introduction, *Works*, vol. 1, pp.xxx-xxxiv.

'necessary' consumption. The output in this sector minus the workers' 'necessary' consumption is the surplus product; the rate of profit is the ratio of this surplus to wages. This ratio is determined by the productivity of labour in the production of labour's subsistence, and the level of that subsistence. Both are taken as given.

It will be noted that since the same product – corn – forms both the surplus and the capital (consisting of workers' subsistence) the rate of profit in agriculture is obtained without the need to evaluate the product. (Malthus referred to it as the *material* rate of profit.)[33] This means that if there is to be the same rate of profit in all sectors of the economy **–** a fundamental assumption of classical political economy – whenever there is a change in the rate of profit in corn production prices of all other commodities must adjust in a manner such that their producers obtain the same rate of profit as in the production of corn, their capital.[34] The non-corn economy has no role in the determination of the rate of profit.

The conclusion is that there is an *inverse* relation between profits and wages; they are bound together in a relation so that one can increase only at the expense of the other. When wages rise, it is always at the expense of profits, and when they fall, profits always rise. 'The rate of profits and of interest must depend on the proportion of production to the consumption necessary to such production.'[35]This relationship is at the core of Ricardo's economic theory.

[33] *Works*, vi, p.117.

[34] On the 'material' rate of profit, Sraffa commented: 'The advantage of Ricardo's method of approach is that, at the cost of considerable simplification, it makes possible an understanding of the rate of profit is determined without the need of a method for reducing to a common standard a heterogeneous collection of commodities.' *Works* i, p. xxxii.

[35] *Works*, vi, p.108.

Into this model, Ricardo inserted the theory of rent. When land is abundant (relatively to population) there can be no rent. But as capital accumulates and population increases and less fertile land is brought under cultivation, the productivity of labour is smaller on the less fertile land as compared with the more fertile. This means that the surplus product is lower on the less than on the more fertile land; in other words, there is a difference between the profits obtained by the capitalist using the less fertile land and the capitalist working the more fertile land. But there must be the same rate of profit on capital employed on two types of land. The difference between the surplus of corn produced on the two types of land is rent. Rent, as Ricardo put it, 'is in all cases a portion of the profits previously obtained on the land. It is never a new creation of revenue, but always part of a revenue already created.'[36]

Ricardo could not have better expressed the view that a characteristic feature of capitalism is clash of class interests.

The model suggests that any improvement in the technology of food production, by increasing the productivity of labour, would increase the rate of profit. Improvements in the technology of non-corn industries (producing non-wage goods) would have no such effect (though by lowering the prices of their products it would improve the welfare of those consuming these goods). Further, imports of cheaper food would also increase profits. In both cases rents will fall as some of the less fertile land is taken out of cultivation.

In the absence of these two factors, and with the expansion of the economy and increase in population, and recourse to less and less fertile land, or more intensive cultivation, the progressive rise in the

[36] *Works*, iv, p.18.

price of food would inevitably result in the fall in the rate of profit and capital accumulation, and therefore in the growth of the economy.

Soon after the publication of the *Essay*, Ricardo was persuaded to enlarge the work. There was also criticism of the *Essay* on the grounds of the unrealism of its assumptions. In the *Principles*, published nearly two years after the *Essay*, Ricardo abandoned these assumptions. He had now to measure the aggregate of the variety of goods that make up the social product that was to be divided between the three classes. In other words, he needed a theory of value. There was no change in his theory of income distribution, which, as we have seen, was focussed on the theory of profit.

Ricardo subscribed to the labour theory of value as a general theory. He wrote in the *Principles*: This 'is a doctrine of the utmost importance in political economy; for from no source do so many errors, and so much difference of opinion in that science proceed, as from the vague ideas which are attached to the word value.'[37] All commodities (barring non-reproducibles) have their values determined by labour. Capital goods and raw materials, etc., - products of labour expended in the past – only transfer their value (or part of it in the case of machines, buildings, etc.) to the product; direct (living) labour transfers its own value to the product *and* creates new value.

As noted, Ricardo criticised Adam Smith's so-called 'adding-up' theory of value which suggested that one of the components of value could change without affecting the others (thus changing value) that contradicted his theory of distribution in which (as noted) profits and wages were bound together in a constraint such that one

[37] *Works*, i, p.13.

could rise only at the expense of the other, and rent was nothing but a transfer of profits to landowners.

