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On a turning point in Sraffa's theoretical and interpretative position in the late 1920s*

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I. Introduction

1. Among Sraffa's manuscripts deposited in Cambridge, at Trinity College, is a document I believe to be highly interesting: about seventy pages with a title on the cover in Sraffa's own hand: 'Notes/ London, Summer 1927/ Physical real costs, etc.'[1]

We know that Sraffa left Italy for England[2] early in July after agreeing to hold a course on the advanced theory of value in Cambridge in the following October. The document's contents leave little doubt that it contains preparations for that course[3], then postponed by a year to October 1928 for reasons that I think we may be able to help to elucidate. These notes are quite separate from the long, 200-page later manuscript containing the lectures in fact held in 1928–31 (D2/4; M1.7). In what follows, I will refer to the first of these manuscripts as the 'pre-lectures', as distinct from the later 'lectures'.

In fact, if we make a close analysis of the document from the summer of 1927, compare it with the lectures of 1928, and then take into account other important manuscripts from the period — including those where we find the first formulations of the equations later developed in *Production of Commodities* — we can, so to speak, see with our own eyes how, over a period of a few months, a turning point matured in Sraffa's theoretical position, away from that of the articles of 1925 and 1926. And this turning-point was one thing with what Sraffa came to see as the re-discovery of the position of the 'old Classical economists', beyond the Marshallian interpretation he

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had hitherto followed, attributing to them an implicit hypothesis of constant returns (constant costs).

This turning point is indeed what Sraffa (1960) himself had implied when, in the Preface to *Production of Commodities*, after denying the dependence of his argument on the assumption of constant returns, he commented:

> The temptation to presuppose constant returns is not entirely fanciful. It was experienced by the author himself when he started on these studies many years ago — and it led him in 1925 into an attempt to argue that only the case of constant returns was generally consistent with the premises of economic theory.
>
> (Sraffa, 1960: vi)

The same Preface also makes it possible to see that the earlier position must have been relinquished in the brief period elapsing between the article of 1926, where it was still present, and early in 1928 when, as Sraffa writes: 'Lord Keynes read a draft of the opening propositions of this paper, he recommended that, if constant returns were *not* to be assumed, an emphatic warning to that effect should be given' (ibid) and when, therefore, constant returns were no longer assumed.

A suggestion of the content of the change or, at least, of how radical it was, can on the other hand be found in the Preface not only because of its reference to as basic a question as the assumption of constant returns but also, and even more fundamentally, in the distance taken at the very beginning of the Preface from:

> 'anyone accustomed to think in terms of equilibrium of demand and supply'
>
> (ibid).

There is, further, the statement that the standpoint adopted in the book will be that:

> 'of the old classical economists from Adam Smith to Ricardo [...] submerged and forgotten since the advent of the 'marginal' method'
>
> (ibid).

That 'submerged and forgotten' standpoint was clearly not the well-known Marshallian one on Ricardo and the Classical economists, which Sraffa had previously accepted. The turning point concerns, in fact, the rediscovery of the determination of prices and distribution, which Sraffa will trace to Ricardo in the *Introduction* to the Royal Economic Society's edition of the

Principles (Sraffa 1951), and will be developed in *Production of Commodities* (Sraffa 1960).

2. In the next section, we will recall Sraffa's theoretical position in the two articles of 1925 and 1926, with the important additional elements regarding distribution which the very pre-lectures provide us with. In the third section, we will then proceed to the difficulties Sraffa ran into when, in preparing his lectures for that autumn, he found himself forced to re-examine his earlier conclusions in favour of Marshall's method of partial equilibrium, on which he had based his argument until then.[4] Those difficulties led Sraffa to the issue of an 'ultimate standard of value', and thus to both a critique of Marshall's subjective 'real' costs, and their replacement with the concept of 'physical real costs'. And, it is in his attempts to develop the latter idea that Sraffa, we shall argue, stumbles into the turning point, which is our subject here. We will deal with that in Section 4, jointly with the questions it opened up for Sraffa.

In Section 5, finally, we will consider the implications of that turning point for the interpretation of the Classical economists, as well as the traces of it that will emerge in 1928–31 in the lectures. The section will close with some reflections on the difficult situation that the evolution of his theoretical position and the awareness of the importance of his results created for him as a teacher in Cambridge.

II. The initial position

3. The theoretical position on value lying at the heart of the articles of 1925 and 1926 is known and well summed up in the following passage by Sraffa himself:

> In normal cases the cost of production of commodities produced competitively — as we are not entitled to take into consideration the causes which may make it rise or fall — must be regarded as constant in respect of small variations in the quantity produced [.] And so, as a simple way of approaching the problem of competitive value, the old and now obsolete theory which makes it dependent on the cost of production alone appears to hold its ground as the best available
>
> (Sraffa 1926: 540–1)

The argument is thus founded on the hypotheses of partial equilibria, but Sraffa writes that, if we wanted to extend the field of enquiry so as to examine the conditions of simultaneous equilibrium, we would be faced with the theory of general equilibrium: 'a well-known conception, whose complexity, however, prevents it from bearing fruit, at least in the present

state of our knowledge, which does not permit of even much simpler schemata being applied to the study of real conditions' (Sraffa 1926: 541).

There are two important points here. The first is that, in this early critical position of his, Sraffa accepts the determination of price by the equilibrium between Marshallian supply and demand functions and therefore, essentially, the whole apparatus of demand and supply of the marginal theories – even if he then denies the possibility of consistently considering the influence of demand on the price of the individual commodity and, more generally, wishes to expunge the subjective elements of 'utility' and 'disutility' from that apparatus. The second point is that, by accepting the Marshallian interpretation of the 'old and now obsolete theory' of Ricardo and the Classical economists in terms of 'constant returns',[5] Sraffa implicitly attributes the same demand and supply apparatus to those authors.

4. It therefore comes as no surprise if, in the pre-lectures, Sraffa describes the determination of prices by an 'equilibrium' between demand and supply functions, as an idea of 'immense scientific importance'.[6]

Besides this general importance of the idea of a demand and supply equilibrium as such, Sraffa also attributes to it an interesting specific merit, that of having:

> 'wiped out the primitive notion that there had to be somewhere or other one single, ultimate cause of value'
>
> (ibid: *ivi*, 4.iv)

where that 'primitive notion' (also attributed, as we shall see, to Ricardo and the classical writers) is characterized, he says, by a 'philosophical as opposed to a technical outlook', its relinquishment thus being in accordance with 'the general scheme of progress in science' (ibid: *ivi*, 4.i.).

It was in two ways, Sraffa argues, that the concept of equilibrium fulfilled its role of purging economic analysis of these alien philosophical elements. The first was that, with regard to the two conflicting schools of 'cost' and 'utility', the concept had:

> 'the great practical advantage that, being to a certain extent compatible with both [schools of thought] (since it embodied their doctrines), it closed the old controversy and brought back the T.[theory of] V.[value], from the field of politics to that of economic theory'
>
> (D3/12/3; A4.4.iv)

For the school of 'cost' Sraffa is here referring to Ricardo's 'cost value', influenced, Sraffa says, by that author's 'anti-landlords complex' whereby 'rent not entering into cost is disgraced'. The second school, that of 'utility',

and with it the conflict between the two, came instead into being, Sraffa continues, when Ricardo's 'cost' theory was 'taken up by Marx and used as a weapon for the workers'. That provoked by reaction the 'immediate simultaneous success' of the utility-based theory of value of Jevons, Menger and Walras – a theory that, significantly enough, was ignored when it made its first appearance in the work of authors such as Dupuit and Gossen,[7] before Marx's work created the need to develop a substitute for labour values.

Still more important — and here we come to the second way in which the concept of equilibrium fulfilled its 'purging' role — the return 'from politics to economic theory' was not, Sraffa says, just the result of the reconciliation between the two schools by means of the 'scissors' – Marshall's well-known description of demand and supply. It was also due to the fact that the notion of equilibrium: 'put as [the] principal problem to be solved by [the] T[heory of] V[alue], not the question of the causes of the value of all commodities together, but the determinants of the value of one article considered separately, and regarded as independent from all the others' (ibid: 4.iv). As Sraffa sums it up, the return to science was due to the fact that Marshallian equilibrium focuses attention on the: 'mechanism through which the actual price of such things as boots or candles was fixed' (ibid: *ivi*, 4.v) and not, as had happened before, on the 'cause of value', or on 'estimating the wealth of a nation' or, in later times, on 'what we call ''distribution''' (ibid: 4.v).

5. The above passages, and the problem of distribution raised in them as an influential motivation behind the search for the 'causes of value', lead us to an important question, which was left in the shadow in Sraffa's earlier articles and which the pre-lectures can now begin to clarify for us: the theory of distribution and its link to value, as Sraffa envisaged it at the time.

Sraffa argues that thanks to the hypothesis of constant returns imposed by the conditions of partial equilibrium, the price of commodities is determined exclusively by production expenses.[8] But these expenses are simply the other face of the prices of the productive factors and, therefore, of the distribution of the social product between them. How then is this distribution determined?

The question is dealt with when, after indicating the practical-political connection with distribution of the 'primitive' notion of a single 'ultimate cause of value', Sraffa writes:

> At present we have a separate theory of distribution: we do give to it a very great importance, but we recognise that besides it there is a different, but also very important question — the fixing of prices of single articles. Besides it has been found that the two questions cannot be treated simultaneously: different general assumptions and different methods of analysis are required.
>
> (ibid: *ivi*, 4.v – vi)

and he continues by explaining:

> We know that the ultimate forces which regulate the division of product of industry between factors are the same that regulate the price of hats [...]: but we also recognise that the frictions, the obstacles through which those forces have to work is so great, that [...] when they reach what we may call the capillary blood vessels of the economic body their action is so much different in degree as almost to be a difference in kind from what their action is in the main streams [...]. Certain subtle features [...] which act upon the first [the capillary blood vessels], may be neglected when considering the broad lines of the general equilibrium: while the dominating elements of the latter may [...] be regarded as [...] not affected by [...] the microscopic changes [in the capillary blood vessels]
>
> (ibid: *ivi*, 4.vi–vii).

The final lines indicate how Sraffa thinks that small (microscopic) variations in the quantities produced can be ignored at the level of factor demand and supply, and therefore at that of factor prices, thus justifying the hypothesis of constant returns and with it the separation between distribution and the value of individual commodities.

Sraffa's initial plan for his lectures appears in fact to have rested on this separation between the problem of distribution and that of relative prices, as is indicated by what is likely to be a programme of the lectures, sketched on the following page as follows:

> 1) Introductory
> Sketch of development of theory of value
> Distinction between two meanings of 'theory of value'
> Examples of confusions arising from failure to distinguish them
> Hypotheses of free competition (law of indifference): its implications; and how it is not possible to regard impediments to it as friction only.
> 2) Elementary statement of theory of particular equilibria
>
> (ibid: 4.viii)

where we find no obvious trace of the theory of distribution. And this is indeed one of the main differences between the lectures that Sraffa is here planning on the lines of the 1925 and 1926 articles, and the lectures he will actually give, where the initial and newer part will instead introduce the basic elements of the alternative theory of distribution of the Classical economists re-discovered in the meantime through a reconstruction of their idea of the cost of commodities.

