

Francis Ysidro Edgeworth (1889) "The Mathematical Theory of Political Economy: Review of Léon Walras, *Éléments d'économie politique pure*", *Nature*, Vol. 40, September 5, p.434-6.

[Note on electronic version: Page and column numbers in bold square brackets, e.g. **[p.434, Col. 2]**, denote the beginning of the respective page and/or column in the original 1889 *Nature* version. All errors are left intact.

Both this *Nature* article and a related address by Edgeworth to the British Association for the Advancement which was jointly published in *Nature*, 12 Sept., 1889, p.496-509 and in the *Journal of the Statistical Society of London*, Dec. 1889 and reprinted in his *Papers Relating to Political Economy* (1925, Vol. 2, Sec. VI, Essay α), were severely criticized by Ladislaus von Bortkiewicz (1890, *Revue d'économie politique*). This, in turn, led to a rejoinder by Edgeworth (1891, *Revue d'économie politique*) expanding on the themes laid out here.

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[p.434, Col. 2]

*THE MATHEMATICAL THEORY OF
POLITICAL ECONOMY*

Éléments d'Économie Politique Pure. Par Léon Walras
(Lausanne: F. Rouge, 1889)

The appearance of a new and enlarged edition affords us a wished-for opportunity of calling attention to this original work. Its author is one of the favoured few **[p.435, Col. 1]** to whom belongs the honour of having made a discovery in political economy. The title of Ricardo to the theory of rent is not better than the title of Prof. Walras to a theory more comprehensive than that of rent. It is a claim founded on originality rather than priority. Prof. Walras is the last of a small band of original thinkers who, in the latter half of this century, have independently excogitated the cardinal article in the doctrine of value. They have contemplated in different aspects the same fundamental conception: that value in exchange is neither simply identical with, nor wholly different from, value in use, but corresponds to the utility of the last, the least useful, portion of the commodities exchanged. "Nutzlichkeit des letzten Mengentheilchens", "Degree of Final Utility", "Grenznutzen," and "Rareté" -- in different tongues and various terminology they proclaim the one essential truth which will for ever be associated with the names of Gossen, Jevons, Menger and Walras.

This chronological, and, as it happens, alphabetical, arrangement is not identical with the order of merit. In that order we should place nearest together the names which are first and last in the series above written. Gossen appears to have been a mere specialist with few valuable ideas beyond the one which has made him immortal. Prof. Walras's light is more diffused. Yet it is true that we find in him rather *multum* than *multa*; that his principal achievement is the copious exposition of the one fundamental theorem to which we have referred. His next most important contribution to the stock of economic ideas relates to the function of the *entrepreneur*. Prof. Walras is one of the first who correctly conceived of the *entrepreneur* as buying agencies of production (use of land, labour, and capital), and selling furnished products in four markets, which thus become interdependent. His criticisms of the English school on this head are often valuable. Of the *entrepreneur's* funds, not pre-determined in the sense which some have imagined to any particular form of outlay, he well says: --

"Il serait aussi impossible de distinguer ce fonds de roulement du travail du fonds de roulement de la rente foncière, ou du fonds de roulement du profit, que de distinguer dans un bassin à trois robinets l'eau destinée à s'écouler par un robinet de celle destinée à s'écouler par les deux autres."

But surely he goes too far in the way of abstraction when he insists that the idea *entrepreneur* should be regarded as "making neither gain nor loss": --

"Pour ce qui est de la part du profit constituant le bénéfice de l'entrepreneur l'école anglaise ne sort pas qu'elle est acalatoire, qu'elle dépend des circonstances exceptionnelles, et non pas normales, et que, théoriquement, elle doit être négligée."

Perhaps his views on this and other points would have been more exact if he had considered the part which the "disutility" of labour -- to use Jevons's phrase -- plays as a factor of economic equilibrium, instead of confining his attention to "final utility." Another theory to which we ought to call attention is contained in the lesson on capitalization, which is added in the new edition. If the price of capital is determined by competition, it follows from the general theory of supply and demand that the maximum utility of all the parties concerned is realized in the same sense as in other markets. What is more than this in the newly-added theory has baffled us.

In the case just noticed and others, the argument is probably rendered obscure, or at least unattractive, by the use of symbols in excess of the modest requirements of elementary mathematical reasoning. The exuberance of algebraic foliage, rather than the fruit of economic truth, is the outcome of science thus cultivated. It is remarkable that the neatness which characterizes Prof. Walras's literary style, should not be reflected in his mathematical compositions. As an algebraist he has not attended to the maxim, *Il ne faut pas épuiser les choses*. We shall justify our criticism by referring to the chapters of "lessons," in which it is attempted to analyze what is called the "*tâtonnement*" of the market. The writer gives us three courses of this analysis. He diffuses over some thirty-five pages an idea which might have been adequately presented in a few paragraphs. For

it is, after all, not a very good idea. What the author professes to demonstrate is the course which the higgling of the market takes -- the path, as it were, by which the economic system works down to equilibrium". Now, as Jevons points out, the equations of exchange are of a statical, not dynamical, character. They define a position of equilibrium, but they afford no information as to the path by which that point is reached. Prof. Walras's laboured lessons indicated *a* way, not *the* way, of descent to equilibrium. This is not the only topic to which the laboriousness of the investigation is out of proportion to its importance.

Agreeing, therefore, in the main with Prof. Walras in his pleas for the use of mathematical reasoning in economics, we fear that he may have prejudiced the cause of his advocacy. The excessive elaboration of his reasoning, compared with the simplicity of his conclusions, is calculated to excite suspicion. Moreover, he traduces the mathematical method when he applies it in such a manner as to justify the popular prejudice against abstract reasoning. He is surely *ultra crepidam*, he goes beyond the little hard matter with which the craft of the mathematician is concerned, when he offers opinions on the living organism of the industrial body, and the complexion of practical problems. His scheme of dosing the circulation by a nicely calculated injection of supplementary currency reminds us of the tailors in Swift's Laputa, who went through laborious mathematical computations in order to determine the measurement of a suit of clothes, which after all fitted very ill. When Prof. Walras offers us "the solution of the Anglo-Indian monetary problem," we think of Fluellen in the heat of battle discoursing about the "discipline of the wars." There is a discipline adapted to the schools, and which it is profitable to have studied, but which has no direct bearing upon action.

A minor ground of complaint is formed by the extreme severity of our author's criticism, especially those which related to the English school. We cannot think that Mill's oversights deserve the "*horribili flagello*" which is administered. To dismiss in a few lines "*comme nul et non avenu*" so much of that philosopher's reasoning appears to us rather slashing. But we are sensible that in condemning the unceremonious treatment of great men, we [p.436, Col. 1] are laying down a law which applies to our own criticism of Prof. Walras. We shall therefore forbear to reduce our initial encomium by invidious reservations. When all that could be made are summed and subtracted, there would still remain to Prof. Walras the undoubted glory of an original discovery. He may say of that, as Napoleon of his victories, "*Il y a là du solide que la dent de l'envie ne peut ronger.*"

F.Y.E.

[Francis Ysidro Edgeworth]