With the adoption of the labour theory of value, Ricardo sought now to measure the collections of heterogeneous commodities in terms of abstract, homogeneous labour. This meant that the ratio of profits to means of production, instead of being seen as a ratio in corn, now was expressed in terms of abstract labour. This enabled Ricardo to demonstrate the determination of the rate of profit in the economy as a whole instead of through the device of the corn-ratio model.

He now recognised a problem with the labour theory. He illustrated the problem:[38]

'Suppose I employ twenty men at an expense of £1000 for a year in the production of a commodity, and at the end of the year I employ twenty men again for another year, at the further expense of £1000 in finishing or perfecting the same commodity, and that I bring it to the market at the end of two years; if profit be 10 percent, my commodity must sell for £2,310; for I have employed £1000 for one year, and £2,100 capital for one year more. Another man employs the same quantity of labour, but he employs it all in the first year; he employs forty men at an expense of £2000, and at the end of first year he sells it with 10 percent profit, for £2,200. Here then are two commodities having precisely the same quantity of labour bestowed on them, one of which sells for £2,310 --- the other for £2,200.'

When commodities are produced with different capital-labour proportions (with uniform rate of profit) natural prices diverge from labour-embodied values. (Profits accruing in the first year are accumulated as capital and make the first method of production more capital-intensive than the second.)

As Sraffa has observed[39] there are two aspects of the problem relating to differences in capital-labour proportions. The first relates

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[38] Ibid., p.37.
[39] Ibid. (Introduction), p.xlvii.

to *differences* in relative values of commodities produced by equal quantities of labour (as illustrated by Ricardo). The other aspect refers to *changes* in relative values (when capital-labour proportions are different across industries) resulting from changes in wages. It was the second aspect that really preoccupied Ricardo. He saw that with changes in wages the value of the national income (in physical terms) appeared to change with its division even though the physical magnitude of that income had remained unchanged. Ricardo thought that the apparent changes in the national product (in value terms) were the result of a faulty measure of value. Hence, his search for an 'invariable' standard of value – a search that remained unsuccessful. However, he stuck with the labour theory of value as the best approximation. (In Sraffa's discussion of these questions, we find an early echo of his later critique of the neo-classical concept of 'capital')[40]

Marx has two distinct narratives. In the first he is a classical political economist. According to him Ricardo had achieved a correct understanding of the working of the capitalist system. To make this point it is best to quote his rare tribute to Ricardo. After criticising Adam Smith for having jumbled up his material regarding the 'inner working [of the] bourgeois system' with the material addressed to those 'interested from a practical standpoint' in the capitalist production, he wrote[41]:

At last, however, Ricardo comes on the stage, and calls to science: Halt! The foundation, the starting point for the physiology of the bourgeois system – for the understanding of the internal organic coherence and life process – is the determination of *value by labour time.* Ricardo starts with this, and compels

[40] Ibid. In particular, pp.xlviii-xlix.
[41] *Theories of Surplus Value,* as cited. pp.203-04.

science to leave its beaten track and render an account of how far the rest of the categories it has developed and described – the relations of production and commerce – correspond to or conflict with this foundation, with the starting point; how far in general the science that merely reflects and reproduces the phenomenal form of the process – how far therefore also these phenomena themselves – correspond to the foundation on which the inner connections, the real physiology of bourgeois society, rests, or which forms its starting point, and what in general is the position with regard to this contradiction between the apparent and the actual movement of the system. This is therefore the great historical significance of Ricardo for the science ... With this service to economic science is closely linked the fact that Ricardo discovers and proclaims the economic contradiction between the classes – as shown by the intrinsic relations – and hence the historical struggle and the process of development is grasped at its roots and disclosed in economic science.

Marx associated himself with classical economy on a number of occasions. For instance, in the afterword to the second edition of *Capital* I, he referred in approving terms to a reviewer of *Capital* who considered Marx's theory 'in its fundamentals a necessary sequel to the teachings of Smith and Ricardo.'[42]

Ricardo had identified contradictions in the capitalist system, but had stopped at that point. Marx would focus on the working of these contradictions which he saw as leading to *historical* change. This brings us to Marx's second narrative.