III. The transition

6. At the time, then, Sraffa still thought of distribution in terms of demand and supply functions for productive factors ('the ultimate forces that

regulate the division of product [. . .] are the same that regulate the price of hats'), albeit 'purged' of utility and/or 'efforts and sacrifices', and thus of the practical and political content that Sraffa saw them as still bearing in Marshall. But this explanation of distribution raised several serious difficulties for the overall position that Sraffa had reached in the articles of 1925 and 1926.

In the first place, in the passage above, Sraffa refers to a theory of distribution separate from the analysis of what determines the price of individual commodities. There is, however, a condition that must be satisfied for this separation. It is valid for only small variations in the quantity produced of an individual commodity, which, in addition, does not use significant proportions of the total endowment of any of the factors needed for its production – for variations of outputs, that is, that cannot cause appreciable changes in factor prices. So, as Sraffa notes in the pre-lectures,

> 'this method of reasoning [about distribution] is legitimate only in respect of one commodity at a time: we could of course apply it in succession to each of the other commodities, [. . .] but not to all or several commodities at the same time'
>
> (ibid: *ivi*, 14ii).

However, when kept within those limits, the argument is not really sufficient to support the conclusions Sraffa had aimed for in his two articles, in particular, when he wrote, as recalled above: 'And so, as a simple way of approaching the problem of competitive value, the old and now obsolete theory which makes it dependent on the cost of production alone appears to hold its ground as the best available' (Sraffa 1926: 541).

Here, the point is a general way of solving 'the problem of competitive value', and it refers therefore to commodities in general, rather than to an individual commodity taken in isolation. Moreover, the solution is referred specifically to the 'now obsolete theory which makes it dependent on the cost of production alone', evidently the theory of the Classical economists. Yet they certainly did not use their theory solely for small variations pertaining to commodities taken one at a time. In fact, as we shall see shortly, Sraffa continues the above passage of the pre-lectures by recognizing the impossibility of limiting the analysis of value to partial equilibrium.

Closely connected with this first difficulty, there is, however, a second deficiency inherent in Sraffa's early synthesis. Even admitting, as a first approximation, that the principle of constant returns can be applied in a sufficiently general way, it establishes the equality between

normal prices and production expenses, where, however, factor prices — and hence the magnitude of the expenses, as distinct from their variations — lead us back to demand for goods and, hence, to the utility Sraffa wished to expunge by referring to constant returns.[9] As he notes in the pre-lectures:

> Suppose now that we found that the price of one commodity is determined exclusively by expenses of production: could we conclude [...] it is 'ultimately' determined only by real costs? Of course not [...] We could only say that the price of those commodities is only determined by 'the conditions of supply', *i.e.* by the wages, interests, rents that have to be paid for its production, and that demand price has nothing to do with its determination. But this would not in the least exclude that we might hold a theory of distribution which said that wages, interest etc. are only determined by the utility of their products (as a whole) or by monopoly, or any other general theory of value. The difference would be that utility would make its influence felt through the conditions of supply of that (or each of all) commodity, and not through its conditions of demand
>
> (ibid: 21.i – ii)[10]

This fundamental point will then be taken up by Sraffa at greater length in an exam question for his students in the lectures of 1928 – 31:

> Is it correct to say that if all industries were operated under conditions of constant returns, the normal value of the products would be entirely determined by their cost of production, and demand would have no influence upon it?
>
> (Note that, 1) an affirmative answer would probably follow from M[arshall]'s assumptions, but 2) all those who have minimised the importance of cost in determining value, *e.g.* Jevons and the Austrians, have never used the argument of variability against it: and they certainly would say that their arguments are independent of the variability or constancy of costs (*e.g.* changes in remuneration of factors might affect values and be due to changes in demand*. This point of the relations between the theories of value and distribution is one of the most neglected by Marshall and his treatment is very unsatisfactory)'
>
> (D 2/4; M1: 167a – b)

And for the asterisk, Sraffa adds: '*Thus we fall back on the difficulty of defining 'real cost of production'. We left it aside at the beginning now it crops up again, and invalidates all our conclusions' (ibid.)

If the above two difficulties touch directly on Sraffa's attempt to cast utility out of price theory by means of the hypothesis of constant returns, a third more general and radical difficulty, of which the first two can be seen as specific aspects, concerns the solidity of the foundations on which the whole argument rested, namely, the method of partial equilibria. In substance, in the pre-lectures, Sraffa's attempt at a clarification and fuller comprehension of the *ceteris paribus* condition of Marshall's partial

equilibrium made him increasingly sceptical as to the significance of that method, progressively dousing the enthusiasm he had shown for it in the early pages of the pre-lectures.[11] In particular, the hypotheses of partial equilibrium – in the last analysis, the assumption that, not only factor prices, but also the prices and quantities of all the commodities other than the one considered were given – emptied of much of its significance the latter's demand curve, which would depend in particular on the given prices and quantities of the commodity's substitutes (ibid: *ivi*, 14). Strictly speaking, the curve would be transformed, Sraffa argues in a different manuscript, into a constant outlay curve and could only determine a price already taken implicitly as given by assuming given the rest of the system.

> If the purchasing power of money is given all the prices must be given, [and,] rigorously also the price of the commodity in question ought to be given [...] If all prices are given, all quantities purchased must be given, since they are functions of prices. Besides, all incomes are given [and] we do not require anything else to know the demand curve: of course it will be a constant
>
> (D3/12/7: A7.30, cf. also D3/12/3: A4.2)[12]

7. In the notes grouped in the pre-lectures, we thus find a growing awareness in Sraffa of the limits of his previous synthesis. It is important to follow this evolution closely in order to gain a better understanding of how he arrived at the turning point we are about to study, and of what that involved. A convenient thread to follow for that purpose is the distinction he makes initially between 'two meanings of the theory of value' or, on occasion, between two different 'theories of value',[13] a distinction that ends by constituting the central issue in the pre-lectures.

The distinction is essentially the one underlying the contrast already seen earlier between the problem of value as viewed by the economists of the past, and relating to questions such as the measurement of national wealth or its distribution, and the problem as seen by the moderns, who focus rather on the 'technique' of price determination for products and productive factors, the contrast being the one in which, as we may also recall, Sraffa saw an example of how science progresses from a 'philosophical' to a 'technical' viewpoint. The problems 'of the past' in fact covered issues such as whether costs (Marshall's 'efforts and sacrifices' or Ricardo's quantities of labour) – or else utility, or both determine values. These concepts, still present in the theories contemporary to Sraffa, were then seen by him as something that had lost real importance for the present, and remained only as a left-over of the 'primitive' notion, whereby there was supposed to be a single 'ultimate cause' of value. As Sraffa writes at the beginning of the pre-lectures: 'the contrast between the idea we have

today of the question of value and that of Ricardo and his contemporaries is impressive' (ibid: *ivi*, 4.iv). And, a few pages later in the programme of the lectures to be held, already quoted above (par. 5), we find among the other subjects of the introductory part: 'Distinction between the two meanings of the ''theory of value''', accompanied by 'Examples of confusion arising from failure to distinguish them'.

The argument is however resumed a few pages later with what already seems to be a slightly different emphasis. If the passage from the 'classical economists who were inquiring into the prime cause [...] and ultimate standard of value' to the moderns is still seen in terms of the 'continuous progress from the philosophical and general to the technical and particular', the tendency of the moderns to ignore the 'prime causes of value' of the Classical authors is noted with the comment 'not that [those questions] have been solved, nor that they have been proved to be insoluble' (ibid: *ivi*, 4.x). Thus, after all, Sraffa seems to feel that questions of the 'ultimate cause' of value are sufficiently substantial to be 'soluble', or at least such as to make it worth showing that no solution is possible.

In fact the relative importance of the two 'theories of value' starts to be overturned some further pages along when Sraffa writes:

> How deep is the difference between the two points of view may be seen, for example, in the opposite attitude that it is legitimate to take in the two cases towards measuring value in terms of money. If we are inquiring into the general problem of the causes of value, it is no use for us to argue that the value of bread is determined by the price of corn and by the money wages of bakers, that the price of corn is determined by the money wages of labourers and by the price of agricultural implements, [...] and so on and infinitum [sic] — this would be a perfectly futile way of reasoning in a circle. In this general problem we must find some ultimate standard, independent from the variables we are considering, such [as] utility or disutility or labour. But if we confine our inquiry to such a question as that of how, being given all the prices and amounts consumed and produced of all other commodities, what is the mechanism through which the price of a given article is caused to be what it is, and not higher nor lower: or how an increase in its demand, *ceteris paribus*, would affect its price — the position is entirely different: there is no objections [sic] to our measuring costs and utilities in terms of money — indeed we can entirely dispense with such conceptions. We can (assume) substitute to costs of production the much simpler 'money expenses of production' and to marginal utility 'marginal demand price'
>
> (ibid: 4.xiii–xiv)

Thus, the question of the 'cause' or 'ultimate standard' of value, initially described as 'primitive', now turns out to be what we have to refer to, if circular reasoning is to be avoided, as soon as we wish to go beyond the limited problems concerning the formation of an individual price, allowing

us to take as given the distribution between factors and the prices of all the commodities different from that taken into consideration.

The argument is repeated, and the reversal in the importance of the two 'aspects' of the theory of value is completed later in the pre-lectures, in the course of an attempt to return to what, according to the initial programme of the lectures (see par. 5 above) was to constitute the body of them after the 'Introductory' part, namely, the 'theory of particular equilibria'. After having expounded the hypotheses on which the equilibria rest, including that 'all prices and quantities of other commodities are constant', Sraffa adds:

> But so soon as we want to analyze how the general equilibrium is reached — *i.e.* [...] to analyze the interactions of one commodity upon the other, how they affect each other's conditions of production and utilities, and how the remuneration of common factors of production is determined — then our ultimate standard of value is required
>
> (ibid: 14ii–iii)[14]

For Sraffa, the relative weight has now clearly shifted in favour of the first of the two 'meanings' of theory of value, the 'ultimate standard of value', which is seen as necessary for solving problems such as: (i) how a general equilibrium is reached; (ii) how one commodity influences the conditions of production and utility of others; or finally, and certainly not the least important of the problems, (iii) how the remuneration of the production factors is determined.

