

*Reviving the “Standpoint of the Old
Classical Economists”:
Piero Sraffa’s Contribution to Political
Economy*

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*Piero Sraffa receiving the
Söderström Medal*



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1. *Introduction*

Sraffa: “In economic theory the conclusions are sometimes less interesting than the route by which they are reached.”

The “working of the human mind.”

“... trying to escape from habitual modes of thought” (Keynes)

Sraffa's work on PCxC

Three periods during which Sraffa worked on “il mio libro”:

- 1927-1931
- 1942-1946
- 1955-1958
- Point of gravitation: *PCxC*

Changing scope

Originally Sraffa had plans to include also

- a **history of the emergence and elaboration of the surplus theory** (see Kurz, Pasinetti and Salvadori 2008);
- a study of certain **analytical aspects of capital accumulation and technical change** related to the problem of whether the marginal productivity theory could be sustained;
- an **explicit critique of the marginalist theory.**

Editing the “big Ricardo”

In 1930 Sraffa assumed the editorship of the *RES* project, a project he intended to finish within 2-3 years. But ...

The editorship – **blessing** or **curse**? It was both.

Imagine Sraffa would have published *PCxC* in the late 1930s or early 1940s.

2. *Early Critique of Marginalism*

- Critique of Marshall's particular (partial) equilibrium analysis
- Critique of Pareto's theory
- Critique focuses above all on the **subjectivist** elements

Sraffa (1925, 1926):

1925: “With regard to small variations in the quantity produced the assumption of constant returns is the most convenient one for the analysis of the supply curve of an industry under competitive conditions.”

This view is repeated towards the end of the first part of the 1926 paper and interpreted as giving support to the classical doctrine: “the **old and now obsolete theory which makes it [the competitive value] dependent on the cost of production alone appears to hold its ground as the best available.**”

Criticism of marginalist theory

“The demand and supply schedules have no objective contents: nothing corresponds to them in the real world”

Criticism of, inter alia,

- “abstinence theory”
- “waiting theory” of interest
- “Austrian” theory of Böhm-Bawerk

Criticism of marginalist theory

As regards the problem of **externalities**, “it is not sufficient to make utility of one commodity a function of all others consumed by the individual”, as in **Pareto**, but it had also to be made dependent on the consumption of the “community” as a whole.

Sraffa: “**It would be as if in astronomy we said the movement of each star depends upon all the others, but we have not the faintest idea of the shape of the functions!**”

Epistemological question

Objectivising Marshall

Since at the time Sraffa still thought that Marshall (i.e. demand and supply analysis) was economics, he for a short time sought to reformulate the Marshallian approach by objectivising demand and supply schedules. But he soon saw that this did not lead him anywhere.

2. *Rediscovering the Classical approach 1927-1931*

- Contemporary literature discriminating between classical and marginal utility theories
- French translation of Marx's *Theorien über den Mehrwert*
- Classical authors (Physiocrats, Ricardo, James Mill, Torrens etc.)
- – Poincaré, J. H. (1902) *La Science e l'Hypothèse*
- – Tugwell, R. G. (1924), *The Trend of Economics*
- – Whitehead, A. N. (1926) *Science and the Modern World*
- – sciences, anthropology, ethnology, philosophy of science

“The question asked of the theory of value ...

is the following: Given (from experience) the prices of all commodities ..., find a set of conditions that will make these prices appear to be **necessary**. This means, given the unknowns, **find the equations** (i.e. the constants) ...

But this is the general question, the problem of finding the theory of value: when it is solved, once and for all, the particular questions asked are the **reverse**, i.e. given the constant equations, if the value of one of the constants is varied, how are the resultant prices determined?”

November 1927: “Principio”

“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, the Physiocrats, A. Smith, Ricardo and Marx. This is not the theory of any one of them, but an extract of what I think is common to them. ... It will be a **sort of ‘frame’, a machine**, into which to fit their own statements in a homogeneous pattern, so as to be able to find **what is common in them and what is the difference with the later theories.**”

The Classical approach

- Production consists essentially in a **transformation of matter and energy in other forms of matter and energy** (subject to the laws of science) (James Mill).
- Production involves **destruction**. This leads to the concept of **physical real cost**. (Cost of labour = “food” i.e. Petty’s “loaf of bread” – as opposed to Marshall’s “real cost”(disutility, abstinence, waiting))
- Production is essentially a **circular flow**:
- Production typically generates a **social surplus**.