Marx completed his worldview with the writing (with Engels) of *The German Ideology* in 1846. And he immediately turned to his 'critique' of classical political economy. In a letter written in December 1846, he wrote that Proudhon 'falls into the error of bourgeois economists who regard these economic categories as eternal and not as historical laws, which are only laws for a particular historical

[42] *Capital* I, as cited. p.99.

development, for a definite development of the productive forces.'[43] And he repeated this point in his *Poverty of Philosophy* written the following year. For classical economists 'capitalist relations were natural laws independent of time ... Thus there has been history, but there is no longer any.'[44] Classical economists considered economic development as if capitalism as a mode of production was the end of history. The reasoning behind this thinking was the neglect of social relations that lay behind material processes. They were 'bourgeois economists' in this sense.

In contrast, according to Marx, the process of capital accumulation under capitalism is inseparable from the process of improvements in methods of production, and this *necessarily* leads to institutional and social change. As *The Communist Manifesto* put it: 'The bourgeoisie cannot exist without constantly revolutionising the instruments of production, and thereby relations of production.'[45] Capitalism would, through the working of its own logic and contradictions evolve into a different kind of economic and social system.

Sraffa's book provides the classical political economy with a rigorous, general theoretical formulation, a kind of formulation that it lacked. The principal function of this formulation is to demonstrate that the production system is self-sustaining, in the sense that it is capable of reproducing itself. To achieve this aim, Sraffa excludes all kind of change in the system, change such as those associated with development or the kind visualised by Adam Smith when he

[43] Letter to P. V. Annenkov. Karl Marx and Frederick Engels, *Selected Works*, vol. II, Foreign Languages Publishing House, Moscow, 1953, pp.446-47.

[44] *The Poverty of Philosophy: Answer to the Philosophy of Poverty by M. Proudhon*, Karl Marx and Frederick Engels, *Collected Works*, vol.6, Lawrence & Wishart, London, 1976, p. 174. .

[45] *Selected Works*, .I, p.37.`

discussed the economy 'gravitating' towards its 'natural balance'. Sraffa's model takes the production system as 'given', and repeating its operations year after year, and offers the condition which will ensure its continuance.

In the Preface to the *Production of Commodities*, Sraffa tells the reader that while the 'central propositions had taken shape in the late 1920s, particular points, such as the Standard commodity, joint products and fixed capital were worked out in the 'thirties and 'forties.' (p.vi) This means that the 'central propositions' are presented in the first three chapters of the book. These cover 15 of the 95 pages of the book. Considering that Sraffa's work has been widely 'explained' and debated[46], the focus here is entirely on the central propositions, and that too very briefly. It is these propositions that have a particular bearing on the 'reconstruction' of the classical political economy.

The first model ('Production for Subsistence') is first presented in its simplest form, in terms of two products, wheat and iron. We have the following system of production:

280 qr. wheat + 12 t. iron = 400 qr. wheat

120 qr. wheat + 8 t. iron = 20 t. iron.

We note the interdependence of the two industries, each uses the product of the other as its input; that there is no distinction between factors of production and the final output, both wheat and iron appear as products as well as inputs; and both enter into their own production. We note also that labour does not appear explicitly; it is

[46] For instance, two works, both by A. Roncaglia, *Piero Sraffa*, Palgrave Macmillan, Basingstoke, 2009 and *Sraffa and the Theory of Prices*, Wiley, New York, 1978. See also, Luigi L. Pasinetti, *Lectures on the Theory of Production* (chapter five), MacMillan, Basingstoke, 1977.

represented by necessary subsistence. Note also that methods of production are given. The theoretical problem to be investigated is: what are the conditions under which the system will reproduce itself? Or, as Sraffa puts it, if there is 'a unique set of exchange ratios which if adopted by the market restores the original distribution of the products and makes it possible for the process to be repeated.' (p.3) Such a ratio is 10 qr wheat: 1 t. iron. This exchange rate springs directly from the method of production.

Sraffa then extends the model to the case of three industries, and then generalises it to k number of industries. The prices are determined *simultaneously*. The system must be considered as whole. (Classical economists considered the system as a whole, but did not have the technique to formulate the problem in terms of simultaneous equations.)