8. At this point, it is natural to raise the question of why Sraffa, as he grew increasingly aware of the limitations of the 'second' theory of value, would turn to the 'ultimate standard of value' rather than to the general equilibrium to which he also makes frequent references in the pre-lectures and the manuscripts of the time. The question is natural, not only because, in 1926, he referred to general equilibrium when he was dealing with the limits of partial equilibrium, but also because, at this stage, if Sraffa sees the need for the 'ultimate standard', he also sees no satisfactory version of it in the theories current at that time. Just after the phrase quoted above, which gives the clearest statement in the pre-lectures of the 'ultimate standard's importance, in a lapidary comment clearly referring to 'costs' and 'utility', he writes:

> 'Two standards offered: they are the same thing — words'
>
> (ibid: *ivi*, A4.14.iii).

The answer to the question we have raised is no simple matter, above all because it is not simple to understand how an 'ultimate standard of value'

as envisaged at the time could resolve the problems left open by partial equilibrium. Yet it seems that the answer should remain substantially what Sraffa himself had already offered in (1926): the complexity of general equilibrium made the whole idea sterile (see par. 3 above).

An interesting, more detailed analysis of why that conception was sterile and was accordingly rejected comes to light in the pre-lectures, when Sraffa discards the possibility of 'imagining' the marginal utility of a commodity as a function of thousands of variables (the quantities of the other commodities consumed), because of the non-observability of the resulting demand curve for the commodity. Unlike what can be argued for Marshall's partial equilibrium demand, the curve could not be referred to demand prices for the commodity that are observable at least in principle. And Sraffa adds:

> 'It should here be added that it is not sufficient to make utility of one commodity function of quantity of all others consumed by individual but also by community! It would be as if in astronomy we said the movement of each star depends upon all others, but we have not the faintest idea of the shape of the functions!'
>
> (ibid: *ivi*, A4.21.x–xi, note).

Faced with the inherent sterility of general equilibrium (to which Sraffa grants no more than the role of showing the logical consistency of reasoning carried out in terms of partial equilibria[15]) Sraffa may have come to see an 'ultimate standard' as the only direction along which he could move in order to overcome the limitations of partial equilibrium without losing the possibility of significant results.

IV. The turning point

9. We have seen Sraffa's concise comment on of the 'ultimate standards of value', which were suggested by his contemporaries: 'words'. Immediately after this comment, however, we find what appears to be the germ of the turning point: 'However there is one reality in cost, *i.e.* labour' (ibid: 14.iii)[16] where, however, labour is not considered in the sense that we might perhaps expect, that of Ricardo's and Marx's theories of value. In fact, after two pages devoted to what is apparently a closer analysis of production expenses, we find the title, 'Physical real cost',[17] followed by some pages of closely argued criticism of Marshall's subjective 'real costs',[18] and then, again, repeated as a heading, 'Physical real cost', where it becomes clear that the expression is intended to refer to the subsistence required by the labour necessary for the direct and indirect production of the commodity in question**,** and not to labour itself along Ricardian or Marxian lines.

Here, however, Sraffa expresses the doubt that substitutability between wage goods may prevent unique identification of a composite 'necessary commodity' providing for workers' 'subsistence'. But he goes on to say:

> It should be remarked that if this difficulty (of no substitutes[19]) were overcome and an absolutely necessary commodity found, the difficulty of reducing to a common measure the various things[20] entering into real cost would solve by itself. In effect it would be easy to find the cost of all the other things in terms of the necessary one, and thus by going back enough in the genealogy of production (and stopping along each branch so soon as we have resolved it into our necessary commodity) we might find exactly the total amount of corn (if this were the ideal necessary commodity [...]) that has actually entered into the production of, say, this book, and covers entirely its cost of production, at the exclusion of any other commodity
>
> (ibid: 16.iii–iv; underlinings in the original)

10. This passage is followed by a number of pages in which Sraffa returns to his criticism of the Marshallian concepts of costs. To find a resumption of the argument he began there about the 'necessary commodity', we have to turn to manuscripts that we can date to November 1927 and to the period immediately after. The first manuscript we shall consider is part of a group that Sraffa put in a folder marked 'Winter 1927–28'.[21] The manuscript takes up the idea of the 'necessary commodity' measuring costs, and makes a start by 'reducing' the commodities to one or more of them. The procedure rests on some algebraic relationships whose form we shall examine in detail in par. 12 below, and which we will call here simply as 'the equations' (as Sraffa does in his manuscripts). They express the relationship between a product and its means of production, where the latter include the subsistence of the workers directly involved in the commodity's production. The reduction, e.g. of *A*, the quantity produced of commodity *a*, to a quantity of commodity *c*, which we may suppose to be the 'necessary commodity', is effected by repeatedly replacing each of the direct and then indirect means of production of *a* different from *c*, with the respective 'equation' so that, in the end, the production of *a* is explained as if it only required *c*, in the way indicated in the passage quoted from the pre-lectures for the 'necessary commodity'.

Thus, on the first page of the document we mentioned, we find what seems to be the reduction to itself of commodity *a*, one of two commodities, *a* and *b*, constituting an economic system with no surplus, and which, to borrow Sraffa's (1960: 4) later expression, finds itself in a 'self replacing state', the quantities produced being equal to the quantities consumed in

production. This first attempt, to which we will return below, is abandoned, and the page in which we find it is crossed out with a pen stroke. The attempt at reducing a product to quantities of a single commodity is however resumed on the following page, this time with a three-commodity system allowing for a surplus. This second attempt is then pursued for the remaining six pages, through the imaginable labyrinth of algebraic expressions, before being again apparently abandoned.

11. The above document is not interesting, however, solely because of the attempt to carry out the reduction to a 'necessary commodity' contemplated in the pre-lectures. Also, and above all, its interest lies in that the attempt is developed in such a way as to make it almost inevitable that Sraffa should promptly come upon a different kind of physical real costs and should then proceed, in other manuscripts of the same period, along a different path – the one that will lead in time to the price equations (or 'production equations' in Sraffa's expression in *Production of Commodities*).

Thus, on the first, cancelled page of the above manuscript, the 'equations' are written as follows:

$$\begin{aligned} A &= a_1 + b_1 \\ B &= a_2 + b_2 \end{aligned} \tag{1}$$

where A clearly indicates the quantity of the commodity a produced using quantities a_1 and b_1 of, respectively, a and b – and similarly for B. As we have said, Sraffa assumes here replacement of the resources consumed in production, but no surplus. He can therefore write the further two equations:

$$\begin{aligned} A &= \sum a = a_1 + a_2 \\ B &= \sum b = b_1 + b_2 \end{aligned} \tag{2}$$

Now, before trying to reduce a to itself, Sraffa notes that from the first of relations (1) follows:

$$A - a_1 = b_1$$

and from the first of (2):

$$A - a_1 = a_2 \tag{3}$$

so that, if the conditions for the replacement of the means of production are to be satisfied, the further condition written on the same page of the manuscript:

$$a_2 = b_1$$

must also hold in the sense, evidently, that the quantity a_2 of a will have to exchange with the quantity b_1 of b, *i.e.* in the symbols we shall see below:

$$V_{a/b} = \frac{b_1}{a_2} \text{for the price of } a \text{ in terms of } b, \text{as well as the reciprocal}$$

$$V_{b/a} = \frac{a_2}{b_1} \text{ for } b \text{ in terms of } a.$$

Thus, in a further manuscript from another folder also dated 'Winter 1927–28', we find equations similar to (1), but for more than two commodities on which Sraffa now comments:

> 'These are homogeneous linear equations. They have infinite sets of solutions, but the solution of each set are [sic] proportional [...] These proportions we call ratios of absolute values. They are purely numerical relations between the things A.B...'
> (D3/12/5, A6.1):

A way of representing 'physical real costs' – what is *physically necessary* for the commodity's production – more direct than the 'necessary commodity' has been found, and the attempt to achieve a 'reduction' to such a commodity is apparently abandoned.

12. By now the reader will surely have wondered at the peculiarity of 'equations' such as (1) and (3), the same found in numerous other of Sraffa's manuscripts of the same period, where heterogeneous physical quantities are added up or represented as equal. This has naturally been cause of some perplexity in the literature.[22]

In the same connection a brief Sraffa manuscript dated '26.6.28' and titled 'Ramsey'[23] has also attracted attention, since it appears to have been written after a meeting with the Cambridge mathematician Frank Ramsey, a close friend of Keynes. After a report on the possibility to solve the price equations for an economy without surplus, and the probable uniqueness of the result, we read: 'Equations without surplus: each quantity must be expressed by two letters, one being the number of units, the other the unit of the commodity otherwise, if I use only one letter, this would stand for heterogeneous things and the sum would be meaningless'.[24]

The temptation has been strong to conclude that in relations like (1) and (3) Sraffa, no mathematical expert, had committed a simple error, which was then corrected by Ramsey. Yet the passage on homogeneous and linear equations we found above and that can be dated to before the meeting with Ramsey indicates that Sraffa was not so lacking in mathematical notions, and that would seem sufficient to cast serious doubts on the idea of a straightforward error. In my view, and for the reasons we shall presently see, those doubts would be more than justified.

In looking at relations like (1) and (3), it is in fact important to remember the nature of circular reasoning that, in common with the economic literature of his time, Sraffa had attributed to the determination of price in terms of the expenses of production:[25] we saw that in the passages quoted from the pre-lectures (see par. 7 above). It is not surprising therefore that, when he got to his 'equations', in a document of November 1927 Sraffa should argue:

> When I say that the value of a product is 'determined' by the physical volume of commodities used upon its production, it should not be understood that it is determined by the value of those commodities. This *would be a vicious circle'* [...] What I say is simply that the numerical proportions between amount of factors and [...] of products is by definition, the absolute value of the product
>
> (D3/12/11; E2.90; our italics; the underlining is instead by Sraffa)

And, in a substantial sense, Sraffa is of course right. Commodity values are determined by the parameters of the equations as normally written, and these parameters are physical quantities of commodities. Thus, for example, as we noted, relation (3) above, $a_1 = b_2$, equalizing two heterogeneous quantities, can be easily and directly read as an expression of the exchange ratio between the two commodities imposed by replacement. This easy determination is due to the simplicity of the two-commodities case, but it may have made clear to Sraffa that the same must have been true in some sense in the more general case.

All this does not of course remove the fact that, while 'the equations' taken in that form may give an intuitive form to the logical conditions that the 'numerical ratios' of equivalence between heterogeneous commodities A, B, a_1, b_1, a_2, b_2 must satisfy to ensure replacement of the means of production, yet they cannot generally be solved for those ratios by the received methods.

