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The Place of Marshall's Principles in the Development of Economics

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Let us begin by reflecting upon the task of this essay: the determination of how Alfred Marshall influenced the course of economics. The task is not simply to ascertain which theories Marshall invented, for others may have invented them first or have been more successful in their development and dissemination. Thus, although Marshall did not contribute utility theory to economics, he was not prepared to acknowledge his heavy indebtedness in this area to Jevons or Walras.¹ The task is to determine how the prevailing science of economics in the first quarter of the twentieth century was different because of his work.

That is an extraordinarily exacting criterion of scientific importance. No doubt every significant economist has had (perhaps by definition) some influence upon the direction and pace of the profession's prevailing beliefs. We owe to Mill such specific doctrines as the theory of the value of joint products produced in fixed proportions. We owe to Böhm-Bawerk – among other things – an extra decade or so of the currency of the idea that utility is the sole or dominant source or determinant of the value of goods. We owe to Henry Sidgwick a sketch of market failures that influenced Pigou's calculus of social welfare. But of Marshall we are asking more: Not how did he influence this disciple or that adversary, but how did he change the course of economics? To ask this question seri-

I wish to thank David Laidler and John Whitaker for helpful comments.

1. See the discussion in *EEW*, 1, pp. 37–52. Whitaker gives what I would describe as the minimum defensible estimate of the possibility of Marshall's independent discovery of utility theory.

ously of a scientist is already a compliment to him; to answer it with an enumeration of major changes in the science due to him is to admit him to the pantheon.

I Some Common, Mistaken Claims

I shall begin, perhaps perversely, by analyzing some claims often made in Marshall's behalf which I believe to be mistaken. A consideration of these mistaken attributions serves to clarify the nature of genuine contributions. I begin with three items in the list of Marshall's contributions that Keynes presented in his famous obituary essay (1924),² and then turn to claims made by Schumpeter and Marshall himself.

(1) Marshall is held to have resolved the dispute between the Austrians and Jevons, who urged the primacy of utility in setting values, and the Classical economists, who had asserted the primacy of cost of production. He is credited with the famous resolution that the two forces were coordinate and indispensable, and in the process employed the influential metaphor about the two blades of a scissor: "We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production."³

Böhm-Bawerk in his defense of utility as the ultimate source of value dismissed money costs of production because they owe their value to the value of the goods and services which production provides. He allowed a role to disutility in the few services produced and directly sold by a labourer and proposed that "the ten parts of that blade which represents demand consisted entirely of *utility*, while of the blade which represents the 'costs,' nine parts are utility and only one part disutility" (Böhm-Bawerk, 1894, p. 52; italics in original). Böhm-Bawerk asserted that the determination of values by a system of simultaneous equations "has nothing to do" with causality (1959, pp. 190–1).

2. The assistance of Edgeworth in completing the list was acknowledged: *Memorials*, p. 41.
3. *Principles*, p. 348; differently phrased in the first edition (p. 535). Rather more explicit than a metaphor is Marshall's comment: "while they [Ricardo and Mill] admitted that cost of production could have no effect upon exchange value, if it could have none upon the amount which producers brought forward for sale; their doctrines imply . . . that the utility of a commodity could have no effect upon its exchange value, if it could have none on the amount which purchasers took off the market" (*Principles*, ed. 1, p. 533).

The Austrian thesis was, of course, mistaken; the proper resolution of the dispute had already been made in Walras' equations of 1877. The essential point is that there could be no longevity to a doctrine of unilateral determination of the prices of goods. If Marshall had never lived, the roles of supply and demand (or rather wants, resources and technology) in the mutual determination of values would have been generally acknowledged in early-twentieth-century economics.

(2) The concept of elasticity was, Keynes asserted, a great service to "terminology and apparatus to aid thought" (1924, p. 45). It is true that Marshall invented the concept (probably with assistance from Cournot and conceivably even from Whewell), but it is simply devoid of substantive economic significance. Elasticities sometimes offer elegant formulations of relationships and have provided an unlimited number of examination questions in elementary economics. That is all.

(3) The theory of monopoly is also on Keynes's list. The theory does not go far in Marshall's hands and it is not assisted by the use of curves of average revenue and average cost with the ancillary apparatus of rectangular hyperbolas. Surely Edgeworth and Walras and Bowley and rediscovered Cournot were doing more than Marshall with the formal theory of monopoly.

(4) Schumpeter presented a curious and even elusive appraisal of Marshall. He referred to some of Marshall's fundamental contributions as "handy tools" (1941, p. 241) and then turned around and made extravagant claims for Marshall as the father of econometrics:

Marshall's was one of the strongest influences in the emergence of modern econometrics. Many as are the points in which the *Principles* resemble the *Wealth of Nations*, there is one in which the former is definitely superior to the latter, if, eliminating time, we reduce both to the common denominator of subjective, time-conditioned performance. Adam Smith judiciously assembled and developed whatever he thought most worth while in the thought of his own and of the preceding epoch. But he did nothing to develop one of the most significant of the achievements within his reach, the "Political Arithmetick" of the seventeenth century, whereas Marshall who, proportions guarded, had really less to go upon firmly led the way toward, and prepared the ground for, an economic science that would be not

only quantitative but numerical. The importance of this cannot be overestimated. Economics will never either have or merit any prestige until it can figure out results.

How clearly Marshall realized this can be seen from his address on “The Old Generation of Economists and the New” (1897). But we owe him much more than a program; we owe him a definite approach. All we have to do in order to satisfy ourselves of this, is to glance once more at what I have described as his “handy tools.” They are all of them eminently operational in the statistical sense. . . . we do not appreciate them fully until we realize that, whatever else they may be, they are first of all methods of measurement – *devices to facilitate numerical measurement* – and parts of a general apparatus that aims at statistical measurement. . . .