Scope and method

In search of the laws governing a capitalist **economic system** **incessantly in motion**:

- **stratification of society** into three classes: workers, land-owners and capitalists;
- **wage labour** as the dominant form of the appropriation of other people's capacity to work;
- an increasingly sophisticated **division of labour** within/between firms;
- the co-ordination of economic activity via a system of **interdependent markets** with transactions mediated through money;
- and significant **technical, organizational and institutional change**.

How to analyse such a system?

Scope and method

Method of **long period positions**: “Natural” vs. “market” prices

Attention focuses on the persistent, non-temporary and non-accidental factors at work.

In conditions of **free competition**: **cost-minimizing system of production**

Two step procedure:

First isolate the kind of factors that determine income distribution in a given place and time.

Secondly, investigate the causes which over time affect systematically the factors at work (development, growth)

Scope and method (evidence)

W. Petty (1690):

“I have taken the course (as a Specimen of the Political Arithmetick I have long aimed at) to express my self in Terms of **Number, Weight or Measure**; to use only Arguments of Sense, and to consider only such Causes, as have visible foundations in Nature; leaving those that depend upon the mutable Minds, Opinions, Appetites and Passions of particular Men, to the Consideration of others.”

Circular flow and physical real costs

Circular flow:

Petty, Quesnay's *Tableau économique*, Torrens and Marx's schemes of reproduction

Physical real costs:

“The agents of production are the commodities themselves They are the food of the labourer [F], the tools and the machinery with which he works [T], and the raw materials which he works upon [M].” (James Mill 1821)

Corn models

“... the laws of distribution are not essentially connected with the doctrine of value” (Ricardo VII: 194)

Several Classical authors used corn models of sorts. In order for a concept of the rate of profits in purely physical terms to hold there is no need to discern in the Classical authors the fiction of a single industry whose product is physically homogeneous with its capital.

Concepts versus tools

How to ascertain the values of heterogeneous commodities that are produced by [means of] commodities?

Search for an “**ultimate measure of value**” to reduce heterogeneous commodities to a common substance.

Sraffa: “A. Smith and Ricardo and Marx indeed began to corrupt the old idea of cost – from [Petty’s] food to labour.”

Proper solution in terms of **simultaneous equations**.

Criticism of the labour theory of value

Reference:

Kurz, H.D. and Salvadori, N. 2010. Sraffa and the labour theory of value, in *Festschrift in honour of Ian Steedman*, ed. by J. Vint, S. Metcalfe, H.D. Kurz, N. Salvadori and P. Samuelson, London: Routledge.

The “fatal error” of Smith ...

The fatal error of Smith, Ricardo, Marx has been to regard “labour” as a quantity, to be measured in hours or in kilowatts of human energy, and thus commensurated to value . . . All trouble seems to have been caused by *small* initial errors, which have cumulated in deductions (e.g. food for worker = quantity of labour, is nearly true). Petty had foreseen the possibility of being misunderstood ...

Physical real cost vs. labour values

The difference between the “physical real costs” and the Ricardo-Marxian theory of “labour costs” is that the first does, and the latter does not, include in them the natural resources that are used up in the course of production (such as coal, iron ...) – ... This [is] fundamental because it does away with “human energy” and such metaphysical things.

Labour process vs. labour as a quantity

It is the *whole* process of production that must be called “human labour”, and thus causes all product and all values. Marx and Ricardo used “labour” in two different senses: the above, and that of *one* of the factors of production (“hours of labour” or „quantity of labour” has a meaning only in the latter sense). It is by confusing the two senses that they got mixed up and said that value is proportional to quantity of labour ...

Seen in this way ...