Now, a striking document of the period shows that Sraffa was quite aware of the normal way of writing 'the equation' and was consciously choosing the form of (1) or (3) — and all this almost certainly before the mentioned meeting with Ramsey. The document (D3/12/6: C, XVI, 4) is in fact in a folder dated 'Winter 1927–28', well before the meeting, which, as we said, occurred in June, 1928. There (ibid, ii), Sraffa writes the expressions:

$$\begin{aligned} A + A_s &= (5a_1 + 6b_1 + 3c_1)r \\ B + B_s &= (4a_2 + 2b_2 + 6c_2)r \\ C + C_s &= (7a_3 + 2b_3 + 3c_3)r \end{aligned} \qquad (4)$$

for a three-commodity economy with a physical surplus of them, which, as specified in the manuscript (ibid, *ivi*: ii), are each in the uniform

proportion (r-1) to their respective initial stocks. In (4), where the 'equations' clearly ask to be read as 'the quantity produced $(A + A_s)$ of a requires for its production 5 units of a, 6 of b, 3 of c and similarly for $(B + B_s)$ etc.' heterogeneous quantities are again 'summed' as in (1). But Sraffa writes immediately afterwards:[26]

> If this were unsatisfactory, we could put the equations in a form which shows explicitly that our real unknowns are values, and rate of surplus. This may be done thus. Suppose we want to know all the values in terms of B or any other one. Call $V_{a/b}$ the value of A in terms of B, etc. We have:
>
> $$\begin{aligned} V_{a/b}(A + A_z) &= (V_{a/b}a_1 + b_1 + V_{c/b}c_1)r \\ (B + B_s) &= (V_{a/b}a_2 + b_2 + V_{c/b}c_2)r \\ V_{c/B}(C + C_z) &= (V_{a/b}a_3 + b_3 + V_{c/b}c_3)r \end{aligned} \qquad (5)$$
>
> The unknowns are $V_{a/b}$, $V_{c/b}$, r, same number as equations [...]
>
> (ibid, *ivi*: iii)

Here, Sraffa clearly makes a conscious choice between two ways of presenting or writing 'the equations' in which the second way shows 'explicitly', as he puts it, the 'real unknowns'. Sraffa thus knows that he *implies* these 'real unknowns' in the first way of writing the 'equations' and clearly he prefers it because, to his own eyes, it makes immediately clear the fact that values are determined by the physically heterogeneous quantities that must be equalized in exchange and that, therefore, there is no question-begging reasoning by which values are determined by other values. In fact, except for expert mathematicians who may have an intuitive grasp of the logical process entailed in equations such as (5), the comprehension of the non-circularity of that price determination is entrusted to a counting of equations, or, more generally, to the 'black box' of a purely technical-mathematical analysis, in which the concrete economic reason of their determining role remains obscure, or even unknown, at least until the equations are explicated in further economic analysis (such as, for example, that of the Standard commodity and Standard system, or, more generally, that of Chapters III – VI of *Production of Commodities*).

We must realize that Sraffa is struggling to express even for his own understanding the basic result he has just arrived at thanks to the concept of 'physical real costs', namely that, essentially, the physical conditions of production of the commodities and the need to allow production to be repeated are sufficient to determine relative prices quite independently of what are generally understood as 'demand and supply forces'. This was an

idea totally new for his contemporaries, and for Sraffa himself, steeped as they were in the complexities of the post-classical demand and supply analysis — which had paradoxically resulted in obscuring, and then forgetting, what had begun to emerge with Ricardo and the Classical economists. And Sraffa has to grasp and express this idea against the common sense notion of the time that an explanation of prices solely in terms of production expenses would involve circular reasoning.

Returning now to Ramsey's role in the question, there is, of course, a margin of uncertainty in dating the above manuscript to the Winter of 1927–8, months before the meeting of June 1928. By association of subject matter, or simply by mistake, a later manuscript can have been put, or have slipped, into that folder dated 'Winter 1927–28'. But, even if it were of a later date, the document would support our central argument – Sraffa would still be writing for himself the 'equations' in a way that he clearly continued to find significant, despite the defects that Ramsey had stressed to him.

In light of the above, it seems possible to conclude that the note relating to the meeting with Ramsey does not have the meaning one is at first tempted to attribute to it of correction, that is, of a straightforward mistake by Sraffa. The note may, for example, have concerned Ramsey's reaction to a presentation of 'the equations' made to him in the form Sraffa preferred, or also here reported the Ramsey's reply to a doubt expressed by Sraffa as to the best way to represent the logical process involved.

13. We have seen how Sraffa counter-posed physical 'real costs' to Marshall's subjective 'real costs'. Now, Marshall's 'ultimate standard of value', like that based on utility alone, could only lead to alternative interpretations of the results of a supply and demand system, which was essentially common to both, and which, as we have seen, Sraffa had hitherto accepted, once freed from the subjective slant given by these particular interpretations. But, unlike those 'ultimate standards', the physical real costs that he finally arrived at brought him to a determination of relative prices (or relative costs), which was alternative to the dominant one based on demand and supply functions, and was apparently unexpected for Sraffa himself. If the result was enthusiastically welcomed by Sraffa, who seems to have immediately perceived its revolutionary importance, at first it seems to have left him disconcerted and searching for the relationship between that way of arriving at relative prices and the one in terms of demand and supply he had hitherto accepted.

The situation finds a fascinating reflection in two manuscripts, part of a group in a folder marked in Sraffa's handwriting with a generic dating: 'After 1927'. I think the points we shall see make it possible to ascribe them to the first of the periods that Sraffa devoted to what would later become *Production of Commodities*: the one from the autumn of 1927 to the early 1930s

(the remaining two being, as is well known, the early 1940's and then the second half of the 1950's). Significantly enough, the first of the two manuscripts is headed: 'Why I neglect increasing and decreasing returns in equations'. In it, Sraffa writes:

> The reply is that these equations cannot possibly answer as to how or why prices change. They only explain why, at a given moment (?),[27] prices of different things bear to one another the proportions which they do. [They do not explain] variations of one commodity at different times [...]. No system of equations, whether it considers variable returns or not, could tell this if time does not enter as a variable. Take a pair of Marshall's D[emand] and S[upply] curves. They tell that, given the conditions, the price will be *AB*: to this effect it is quite indifferent whether the supply curve is SS_1 or $S_{11}\,S_{111}$ [a small diagram is drawn here in a corner of the page with the usual Marshallian cross, and the ordinate AB as the equilibrium price resulting from a decreasing supply curve, $S_1\,S_{11,}$ and also a rising one, $S_{11}\,S_{111}$]. It may be thought this is relevant to a case in which 'there is a change in demand'. The real point is that it is believed that Marshall's curves provide 'forces' which, in case the price falls below or above AB by 'chance' will restore it to AB. Now I am not assuming any forces: I simply say that, if the values will in reality be as given by the equations certain conditions will be satisfied: if not they will not be satisfied.
>
> (D3/12/7: A7.29.i)

In the same manuscript, under a new heading, 'Man from the moon', Sraffa writes:

> The significance of the equations is simply this: that if a man fell from the moon on the earth, and noted the amount of things consumed in each factory [...] during a year he could deduce at which values the commodities must be sold, if the rate of interest must be uniform and the process of production repeated. In short, the equations show that the conditions of exchange are entirely determined by the conditions of production.
>
> (ibid, *ivi*: iii)

where the new mid-page title and**,** above all**,** the clarity as to the nature of the result could indicate a later addition to the manuscript:[28] a fact which would be significant in itself as an indicator of the gradualness with which Sraffa came to grasp the significance of his own results.

The second manuscript on the other hand takes us back to the uncertainties of the first part of the previous document. It is headed: 'Difference (simultaneous) versus Change (succession in time)', and we read with reference presumably to the results of the 'equations':

> The general confusion in all theories of value [...] must be explained by the failure to distinguish between two entirely distinct types of questions and the universal attempt of solving them both by one single [...] theory.

> The two questions are:
>
> 1) what determines the (difference in the ?) values at which various commodities are exchanged in a given market on a given instant?
>
> 2) what determines the changes in the values of commodities at different times? (*e.g.* of one commodity)' [underlining and question marks in the original]
>
> (D3/12/7: A7.38, i)

and after seeking radical differences between the two points of view, in the uniformity of prices, wages and profits in the first, and changes in these magnitudes in the second, he continues:

> Therefore it is possible that the two problems have to be solved in different ways: and that of two opposite general theories of value, one may be true in respect of one question and the other in respect of the second [...] The first problem gives rise to a geometrical theory, the second to a mechanical one [...] The first problem must be solved by the theory of value. The second, I think, can only be solved by the theory of industrial fluctuations [...] Marshall's theory of value, with its increasing and diminishing costs and marg[inal] utility, scissors, pillars and forces, can only be understood as an attempt to solve the first question in terms of the second.
>
> (ibid, *ivi*; iii)

In these two documents, Sraffa seems to be surprised by the fact that he can determine prices without the supply and demand apparatus and the consequent hypotheses on returns. He hunts then in several directions for the reasons of his result, here essentially in terms of a distinction between 'differences' and 'changes', which, as we will shortly see, he will soon recognize was unfounded, at least in the form in which he outlines it at this time. Accordingly, the idea in the first manuscript appears to be that returns are relevant for 'changes', which, as such, can take place only in 'time', while 'the equations' he arrived at are 'timeless'. Hence the idea, also found in the second manuscript, that 'the equations' could express only a given situation and hence explain, in some sense, only 'differences' between 'simultaneous values' (in fact, relative values, as the first document puts it more appropriately), while Marshall's supply and demand with variable or constant returns concern 'forces', which explain changes or, alternatively, lead back to an equilibrium after accidental deviations from it. The two procedures or theories seem to be viewed at times as complementary by Sraffa — one 'geometrical' to explain 'differences' and the other 'mechanical' to explain 'changes' or the tendency to equilibrium; the first being more properly called a 'theory of value', the second a 'theory of industrial fluctuations'.

In reality, in the second manuscript, Sraffa realizes already that the distinction between 'the equations' for 'differences' vs. Marshall's demand and supply for 'variations' is unfounded. Referring to the 'common substance', which he has just said should explain 'differences' between prices, he continues: 'This way of putting the distinction is confusing. If the ''common substance'' is drawn in for the first [problem] it is clear that as it explains the equality [between simultaneous values] in the first case it will explain the difference in the second' (ibid: iv).

Yet the effort at clarification in these manuscripts brings Sraffa quite close to grasping another implication of the results he has arrived at – besides, that is, the fact that 'the equations', no less than Marshall's demand and supply, suppose 'forces': those forces, which, under the title 'Man from the moon', he had called 'conditions of production'. This further implication emerges when in the second of the two manuscripts Sraffa writes:

> [Marshall's] machinery of supply and demand [...] seems to be directed to answer questions such as 'what will happen to price if a tariff be imposed? or a bounty or tax? or change in tastes? or inventions?' *The point is — can such questions be answered in a general way, i.e. assuming the 'initial' movement to be entirely arbitrary? or is it not necessary to know how it has arisen?*
>
> (ibid: iii – iv; our italics)

Only Marshall's ambiguities could leave any doubt as to the question in marginalist terms where, in reality, each change in demand could only result from a change in some data in the system of general equilibrium, which would then also define the eventual corresponding changes in the supply functions. Yet, where, with 'the equations', the prices are no longer supposed to be determined by demand and supply functions, but by other forces summed up as conditions of production, Sraffa's observation becomes of fundamental importance and will be resolved by the separation between the determination of prices and the determination of outputs, i.e. with the given outputs that we find in *Production of Commodities* and, in fact, already in the equations, like (1) to (5) above, that Sraffa is at this point developing.