In the second chapter, 'Production with a Surplus', Sraffa offers two propositions or models. In the first model wages are still at subsistence level and therefore do not appear explicitly in the model. The theoretical problem now is how the aggregate surplus , consisting of a collection of heterogeneous commodities is distributed across the industries, given that the rate of profit across industries is uniform. We have here the problem of measurement – to evaluate the collection of heterogeneous commodities. To evaluate the surplus we need to have prices of commodities. But prices are not known until the rate of profit is known, and the rate of profit is not known until we have prices.

Sraffa shows that the distribution of the surplus and prices need to be measured *simultaneously* - through the same mechanism and at the same time. The conclusion is that the distribution of the surplus and price determination cannot be separated. (They were separated in Ricardo.)

In the second model (in chapter 2) wages are no longer treated as consisting of the necessary subsistence. Sraffa now assumes that wages are paid *post factum* (rather than as being advanced, as in classical political economy) and, with profit share in the surplus. The result of adding the wage as one of the variables is that there is now one more variable than the number of equations. (Variables are k prices, the wage, and the rate of profit.) This means that to get the solution, one of the distributive variables must be treated as ‘given’, that is, given from outside the economy. On this basis, Srffa provides the solution to the system of simultaneous equations. The model is thus an ‘open’ one – open to social forces. (This accords neatly with the classical view that the wage is determined by historical and social forces, by ‘civilisation’, as Marx put it.)

In chapter three, Sraffa considers the effect of wage changes on prices, a question that had exercised Ricardo.

If labour-means of production proportion are the same in all industries, wage changes would have no impact on prices. But when these proportions vary across industries prices must change if the rate of profit is to remain uniform. If prices did *not* change a wage-reduction would favour industries with a high labour-means of production and disfavour industries with low labour-means of production. Sraffa refers to them as ‘surplus’ and ‘deficit’ industries, respectively. Price changes are required to restore the uniformity of the rate of profit.

At this point of the discussion Sraffa has a surprise for the reader. Relative price changes depend not only on the labour-means of production proportions by which products are produced, but also on the proportions in which the means of production of industries’ means of production are produced, and the means of production of those means of production are produced, and so on. (At this point we may recall Adam Smith’s example of the production of the woollen coat.) We cannot simply look at the final stage of production of a product and conclude whether it is more or less labour intensive, or what its price needs to be in order for the uniformity of the rate of profit to be restored to its previous level. The reason for this is that the final price is arrived at as the summation of earlier stages of production, spread out in time, each stage having its own labour-means of production proportion, with a date attached to it. ‘The result is that the relative prices of two products may move, with the fall of wages, in opposite direction to what we might have expected on the basis of the respective ‘proportions’; besides, the prices of their means of production may move is such a way as to reverse the order of the two products as to higher and lower proportions ...’ (p. 15)

This discussion leads to two important results. The first is that on the basis of this analysis, Sraffa constructs an ‘invariable’ standard of value, the search for which had eluded Ricardo. This is done in the following chapter, ‘The Standard Commodity’. And the second refers to his critique of the neo-classical attempts to measure ‘capital’. This is done in the chapter ‘Reduction to Dated Labour’ (chapter vi). Here Sraffa concludes: ‘The reversals in the direction of the movements of relative prices, in the face of unchanged methods of production, cannot be reconciled with any notion of capital as a measureable quantity independent of distribution and prices.’ (p.38).

To conclude: Classical political economy emerged to understand the working of the contemporary capitalist economy. Its principal features, as worked out by the French Physiocrats, were the notions that (a) wealth is created in the process of production (rather than in exchange), (b) it consists of a flow over time (rather than as a stock), and (c) it is made up of the surplus of production over all the inputs required for this production. Adam Smith defined the subject of political economy as the growth of the economy or the process of economic development. He defined wealth as general production (rather than as just agricultural production), and the source of economic progress in the productivity of labour, which in turn depends on the division of labour and the size of the market. Ricardo accepted the general framework of political economy developed by Adam Smith, and focussed his work on the distribution of income between the landowning class, capitalists and labour, or more precisely on the theory of profits – because profits were considered as central to capital accumulation and economic progress. I have suggested that with Ricardo the development of classical political economy was complete. In the last section of the paper, I have suggested that Sraffa’s *Production of Commodities by Means of commodities* -- a work of pure theory – can be seen as a rigorous theoretical reformulation of classical political economy, a kind of classical general equilibrium system.