“all values are “due” to labour, or to wheat or to any other thing that enters in the production of every [one] of them”

*“First” equations:
production for subsistence*

$$5A + 3B = 11A$$

$$6A + 4B = 7B$$

$$3B = 6A$$

(Sraffa speaks also of “physical value”)

“Atomic theory”



John Dalton’s “atomic theory” in chemistry based on two laws:

- the Law of the conservation of mass;
- the Law of definite proportions.

Heisenberg

Heisenberg put forward the demand that only such quantities as are observable should be represented in the mathematical formulation of atomic theory.

Economics and the sciences

- Waste
- Workers can subsist in different ways and yet produce the same kind of commodity. (Similarly, they can subsist in the same way and yet produce different kinds of commodities.)
- One and the same commodity can be produced using different methods of production, which request the productive consumption of different means of production.

Three commodities

$$T_t + M_t + F_t = T$$

$$T_m + M_m + F_m = M$$

$$T_f + M_f + F_f = F$$

(where “=” becomes “→□□□”

)□□□□□□□

“Absolute prices”
The realm of pure necessity

$$T_{t|t}p_t + M_{t|m}p_m + F_{t|f}p_f = Tp_t$$

$$T_{m|t}p_t + M_{m|m}p_m + F_{m|f}p_f = Mp_m$$

$$T_{f|t}p_t + M_{f|m}p_m + F_{f|f}p_f = Fp_f$$

$$T = \sum_i T_i, \quad M = \sum_i M_i, \quad \text{and} \quad F = \sum_i F_i$$

“First” equations:

$$2A + 15B + 20C = 17A$$

$$5A + 7B + 4C = 28B$$

$$10A + 6B + 11C = 35C$$

$$2p_a + 15p_b + 20p_c = 17p_a$$

$$5p_a + 7p_b + 4p_c = 28p_a$$

$$10p_a + 6p_b + 11p_c = 35p_c$$

“First” equations:

$$p_a = 3p_b$$

$$p_b = (2/3)p_c$$

$$p_c = (1/2)p$$

These values depend exclusively on **necessities of production**. They are the only ones that allow to restore the initial distribution of resources.

Note:

- No need to talk about **labour values** at this stage.
- There are many **common thirds**.
- The same applies to the next stage of the argument.

So far, so good, but ...

Was an **objectivist, material-based approach to the theory of production, distribution and value** at all possible?

Could **property incomes** such as profits and rents be explained exclusively in terms of magnitudes that can, in principle, be observed and measured?

“Second” equations: production with a surplus

$T \geq S_i T_i$, $M \geq S_i M_i$, and $F \geq S_i F_i$, where at least with regard to one commodity the strict inequality sign holds.

Special case: *uniform rate of physical surplus* across all commodities (the analogue of a “corn model”)

Production with a surplus

- Problem of “scramble for the surplus”
- Institutions matter: interest/profits – a **social cost** in addition to **natural costs**?
- Concept of “**withdrawing**” to explain wages, profits and rents

“Second equations”:

$$(T_{tt}p_t + M_{tt}p_m + F_{tt}p_f)(1 + r) = Tp_t$$

$$(T_{mt}p_t + M_{mt}p_m + F_{mt}p_f)(1 + r) = Mp_m$$

$$(T_{ft}p_t + M_{ft}p_m + F_{ft}p_f)(1 + r) = Fp_f$$

... solves for r and two relative prices.

“Second” equations:

$$v_a A = (v_a a_1 + v_b b_1 + c_1)r$$

$$v_b B = (v_a a_2 + v_b b_2 + c_2)r$$

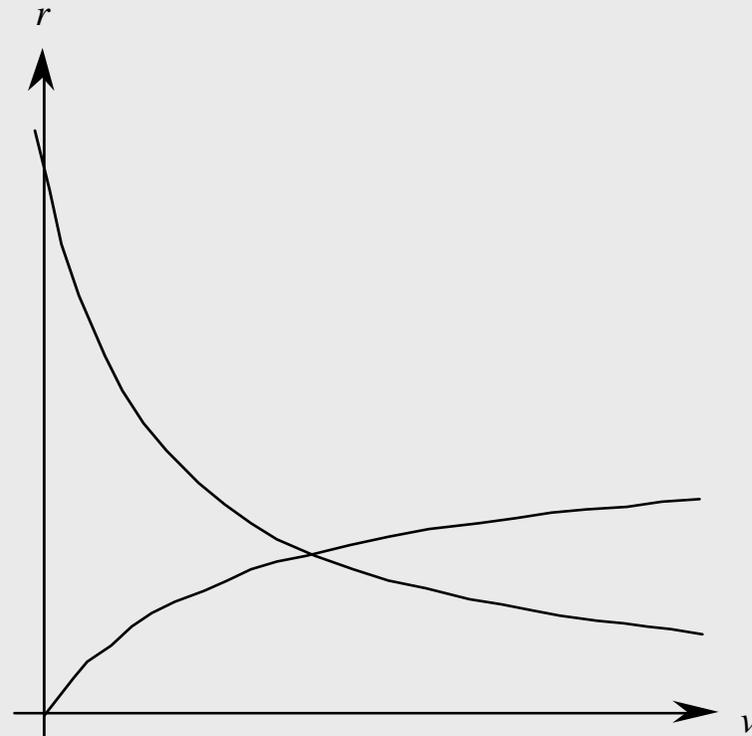
$$C = (v_a a_3 + v_b b_3 + c_3)r$$

(here $r = 1 + \text{rate of profits} = \text{profit factor}$)

Numerical example:

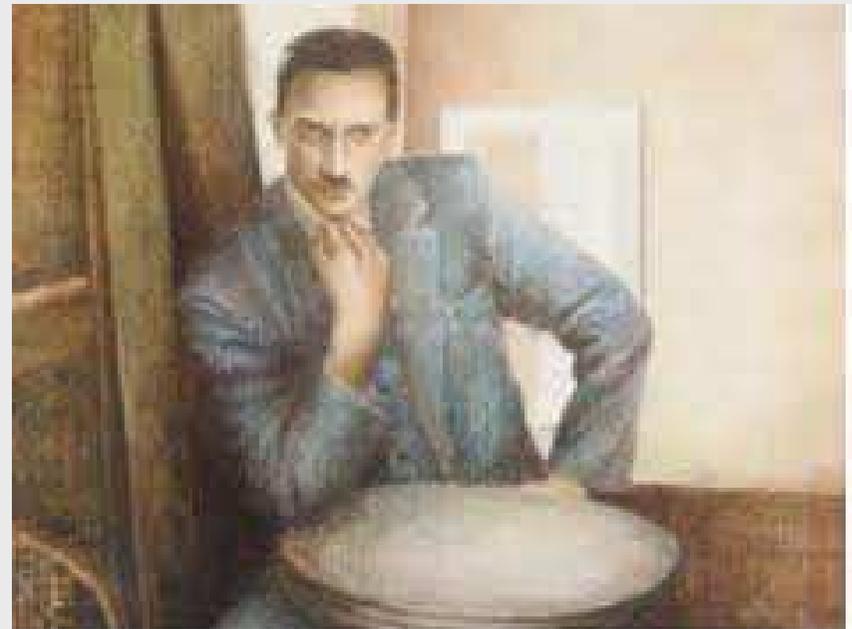
$$17v = (6v + 10)r$$

$$23 = (5v + 4)r$$



Open questions

- But what about
- changes in income distribution
 - fixed capital
 - land
 - joint production?



RETRATO DE SRAFFA DE BERNIARD BRUNOS

Fixed capital (1927-1931)

- Problem: Which part of (the value of) fixed capital enters the product?
- Critical of joint-products approach.
- Reduces fixed capital to circulating capital on the one hand and land on the other.
- Interest to be paid only on circulating capital.
- Uses annuity method.