It is not surprising, then, that in the first of the two manuscripts there emerges already what we shall find in the Preface of *Production of Commodities* more than thirty years later:

> 'I am afraid it will be difficult to make it clear that we are considering what has actually happened in the markets, and not what might have happened had things been different. It will therefore be useful to explain that the reader may assume that constant returns prevail.'
>
> (ibid, *ivi*: A7.29.ii)

where 'what might have happened' consists of all the points of the supply and demand functions other than those for the equilibrium**,** and which had him to state in that Preface: 'No changes in output and [. . .] no changes in the proportions in which different means of production are used by an industry are considered so that no question arises as to the variation or constancy of returns' (Sraffa 1960: v).

14. In fact, Sraffa's disorientation at first in grasping the relationship between the theory of value he started out from, and that he arrived at, seems to have been, initially, even more radical than might directly emerge from the manuscripts we have just considered. There, he is sufficiently clear that what comes out of the solution of the equations are prices that we expect to be realized in the markets as 'normal' or 'production' prices. But manuscripts that are in all probability of an earlier date show considerable uncertainty in that respect.[29]

As we have seen, Sraffa arrived at 'the equations' when he was looking for an 'ultimate standard of value' envisaged as 'physical real costs' in contrast with Marshall's subjective real costs. To start with, he saw the results obtained from 'the equations' as 'costs' and, therefore, as the 'absolute values' we saw in two of the passages we quoted above — something distinct, at least in principle, from observable prices. Thus, under the title, '*Natural value',* Sraffa writes:

> When A. Smith etc. said 'natural' he did not in the least mean the 'normal' or the 'average' nor the 'long run' value. He meant that physical, truly natural relation between commodities, that is determined by the equations, and that is not disturbed by the process of securing a greater share in the product. 'Exchange value' was the result of natural value disturbed permanently by the scramble for the surplus
>
> (D3/12/11; E2.73; underlining in the original)

where, clearly, the effect of the uniform rate of profit or, more generally, of the distribution of the surplus, on relative prices is seen as a factor for difference and disturbance with regard to the 'absolute values' representing the true costs of the commodity for the community. This is confirmed in another manuscript where we read:

> 'Ratio of solutions are ''absolute value''. It is not contended that they are actual exchange values (this depends on institutions) which is [sic] indeterminate'
>
> (D3/12/6: CXVI.3.i).

The same ambivalence as to the meaning to be given to the unknowns determined by 'the equations', emerges as regards whether and how the values obtained for an economy without surplus should be modified when a surplus is present. We have seen how, in the manuscript titled '*Natural*

value', the implication is that relative costs should not be influenced by the 'scramble for the surplus': the problem surfaces again in the manuscript we have just quoted with the question: 'How to «justify» or explain the equal percentage added to initial stock of each industry' (ibid, *ivi*; CXVI.3.vii).

Sraffa's answer is not, as one might perhaps naturally expect, that it is a condition directly imposed by free competition on the markets. Rather, it is sought in the necessity of ensuring that capital is not removed from branches of the economy which would otherwise finish up with a lower rate of profit and would prevent the system from reproducing itself on an unchanged scale – even if, as Sraffa notes in the manuscript, in this way 'we are allowing to come back through the window the [notion of cost as] 'inducement' we had excluded from the door'.[30]

V. The interpretation of the classical Economists and the Cambridge lectures

15. We have so far considered Sraffa's development of the idea of 'physical real costs' in those years, from the viewpoint of his own theoretical position, but the same development could not fail to have drastic implications for his interpretation of the Classical authors in whose work (in particular that of the Physiocrats) that general idea of costs clearly had its origin. As we recalled, Sraffa had accepted the Marshallian interpretation of Ricardo and the Classical economists in terms of constant returns and, therefore, of equilibria between demand and supply. The discovery that 'physical real costs' implied a determination of relative prices, which would not introduce any demand, and supply functions could not but revolutionize his interpretation of those authors by revealing a theory of relative prices and distribution more radically alternative to the dominant one than Sraffa had until then supposed. And we must stress that, contrary to what has been contended by some commentators[31], the evidence is that the change in the interpretation was not the gradual result of a deliberately planned inquiry: it was as rapid and unexpected as the achievement of the 'equations' in the way we described above.

The reliance on physical real costs rather than the subjective real costs and/or utility, claimed as 'ultimate standards' of value by Marshall and the other marginalist authors, thus came to replace, for Sraffa, the assumption of constant returns as the true discriminating criterion between Classical theory and the subsequent theories. As he wrote in a manuscript of a few lines headed '*Evolution of the concept of cost*': 'the trend has been from meaning by cost the means necessary to enable production to be made, to

meaning the incentive required to induce somebody to overcome the sacrifice involved in production' (D3.12.4: A5.6. Underlining in the original).

The evolution of the cost concept had been, that is from the things objectively necessary for production (means of production and workers' subsistence) to the incentives subjectively required to induce a supply of those means (undertaking the efforts and 'sacrifices' of labour and 'waiting'). As Sraffa explains:

> It was only Petty & the Physiocrats who had the right notion of cost as 'the loaf of bread'. Then somebody started measuring it in labour, as every day's labour requires the same amount of food. Then they proceeded to regard cost as actually an amount of labour. The[n] A. Smith interpreted labour as 'the toil and trouble' which is the 'real cost' [...] and the 'hardship'. Then this was by Ricardo brought back to labour, but not far back enough, and Marx went only as far back as Ricardo. Then Senior invented Abstinence, and Cairnes unified all the costs (work, abstinence & risk) as sacrifice.
>
> (D3/12/4: A5.4.i)

— and, again, in another manuscript making the point more freely and expressively:

> This [the concepts of subjective costs and/or utility as ultimate standards] was an enormous breach with the tradition of Pol[itical] E[conomy]; in fact, this has meant the destruction of the classical P[olitical] E[conomy] and the substitution for it, under the old name, of the Calculus of Pleasure & Pain [...]
>
> When the Jevonsians turned back to write their own history, they found with pride (it ought to have been with disma[y]) that they had no forerunners amongst P[olitical] E.[conomists]; their forerunners were mainly two or three cranks, an engineer Dupuit, a mathem.[atician] Cournot, a Prussian civil servant Gossen, who had only cultivated P[olitical] E[conomy] as a hobby. [...][32]
>
> They had not the slightest knowledge of the works of the Classical economists. They drew it out of their fancy. In fact, no competent P[olitical].E[cono]mist, with a conscience of his tradition, would have degnato [in Italian in the text: deemed worthy] to entertain those views
>
> (D3/12/4; A5.2.i)[33]

The fundamental importance that Sraffa attributed to the concept of objective (physical) 'real costs' in contrast to subjective 'real costs' and/or utility will be less surprising for today's economists, who are used to seeing these problems in different forms, when we recall that the idea of physical real costs to be found in Petty and Quesnay is one and the same thing as the central concept characterizing the alternative classical theory that Sraffa was now in the process of rediscovering: the concept that is of a 'surplus' produced over and above the materials used and the

workers' subsistence, with the corresponding determination by difference of rents (Quesnay) and/or profits (Smith and Ricardo). As we have seen, it is indeed the concept that quite naturally enters Sraffa's manuscripts of the period concerning 'the equations', which are always distinguished according to whether they refer to an economy with or without 'surplus'.

16. It is above all through this Classical conception of costs and the resulting notion of surplus that what Sraffa is developing in his manuscripts filters into the more than 200 pages of notes that he wrote for the lectures on the 'Advanced theory of value', as they were then held for the three academic years from 1928 to 1931 (D2/4). It is not the task of this essay to examine the lectures, or even to make a systematic treatment of the traces we find there of the 1927 turning point. We will do no more than indicate some of the salient characteristics of these traces.

The most obvious novelty with regard to the articles of 1925 and 1926 and to Sraffa's initial project for his lectures (see par. 5 above) lies in a first section of the lectures taking about one-third of the whole of the notes. This first part is devoted to the alternative between, on the one hand, subjective costs and/or utility, and on the other hand, the 'physical real costs' of the pre-lectures, which, however, are now generally indicated as objective costs or simply 'costs'.[34] The remaining two-thirds of the lectures consist then of material referring largely to the 1925 and 1926 articles.

The apparent purpose of the first part of the lectures is to show the inconsistency of Marshall's compromise of a twofold 'ultimate standard of value': utility, on the one hand, and costs in the form of 'efforts and sacrifices' on the other, where in equilibrium the two would have to be equal. In his lectures Sraffa argues then that the notion of 'costs' was developed by the Classical economists as a completely different objective concept referring to workers' subsistence and the other material means of production. These objective costs would not have been commensurable with utility as the ultimate standard of value, subsequently developed in contrast with the Classical costs. For the commensurability it logically needed, the Marshallian compromise had therefore to refer to subjective costs consisting, as we have seen, of the incentive necessary to induce the owners to allow their resources to be used in production. If this makes the costs commensurable with utility, it also transforms them, Sraffa argues, into nothing more than the negative utility of the alternative uses, which are given up in order to use the resources in the production in question. The Marshallian compromise is therefore no compromise at all, since it in fact leaves utility as the sole 'ultimate standard of value'. The real alternative as to the 'ultimate standard' is therefore the one

between utility on the one hand and the Classical objective costs on the other.

As to which of the two should be chosen, Sraffa does not explicitly take sides in the lectures. Thus, for example, after distinguishing between the Classical notion of costs and the Marshallian one that he is about to trace back to utility alone, he observes: 'between these two notions of real cost it is not so much a question of one of them being right and the other wrong, as of one being relevant for dealing with one set of questions, and the other for an entirely different sort of questions' (D2/4: M1.24–5).

Sraffa is allowed this agnosticism because, in concluding this first part, and moving on to the rest of the lectures, he argues:

> Of course, the next part of our analysis would have been made easier, if first we had found that there is one clear and definite conception of cost of production, about which all economists agree. But we shall see that, in the detailed application of the notion of cost to the theory of value, we are able to carry our analysis a fairly long way before we are faced by the sort of difficulties which may compel us to make up our mind about what exactly we mean by cost. And this is due chiefly to the fact that for the purpose of many questions arising in the determination of the price of any one particular commodity, the notion of expenses of production will be sufficient for most purposes without being necessary to decide[35] whether it is 1) merely a shadow of 'real costs' or sacrifices behind it or 2) another name for the utility of the product (opport[unity] cost) or 3) itself the ultimate real costs (not as a sum of money, but a sum of things consumed in production).
>
> (ibid: *ivi*, p. 61)

where the big novelty, announced with little fanfare, lies in the third possibility.

This argument that one can go 'a fairly long way' in the theory of value without dealing with what costs are**,** may however seem to echo the initial position in the pre-lectures, where the question of the causes of value was contrasted with that of the exchange 'of commodities with each other' (D3/12/3: A 4.4.v). But to pose the problem is also to realize how far Sraffa had travelled in the meantime as indicated already by the fact that this whole part of the lectures was nowhere to be found in the pre-lectures (see par. 5 above).

The initial position in the pre-lectures had in fact been that of excluding from economic theory proper the question of the 'causes of value', whether costs or utility, as a 'primitive' and political–philosophical issue, all this in favour of a theory of value based on a notion of equilibrium independent of that issue. Here, instead, in this first part of the lectures, the discussion is pursued within the very framework set by the two **'**causes of value' — it centres, that is, on the very aspect of the theory of value that Sraffa was there hoping to expunge (see above).

Indeed the vision is now that of two alternative theories of value distinguished according to the respective idea of the 'causes' of value, namely utility, or costs, the latter being now more precisely defined in the classical objective sense. The theory of value or more exactly the two alternative theories of value are now seen to be susceptible of a common treatment independent of the contrasting 'causes of value' to which they appeal but this only for part of the argument: Sraffa states that a point will come (basically with the theory of distribution: par. 6 above) at which one will be faced 'by the sort of difficulties which will compel us to make up our mind about what exactly we mean by cost'.

As a matter of fact, that 'fairly long way' common to both approaches — which will turn out to be largely that of the two articles of 1925 and 1926 — is hardly compatible with the critique of partial equilibrium to which Sraffa had arrived at end of the pre-lectures and, it would seem, with the results that he had been achieving or was achieving in the manuscripts discussed above. In particular, as will be shortly confirmed by the lectures themselves, those results were throwing into doubt that pillar of partial equilibrium, which consists of the supply curve of a commodity. But, as will be argued in par. 19 below, this conflict between lectures and manuscripts may in part be the consequence of the compromise Sraffa had to strike because, beyond what he says about Classical costs and surplus in the first part of the lectures, he clearly felt that that new material emerging in the manuscripts was still in too fluid a state to be handled in lectures. However, in that first part of the lectures, Sraffa had allowed the central elements of an alternative theory to emerge, and in this way he had placed, so to say, a lien on all the rest of the lectures. However, the novelty was too radical and was presented with too little emphasis to allow his Cambridge students of the time to understand and perhaps even really notice it.

17. In fact the notion of surplus, which is completely missing in the pre-lectures, is introduced very concisely, but with great conceptual clarity as part of the objective conception of costs, when, e.g. Sraffa writes:

> This view [of wages as necessary subsistence for workers and not as inducement to the 'sacrifice' of working] leads to a conception of wages during the productive process: they come thus to be identified with capital or at least with an important part of capital. Profits (and rent of course) are a part of the product and precisely *the excess of the product over the initial stock*
>
> (D2/4, M1.7: 24, our italics)

The contrast with the parallelism between wages and profits which the doctrine of subjective costs ('efforts and sacrifices') had attempted to establish, could not have been stated more sharply.

Or, again:

> 'For Quesnay [...] the cost is [...] an element of the productive process, which must be exactly measured in order to compare it with the product and thus determine whether product contains *a surplus over and above cost*'
>
> (ibid: 25–6, our italics),

and more generally:

> 'the notion of the surplus product plays an important part in classical economics [...]. Smith adopted this notion of surplus and with it the idea of cost of the Physiocrats'
>
> (ibid: 27).

Accordingly, in the theory of wages, which Sraffa traces in the Classical economists, we find the basic elements which, in their independence of supply and demand functions for labour, are infact the ultimate foundation for the notion of surplus. 'Ricardo's theory regarded as the fundamental problem [...] the distribution between the landlord and the other classes; when this was done the division of their share between capital and labour would take place on *entirely different principles*' (ibid: 7–8, our italics). This passage clearly excludes Marshallian labour demand and supply functions from any role in what is there called the 'division' between capital and labour. It would indeed be difficult to see such a determination of wages and profits as based on 'entirely different principles' from those applied for the classical rents, of which those Marshallian labour demand and supply functions are in fact intended to be a generalization.

18. As hinted above, there are in the lectures, besides the conception of surplus, also signs of a second central feature distinguishing the Classical approach which Sraffa is re-discovering, from the demand and supply of marginal theories. It is the negative one of the lack of any notion of supply functions for commodities. This is a direct consequence of determining prices and outputs in the way we saw in the winter-1927 manuscripts, independent of supply and demand functions, and a result, ultimately, of the different theory of distribution. Thus, in the margin of one passage of the Lectures, Sraffa notes:

> The interdependence of cost and quantity produced is quite a modern idea. All the classical economists ignore it altogether [...]. It was only with the introduction of the concept of marginal utility that a possible quantitative connection between value and utility was perceived [...] and in consequence of it [...] variations of costs as a function of quantity produced were connected with the determination of value
>
> (ibid: 66–7)

and he adds, again in the margin:

> 'so much so that it cannot even be said that they assume constant costs to operate throughout as their argument implies, since they don't take the question into consideration at all'
>
> (ibid: 66)

a striking change with regard to his Marshallian interpretation of the Classical economists of 1926 and 1927. Even if a residue of the Marshallian approach may perhaps be still detected in that phrase 'as their argument implies', in denying the existence of a supply function in the Classics, Sraffa is in effect saying that they took the quantities produced as given when determining prices. And this is in line also with his observation noted in par. 13 above, according to which the behaviour of costs as outputs vary is said to require specific consideration as to how and why outputs change.

In effect, if the Classical economists ignore the inter-dependence of prices and outputs while at the same time not assuming constant returns, their procedure can only have consisted of determining prices for the quantities produced in the situation under consideration, i.e. of taking outputs as given when determining prices. This is confirmed and re-enforced by the consideration that when the behaviour of costs is likely to differ with the causes of the change in outputs (and information in this respect is not already included in the equation system determining prices: see par. 18 above), what is natural is to proceed by separating the determination of costs and prices from that of outputs, i.e. determining prices for given outputs and then consider how those prices are likely to change in response to the specific output changes envisaged. And this procedure is precisely the one Sraffa was in fact following when taking the quantities produced as given in 'the equations' of his manuscripts.

19. We have considered the new theoretical position Sraffa arrived at, but, as indicated already by Sraffa's caution in the lectures, we should not run too far ahead. He arrived at that new position in the sense of the initial break-through of the discovery that 'physical real costs' are sufficient to determine exchange relations independently of any demand and supply functions. It is the theoretical break-through that enabled Sraffa to say in his Preface to *Production of Commodities* that the 'central propositions' [in the book] had taken shape in the late 1920s and that, as early as 1928, 'Lord Keynes read a draft of the propositions with which this work opens'. But what we saw in par. 12–15 has shown us how, precisely because of its novelty, the new position needed all the development that Sraffa will put into it in subsequent years.

The structure and content of the lectures of 1928–31 appear, however, to be a reflection not only of the above need for completion, but also of the very special situation in which Sraffa came to find himself as lecturer in Cambridge. Clearly, by character he was anything but an improviser and would find it impossible to hold lectures on material of which he felt not to be in full command. And, still more important perhaps, the fundamental break with contemporary theory, which he knew to be inherent in the theoretical position he had arrived at, was such as to make him even more careful. That break did not allow elements of the new position to be advanced before the whole of it had been brought to a certain degree of maturity. The approximations, inexactness or even inconsistencies, which may be a tolerable blemish when the terrain is that generally shared in the profession, can cause grave if not irreparable damage when the terrain is a new, unfamiliar one, as in Sraffa's case, in view also of the miscomprehensions and resistances, which that analysis would inevitably have encountered, if only for its distance from the positions that the profession had long occupied.

It should therefore not come as a surprise that, in the lectures, there is, for example, no mention at all of 'the equations' that Sraffa was developing in those months or years, and that the expressions of the new position were limited to those of the kind we saw emerge through the Classical concept of objective costs as opposed to Marshall's subjective ones. Thus, as we said, in the remaining two-thirds of the lectures, we find materials coming largely from the two earlier articles, the same that Sraffa was now questioning in his manuscripts, but which was also that for which he had felt ready to lecture in Cambridge when invited by Keynes to do so in 1926.

20. This will also help to explain, among other things, why Sraffa found holding lectures in Cambridge painful enough to free himself of it as soon as he could: it may, that is, explain that difficulty quite irrespective of what may or may not have been the elements of character often attributed to him. (After all, he did not seem to find it particularly burdensome to give lectures in Perugia or Cagliari, nor, in those years, to give papers at King's College seminars on Italian politics, or the Florentine bankers,[36] nor was he particularly reluctant to hold lectures in Cambridge on subjects like the European banking system or, later, on 'Industry' — or even, as we shall presently see, on any other subjects, but the theory of value).

Something new and unexpected had in fact occurred with regard to the situation in which he had agreed to hold lectures on the theory of value, and it concerned the specific subject on which he was called upon to lecture.[37] The unexpected fact was the discovery of a theoretical approach, which was radically new for his contemporaries, and which because of this, he felt he should not prematurely expose to criticism. If the conquest, or

rather re-conquest, of that theoretical position had roused his enthusiasm, it had also thrown into a crisis the synthesis he believed to have reached in 1925 and 1926, and possibly the developments of it he was projecting at the time. He thus found himself in the position that, on the one hand, he could not lecture on what he was intensely working on and, on the other, that the alternative he was apparently left with, was to lecture on what he had earlier committed himself to, i.e. on theories and concepts on whose validity, or at least significance, he had now come to have radical doubts. It would indeed be surprising if anybody enjoyed giving lectures in these circumstances. And, after some first attempts at communication, similar difficulties seem to have emerged for theoretical discussions even with his closest colleagues, whenever the exchanges went beyond a critical discussion of their work or of his own *past* work.

21. Thus, at a more immediate level, it is hardly surprising that Sraffa asked the university to let him postpone the lectures announced for October 1927. The subject matter for his lectures had been plunged into a crisis. Time was needed to attempt re-structuring the lectures, as he finally managed to by October 1928, with that first part, which, as we said, laid down a lien on what came after and in some way allowed Sraffa to reconcile the lectures he was giving with the new theoretical landscape he was exploring. Moreover, all his interests and energy were now focused on the latter task, and on clarifying the results he had just arrived at. It could only be burdensome to give instead the necessary attention and time to preparing lectures on materials on whose validity, as we said, he could only be in doubt and which, in any case, must have seemed pale and lifeless by comparison with that on which he was working.

A sign of these two reasons for postponing the lectures is in fact readable in the letter that Sraffa wrote on 11 January 1928 to the General Board of the university, to apply for a second delay after the one he had obtained the previous October. He explains his request in the following way:

> 'This is partly due to the fact that now that I have prepared a certain number of lectures, I am convinced that the subject I have chosen is quite unsuitable. It is also partly due to the fact that I have been engaged on a piece of research which has so much occupied my mind as to interfere with everything else'.