“Looms”:

Suppose that we have 100 looms: that each loom lasts 10 years, and that 10 are 10 years old, 10 are 9 years old ..., 10 are new. Average age 5 years. Now, at the end of the year we shall have scrapped 10 looms 10 years old, and all the others will have grown 1 year older. ... The total decay is equal to 10 new looms. During the year we will have had to use so much circ. cap. as required to make 10 new machines. Therefore of the original 100 **10 (one per age) were circulating cap., and 90 were fixed.**

“Looms”:

- The old machines “have not grown any older, although a year has lapsed. As it were, they have been mere spectators in production, they have ‘contributed’ nothing, they have ‘transfused no part of themselves’ into the produce.
- Depreciation, there is no such thing. Fixed capital is **eternal**: and working capital is entirely destroyed in one period of production. **These two categories are exhaustive: *tertium non datur*.**

“Looms”:

Value of fixed capital

$$\text{Val. F.C.} = \frac{(nC_r - C)(1+r)^n + C}{r(1+r)^n - r} = \frac{nC(1+r)^n - \frac{C}{r}(1+r)^n + \frac{C}{r}}{(1+r)^n - 1}$$

Capital utilization

Discussion of different patterns of capital utilization and especially of **shift work** in the context of the problem of the development and growth of socialist economies.

Land

- By 1929 Sraffa had fully solved the problem of **extensive diminishing returns** and thus intensive rent.
- ... including that (1) the **order of rentability** and the **order of fertility** need not coincide and that (2) the choice of which land to cultivate depends on the rate of profits.
- As regards **intensive diminishing returns**, Sraffa for a long time thought that they are incompatible with what he called “**Bortkiewicz’s dictum**”, that is, methods that are not used cannot have an impact on prices and distribution.

Joint Production

Mentioned in several context (fixed capital, Marshall, discommodities as by-products etc.), but no deeper analysis of the problem.

Supervenience physicalism

Criticizing an Application of the Principle of Sufficient Reason: In August 1931 Sraffa drafted a note entitled “Surplus product” [“Supervenience physicalism” J. Davis 2010]

4. *Developing the Classical approach (1942-1946)*

- 1940 reads the new English edition of *Capital I*.
- 1943 discovers Ladislaus von Bortkiewicz's essay on "Wertrechnung und Preisrechnung im Marxschen System": this provides the **litmus test** of his achievements up until then.
- Reduces fixed capital to circulating, adopts the joint products method and with the help of Besicovitch in late summer has solved the problem.

Developing ...

- Develops his “third” equations in which wages are treated as a share (Ricardo: “proportional wages”) and are taken to be paid post factum.
- Develops the concept of the Standard commodity and the distinction between basic and non-basic commodities.
- Analyses cases of the return of the same technique.
- Shows that marginal productivity theory cannot be sustained in general.
- Joint production

“Men kick”

Ricardo: machines – “mute agents of production”.

Sraffa 1942: in 1st and 2nd eqs the “food and sustenance of the workers treated ... on the same footing as that of horses.”

He added with characteristic irony:

“Men however (and in this they are distinguished from horses) kick.”

[“The horse (or his physiology) takes a strictly private view of his relation with his food ... : he is a **perfect utilitarian** and thus forms the ideal object of study of the marginal utility economist.”]

Ricardo: $r = P/W = (1 - w)/w$

“The greater the portion of the result of labour that is given to the labourer, the smaller must be the rate of profits, and vice versa.”

(Ricardo, VIII, 194)

Marx: $r = S/(C + V)$

$$r = \frac{S}{C+V} = \frac{S/L}{(C/\bar{L})+(V/L)} = \frac{1-w}{(1/R)+w}$$

$$r = \frac{R(1-w)}{1+Rw} \quad \frac{\partial r}{\partial R} = \frac{1-w}{(1+Rw)^2} > 0$$

The “surrogate production function” ante litteram (16 Jan. 1946)

The Irony of it is, that if the “Labour Theory of Value” applied exactly throughout, then, and only then, would the “marginal product of capital” theory work!

It would require that all products had the same org. comp.; and that at each value of r , each comm. had an “alternative method”, and that the relations within each pair should be the same (i.e. that marg. prods. should be the same; ...); so that, even when the System is switched, and another Org. Comp. came into being, it should be the same for all products.

The “surrogate production function” ante litteram (16 Jan. 1946)

Obviously this would be equivalent to having **only one means-product (wheat)**.

Then, commodities would always be exchanged at their Values; and their **relative Values would not change**, even when productivity of labor increased.

[5. *Finale* (1955-1958)]

- Joint production
- Basics and Nonbasics in joint production
- ...

*6. Concluding remark:
Thank you, Professor Sraffa*