Qualifying as 'unsuitable' for his lectures, the subject he had earlier accepted to lecture on and which was that of the articles on which he had worked for years, successfully enough to be invited to Cambridge to lecture on it, will seem less startling when it is realized that the subject was exactly the one in which what we have called 'the new fact' had occurred. As for the research that had occupied his mind so much 'as to interfere with

everything else', it was certainly a question of the fervour and excitement that is palpable in many of the manuscripts of the period, some of which we have quoted here.

The same factors behind Sraffa's procrastinations can be read even more significantly in the rough copy of a letter, which, at about the same time, on 14 January 1928, he planned to send to Pigou for the same purpose, while promising to give the lectures the following October. Here, he explains that his commitment is now 'independent of the program of work which I mentioned to you', and moreover that it is a commitment specific to holding the lectures on the theory of value or also — he, however, revealingly writes — 'if I could not in the near future overcome the difficulties which have prevented my lecturing on that subject at present, on some subject *unconnected with it*' (my italics). What we have seen in this article may explain, on the one hand, what was the 'program of work' about which he had evidently talked with Pigou. On the other hand, the draft letter also casts a clear light on 'the difficulties which have prevented my lecturing on that subject at present'. These clearly had little to do with a general repugnance to lecturing: Sraffa offers to lecture on any other topic provided, he significantly says, it is 'unconnected' with the theory of value.[38]

As for Sraffa's fervour and excitement for his work at this time, Keynes noted it down with his characteristic self-confident humour, when he wrote to his wife on 27 November 1927:

> Sraffa is in so much intellectual ferment and excitement about his ideas since I said that I thought there was something in them that he walks very fast up and down his room all day thinking about them. It is impossible for him to write them down, because as soon as he thinks about them, he has to start walking again. He is now inclined to give up his Christmas visit to Italy so that he can be able to continue in these courses for several weeks more'[39]

It is in these weeks — it is important to note — that Sraffa decides he will have to write a book[40]. Today, we can see that while striding back and forth in his room, he was also writing quite a lot and not about things of little import.

22. We can now conclude by mentioning an important manuscript whose tone shows in all its vivacity Sraffa's sense of discovery at this other world of economic theory, which he now understands to have been that of the Classical economists:

> 'in the middle of the 19th century a man succeeds, either by accident or by superhuman effort, in getting again hold of the classical theory: he improves it, and draws its practical consequences from it'
>
> (D3/12/4: A5.14iii).

It seems clear that the man in question is Marx. (With these lines, we may incidentally note, Sraffa permits himself some immodesty in his inner dialogue: if it was so difficult to grasp Classical theory again only thirty years after Ricardo's death, how much more so a century after? Or did Sraffa think he had chanced on it 'by accident'?)

Now, this document and similar ones[41] seem to have been interpreted as the expression of a long-term strategy envisaged by Sraffa to rehabilitate Marx. What we have said above should be sufficient to show that this is far off the mark. It may be closer to reality to say that, before his theoretical breakthrough, Sraffa certainly had a good knowledge of Marx. He sympathized with his political and philosophical theses and also with some aspects of his ideas in economic theory, but entertained doubts about the strictly economical, rather than political-philosophical value of other aspects, including the labour theory of value (see the quotations in par. 2, 4 and 11). It is only after his independent re-discovery of what he saw to be Classical economics, done along his very particular, personal path of a critique of Marshall's 'real costs', and the counter position to them of 'physical real costs' inspired by Quesnay and the Classical authors in a general sense, and after the resulting 'equations', that Sraffa came to recognize a new Marx as economic theorist, the one that arouses his admiration in the passage quoted above, and stimulates him to dive into reading (or re-reading) his works,[42] to come then, for example, in (1951), to the conclusion that the labour theory of value had in fact had a basic analytical role: that of expressing independently of distribution the aggregate on which a theory founded on the notion of social surplus naturally operates.[43]

Notes

* Although based on a study of the manuscripts conducted for several years over different intervals of time (cf. Garegnani 1998), this essay is strictly provisional. The reason is the difficulty in gaining sufficient control over a vast mass of relevant, but fragmented manuscripts, reflecting a highly original and long process of research in which the author had to open up his own path all along, step by step. The essential points in the present essay were presented at the Conference 'Piero Sraffa: A Centenary Estimate' organized in October 1998 in Turin by the Einaudi Foundation. The presentation there was exclusively verbal: (which seems to have led to some misapprehensions and also to expectations which, I hope, will be disappointed by the present paper: see De Vivo 2001: 158). I should finally mention that the present author is among those engaged in the publication of Sraffa's manuscripts: he is however responsible alone for the views advanced in the present essay (which concerns manuscripts of a period entrusted to his case for publication). The translation from the Italian original has been conducted by Mr. Julian Bees.

1 D3/12/3 in the Trinity catalogue, and from A4.4 to A4.28 in the Bharadwaj-Garegnani inventory. The document may at first appear to show discontinuities, but apart from the unity attributed to it by Sraffa's binding it together, a close study shows a substantial continuity between the three longest manuscripts constituting it, classified in the inventory as A4.4; A4.16; A4.21, separated by pages consisting almost entirely of bibliographies and reading notes that can be associated with the main texts immediately preceding them. (I note here that the catalogue drawn up by Trinity College Library often proceeds by groups of manuscripts and, as far as is accessible to me at present from Italy, does not separate the sometimes numerous manuscripts distinguished in the inventory. As a result, the page numbering will here refer to the latter, drawn up by Krishna Bharadwaj and the present author immediately after Piero Sraffa's death (Garegnani, 1998: 151). In the following, I will therefore give references to both classifications, with that of the Trinity catalogue first, followed by that of the inventory, which scholars consulting the manuscripts will normally find indicated in pencil on each manuscript page. (Classifications in the inventory given here with A, E or C stand, for the sake of brevity, for G.S.A; G.S.E; G.S.C).

2 Cf. Naldi 1998.

3 See, for example, 'I want to make clear that in this course . . .' (D3/12/3; A3.21). See also what appears to be a brief scheme of the intended course (par. 5 above).

4 Sraffa uses Marshall's own expression of 'particular equilibria'. Here, we have preferred the less exact expression that has now entered general use.

5 It should be recalled that Marshall's (and Sraffa's) definition of constant returns is stricter than that of 'constant returns to scale' usually applied to production functions today. Marshallian constant returns (i.e. a horizontal supply schedule) imply also a constancy of the relative prices of the productive services in the face of changes in the output of the commodity in question (cf. Section 5).

6 *Ibid.* D3/12/3: A4.4.iv, and ii, respectively. From now on our reference to the pre-lectures will be abbreviated to the Arabic numeral of the manuscript, following A.4 and to the small roman numeral of the page (in the present case 4.iv and 4.ii, omitting, that is, the expression D3/12/3.A4 common to all pre-lectures references.

7 *Ibid.* 4.ii, xi; cf. also par. 15 and n. 32 below.

8 In the documents of that early period, Sraffa makes a neat distinction between**,** on the one hand, 'production expenses', or equivalently 'money expenses of production' — a mere money value — obtained by taking factor prices as givens, and, on the other hand, 'production costs'**,** seen as a result of either the Marshallian 'efforts and sacrifices'**,** or Ricardo's and Marx's labour quantities, or, also, the 'utility' of alternative uses forming the basis for 'opportunity cost' in Wicksteed and other authors (cf. the passage in the pre-lectures, 4.xiv, quoted in par. 7).

9 Thus, for example, the level of the wages compared with the profit rate would depend on the relative demand for the goods produced with higher proportions of labour to means of production so that the level of the supply curve for those goods, taken as horizontal, would be the higher in terms of an average commodity used as numeraire, the higher that relative demand (*ibid.* 14i, n.).

10 For a similar passage, cf. *ibid.* 20.i.

11 It is as if the enthusiasm for a form of analysis, which he thought could be made independent of the practical and political presuppositions altering its objectivity, had led him to overestimate initially the significance of Marshall's partial equilibrium method.

12 Cf. also D3/12/3: A4.2 headed 'Demand curves a truism or false'.

13 *Ibid.* 4.viii and 21.i.

14 A similar clear distinction between the significance of the 'two classes of theory of value' is to be found in the pre-lectures at 20.i.
15 Cf. for example *ibid*, 4.vi.
16 In the manuscript the word 'clay' is added in parentheses after 'labour', presumably in order to indicate that labour is malleable in the way that clay is: it can be used for, and take the form of, any commodity.
17 *Ibid*. 16.iii.
18 Sraffa's criticism points out that Marshall's purely psychological concept of costs as a readiness to accept a sacrifice in return for utility is closely connected to the existence for the resource in question of alternative uses, the renunciation of which constitutes in fact the 'sacrifice'. This, Sraffa notes, makes it a relative, not an 'ultimate' concept of cost: and Sraffa wonders: 'What happens then if, as it is necessary in a quest of an ultimate standard, we go so far as to consider the whole of the commodities produced, and the efforts incurred at one and the same time? Shall we not then entirely miss any alternative use, since ex hypothesis we have included them all into our consideration?' (*ibid*, 16.ii).
19 This is clearly an abbreviation for the 'difficulties caused by the existence of substitutes for the subsistence goods'.
20 'Things' replaces a crossed out 'factors', which was Sraffa's first choice of word.
21 *Ibid*. D3/12/6; C.XVI.1.ii.
22 Cf. De Vivo (2000: 9–11), Gilibert (2004: 28).
23 (D3/12/2; A.1.26). Sraffa's diary shows that the date fixed for the meeting with Ramsey was 28 June 1928.
24 The word 'unit' here seems to have been interpreted by those commentators as a slip of the pen for 'price'.
25 Compare for example Dobb (1937: 9–10), 'A principle of value is not adequate which merely expresses value in terms of some one or other particular value'.
26 From the handwriting it transpires that the digits 5, 6, 3, etc have been inserted in the 'equations' (4) after the rest of them had been written.
27 This question mark and the further one that Sraffa inserts at Point 1) of the second manuscript to be presently quoted in the text give graphic expression to Sraffa's search for the meaning of his results and to the necessity for Sraffa to open up for himself the path he follows.
28 The issue of the possible later date for this second part of the manuscript was brought to my attention by my colleague, Roberto Ciccone.
29 The two manuscripts from which we quoted in par. 13 are we said, in a folder dated 'After 27' by Sraffa. Those we shall presently refer to are in two bundles (E.2 and CXVI in the Bharadwaj-Garegnani inventory), both of which are instead dated November 1927.
30 D3/12/6; CXVI, 3, viii. Thus it appears that Sraffa came to his 1927 'equations' in strict continuity with the work he had done for his 1925 and 1926 articles. There is little sign, in fact, that Sraffa's

> 'considerable shift of emphasis (in 1926–7) from his critique to Marshall to his 'equations' was mainly due to his (re-)reading of Marx'
>
> (De Vivo 2003: 6);

or, more generally, that:

> '[at the beginning of 1927] when he started preparing his lectures on the advanced theory of value for Cambridge, Sraffa also began a more extensive study of the classical economists and in particular of Marx' (*ibid*, 5)

and that it was in the course of this study, and under the direct influence of Marx that he developed the 'equations' (de Vivo 2003: 6). As we saw the signs are rather that Sraffa's original intention was to lecture on the material of the 1925 and 1926 articles, after an introduction on the more general theoretical context in which he had located it (see par. 5 above). The dates from November 1927 onwards of the corresponding reading notes testify that the intensive study of Marx and the classical authors came after, and not before the 'equations' arrived at in the autumn of 1927.

Indeed, as we saw, the 'equations' emerged from counter-posing to Marshall's subjective real costs, the objective concept of 'physical' real costs, begetting at first the notion of the 'necessary commodity': all this without any specific reference to Marx and to his schemes of simple reproduction of *Capital*, volume II, in which De Vivo (2000: 9–10) and Gilibert (2004: 28) attempt to trace their origin. The affinity between the 'equations' and Marx's schemes, lying in the common reference to output proportions ensuring replacement, seems on the other hand quite sufficient by itself**,** to explain the Sraffa annotations about those schemes on which Gilibert (2004: 28) and De Vivo (*ibid*, 9) base their thesis.

An important implication of the above should also be noted. Sraffa's consideration of November 1927 that the 'ultimate' result of his work would be:

> 'a restatement of Marx, by substituting to his Hegelian metaphysics and terminology our own modern metaphysics and terminology'
>
> (D3/12/4; A5.5, quoted by De Vivo 2000: 7)

made together with the decision, noted down in those same weeks, of writing a book (par. 21 above) can hardly be seen as expression of a project connected with the Cambridge lectures as such, as de Vivo 2000: 4 n., seems to contend. The project emerges rather as a natural, direct expression of the autumn 1927 breakthrough, and of Sraffa's awareness of the novelty and importance of his results.

31 Thus Kurz-Salvadori in their otherwise suggestive (2005) write

> At the beginning of his academic career Sraffa appears to have adopted by and large the received Marshall's interpretation of the classical economists as early and rude types of demand and supply theorists with the demand side still in its infancy. However he gradually came to see that this interpretation implied a travesty of facts [...]. The radical change of his view of the classical authors received some support from his reading in 1927 and 1928 of the French translation of Marx 1924–25
>
> (*ibid.*, 416)

The change in the interpretation of the classical authors does not however appear to have been gradual, but to have rather been a matter of months, if not weeks, early in the Autumn of 1927, as Sraffa arrived at 'the equations'. It thus seems misleading to refer to a Sraffa who 'in the late 1920's deliberately sought to elaborate an objectivist alternative to contemporary theory' (*ibid.* 414) or who, in a similarly deliberate way, set himself 'three huge tasks' consisting of the tracing of the essence of classical theory, of the reconstruction of it and, thirdly, of finding its differences from dominant theory (Kurz-Gehrke 2005: 18). The basic solutions to these problems occured, in a sense, all at once to Sraffa, the moment in which he came upon what Gehrke, Kurz and Salvadori describe as his 'objectivist alternative' (cf. also Kurz-Salvadori 2004). In this connection it might indeed be noted that if Sraffa's question had then been to achieve 'objectivism', rather than that of having stumbled on an

alternative theory of relative prices and distribution, based on the notion of surplus, he would probably have thought to have conquered that 'objectivism' already in his 1925–26 synthesis, when he was determining prices independently of a demand, which, in any case, he held to be definable with no recourse to subjective utility.

On the other hand we stressed already (n. 30 above) how, from the argument conducted, and the literature referred to in the pre-lectures, on the way to the 'necessary commodity' and hence to 'the equations', the change in question emerges as a strictly autonomous development of Sraffa's previous position. No trace seems visible there of specific external influences, whether from new readings of Marx — or, also, from particular natural sciences, in the way which is being suggested by Kurz-Salvadori (2005: 421–5) and Gehrke-Kurz (2005: 9–10).

32 In the manuscript, Sraffa specifies: 'I do not mean by this that cranks can never find new theories: on the contrary when a big breach with tradition is required, their intervention is usually necessary. What I mean to prove is that there has actually been a breach with tradition, and the intervention of the cranks is an element of the evidence' (*ibid*: the underlining is in the original).

33 The document continues: 'what had happened in the meantime to change so much the mind of the economists, and induce them to scrap all that had been done up to that time? (It was in fact scrapping the whole: Jevons (1957) Preface, and Cannan, Theories [of Production and Distribution (1893), 379–83]…) Socialism has been the cause of all this. In fact classical P[olitical] E[conomy], with its surplus to be arbitrarily divided leads straight to Socialism.' (*ivi*, ii).

34 In a manuscript titled 'Principio' [Beginning] contained in a file dated November 1927, which may refer to a revised program for the Cambridge lectures (or perhaps to an outline for the opening of the projected book mentioned in par. 21 above) Sraffa writes: 'I shall begin by giving a short 'estratto' [extract] of what I believe is the essence of the classical theories of value, i.e. of those which include W. Petty, Cantillon, Physiocrats, A. Smith, Ricardo and Marx […] Then I shall go over these theories very cursorily, dealing with them, not at all exclusively but examining only those points which are relevant to my present purpose. So, of the Physiocrats, I shall not talk of […] the physiocratia, but only of one of its basic points.' (D3/12/4; A5.1).

35 In the rest of the passage, we have followed the alternative version that Sraffa inserts in the margin of his text, rather than the text itself, which says simply that there is no necessity of deciding 'what [the notion of expenses of production] is based upon, and whether it has any foundation at all'. (For an example of how the difficulties mentioned in the passage quoted in the text**,** cf the quotation from the lectures above).

36 See the manuscripts D2/4; M.2, *ivi* M1.3, *ivi* M1.4, *ivi* M1.5.

37 See the documents quoted in par. 21 above.

38 The letter to the board is quoted in Marcuzzo (2004: 126–7). The draft of the letter to Pigou is mentioned both in her paper and in Nerio Naldi (2004), whom I thank for drawing my attention to the two documents.

39 For this letter, see Nerio Naldi's (2004: 101n.).

40 See the manuscript (D3/12/11; E.2.49) contained in a block of notes dated November 1927 and headed. 'Impostazione del libro [Outline of the book]'. Other notes from the period alluding to the book can be found in, for example, D3/12/4, A.5.5; D3/12/9, E.6.8 dated respectively of November and Winter 1927.

41 See, for example, D3/12/16, A3.12.

42 See, for example, apart from those quoted above, the further manuscripts D3/12/4;A5.2, *ivi*; A5.7, D3/12/11; E.2.76, *ivi*; E2.81, *ivi*; E2.82, *ivi*; E2.84, *ivi*; E2.86, D3/12/10; E3.6, *ivi*; E3.7, *ivi*; E3.10, *ivi*; E3.11, *ivi*; all of them manuscripts datable from November to December 1927.

43 Thus Porta (2001) follows De Vivo (2000) in associating with the Cambridge lectures as such, Sraffa's intention of writing a book whose 'ultimate result' would be 'a restatement of Marx in 'our own modern metaphysics and terminology' (n. 31 above). Porta then writes:

> Sraffa's ambitions are very clear. The lectures [...] at Cambridge are to be made the occasion for a book' in which Marx must provide the guide both in method and in context
>
> (Porta 2001: 253).

And he proceeds to argue that 'behind the scenes' already at the time of the 1925 and 1926 articles, Sraffa's 'much larger ambition' was to establish on Marx's lines both economic analysis in general and, through the interpretation of Ricardo he was to advance in (1951), the very history of political economy. However, as we saw in n. 30 above, the November 1927 manuscript to which Porta refers, far from revealing a project dating from the middle 1920's, appears to be rather the straightforward result of the theoretical break-through of that Autumn, and of Sraffa's consequent re-discovery of Marx and classical economics. Indeed Porta's concern for Sraffa's ideological positions seems at times to get the upper hand upon demonstrating the putative errors, which that ideology would have caused in Sraffa's interpretation. Thus in his (1986) essay, referred to in (2001), and dealing with Sraffa's alleged central error of attributing to Ricardo a surplus procedure peculiar to Marx, Porta does not seem to ask himself the basic question of how could Ricardo have arrived in 1813–14 at his novel theory of profits, except by that very surplus procedure which he denies to the classical author (cf. Garegnani 1983).

The latter point seems in fact to be at present granted also by Hollander (2000) who however sees now Sraffa's surplus founded interpretation as 'truncated' of the 'demand and supply' entering the system of the classical economists through the determination of the wage (2000: 197, 203). In common with Porta, he then proceeds to an examination of the manuscripts in order to trace the ideological reasons for Sraffa's alleged 'going astray' in his interpretation of Ricardo (2000: 193). Hollander might however have devoted more attention to his own allegation, and to some basic differences between the demand and supply of labour in Ricardo and the 'old' classical authors, on the one hand, and the homonymous neoclassical functions which he wishes instead to attribute to Ricardo on the other. It is the differences shown, for example, by the admission of permanent labour unemployment contained in Adam Smith (recognized by Hollander himself: 1973: 245) and of course, in Ricardo's chapter 'On Machinery' and elsewhere in the *Principles*. (On classical labour demand and supply, and, in particular, on the frequent confusion between, on the one hand the classical relationships between the wage and the *growths of population and employment* and, on the other hand, the neoclassical labour supply and demand functions relating the wage to the labour supplied and employed *in a given position of the economy*, cf. Garegnani 2002: 248–9).

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Abstract

Sraffa's notes titled 'Summer 1927' (D3/12/3, Trinity Catalogue) presumably written while preparing for the lectures on the theory of value he intended to hold in Cambridge that autumn, when examined jointly with the lectures in fact delivered in 1928 – 31 and other manuscripts from the period make it possible to identify an important change occurring in those months in his theoretical position and in his interpretation of Ricardo and the Classical economists. From his previous acceptance of Marshall's apparatus of demand and supply once purged of the subjective elements of utility and 'efforts and sacrifices', Sraffa moved on to a theory of relative prices and distribution based on what he then called 'physical real costs' (in opposition to Marshall's subjective 'real costs') and to the consequent conception of a 'surplus product' providing for profits and rent. It is the theory which Sraffa recognized then to be that of Smith and Ricardo and the 'old classical economists', beyond the Marshallian interpretation of those authors he had previously shared, in terms of constant returns and, therefore, of the demand and supply apparatus. That is the interpretation that will emerge twenty years later in the Introduction to Ricardo's *Principles* (1951), just as that is essentially the theory we shall find in *Production of Commodities by Means of Commodities* thirty years later.

Keywords

Sraffa, classical economists, interpretation of classical economists, Sraffa's turning point, Sraffa's analysis, surplus analysis, Sraffa's 'equations'