For instance, it is obviously no coincidence that those endeavors were, on a large scale, first directed toward the derivation of statistical demand curves: Marshall’s theory of demand had provided an acceptable basis.⁴

A showing that Marshall was the parent of the quantification of economic relationships would be enough to make him the author of the most important single development in economics in the twentieth century. It is difficult to believe that the claim is justified. Certainly the pioneer econometricians such as Marcel Lenoir and Henry Moore neither displayed nor acknowledged any debt to Marshall’s work, and it is difficult to find a reason why they should have.⁵ The demand curves they calculated – price-quantity relationships for one commodity – were far removed from the complex discussions of Marshall or, for that matter, Walras.

(5) Marshall himself placed immense emphasis upon his formulation of the theory of general equilibrium: “My whole life has been and will be

4. Schumpeter, 1941, p. 247.

5. See my “The Early History of Empirical Studies of Consumer Behavior”, reprinted in Stigler, 1965. Marshall’s treatment of Moore’s *Laws of Wages* in a letter (dated June 6, 1912) to Moore revealed hostility to econometric studies (*ibid.*, pp. 352–3): “I will be frank. I have had your book on *Laws of Wages* in a prominent place near my writing chair ever since it arrived, intending to read it when opportunity came. It has not come: and I fear it never will come. For what dips I have made into the book made me believe that it proceeds on lines which I deliberately decided not to follow many years ago; even before mathematics had ceased to be a familiar language to me. My reasons for it are mainly two. (1) No important economic chain of events seems to [sic] likely to be associated with any one cause so predominantly that a study of the concomitant variation of the two can be made as well by mathematics, as by a comparison of a curve representing those two elements with a large number of other curves representing other operative causes: the “*caeteris paribus*” clause – though formally adequate seems to me impracticable. (2) Nearly a half of the whole operative economic causes have refused as yet to be tabulated statistically.”

given to presenting in a realistic form as much as I can of my [mathematical] Note XXI".⁶ There is no reason to question his claim to independent discovery of the general equilibrium framework, but there is also no reason to credit him with a realistic development of the equations of general equilibrium. Realism and general equilibrium theory have never joined hands, and Marshall could not bring himself to make extensive elaborations of the theory of general equilibrium as purely formal exercises. However, the members of the Lausanne School (in particular Walras and Pareto) considered Marshall the premier partial equilibrium economist of the world, and they were right.

II Marshall's Major Influences on Economic Analysis

We consider now the basic influences that Marshall exerted upon the evolution of economic analysis. In each case he introduced a subject which otherwise would probably have come considerably later and in a different form.

(1) First and foremost, Marshall made time itself a major factor in the theory of value. Where there had previously been scraps of recognition of the roles of time in price determination, it now became a central force and a fundamental basis for classification.

More important, the roles of time were made manageable and instructive by a set of empirical hypotheses:

(a) Demand curves were held to be little changed by the passage of time: "those demands which show high elasticity in the long run, show a high elasticity almost at once" (*Principles*, p. 456). Modern economists will argue that this proposition is dubious, but it was accepted fully for a long time and is often accepted today.

(b) When Marshall partitions operational time into (i) market periods (when supply is given), (ii) periods when some productive factors are fixed in supply and (iii) periods in which all production factors are variable in supply, he makes the following assumption: In any period, price is determined by the forces primarily operative in that period. Thus in the short run normal period, the determinants of price in the market period (that is, demand fluctuations and the allocation of fixed supplies over a

6. *Memorials*, p. 417. Note XXI (XX in the first edition) ended with the Walrasian incantation: "Thus however complex the problem may become, we can see that it is theoretically determinate because the number of unknowns is always exactly equal to the number of the equations we obtain" *Principles* (1st ed., p. 746).

crop year) cancel out or become negligible. The determinants of long run normal price (plant construction or replacement, entry and exit of firms) operate so slowly that they also leave little imprint upon short-run normal price. Similarly, in long run normal periods the effects of short-run normal fluctuations in prices and outputs are negligible, and in the market period investment and production play no significant role.

This assumption of separability of periods made the role of time a manageable component of the theory of value. An elementary dynamics became a part of the standard theory without requiring the complex methodology necessary to deal with interdependent periods. The great Viner article indicates by its date (1931) that this apparatus continued to be a dominant paradigm well into the twentieth century, and of course it is still recognizably present. The separability, we should note, was possible only under conditions of competition: A monopolist could not sensibly ignore the effect of present decisions upon future demands.

Marshall developed the doctrine of quasi-rents as the distributive complement of the short run inelasticity of supply of some factors of production. The fertility of time in economic theory was increased by this extension, which eventually contributed to the theory of investment.

Keynes was much influenced by Marshall's period analysis in the *General Theory*. We may quote Leijonhufvud: "This device [short and long run period analysis] was not Keynes' invention. Marshall had made much use of it, and in this aspect of his method as in many others, Keynes was very Marshallian".⁷

(2) The doctrine of external and internal economies was a major Marshallian contribution. The classification permitted an analytical reconciliation of competition and increasing returns, and thus repaired a major gap in classical price theory. Besides enriching the theories of production and price, the distinction played a major role in welfare economics: for example, it was absolutely central to Pigou's *Wealth and Welfare* (1912) and *The Economics of Welfare* (1920 and later).

Because the point is often overlooked,⁸ it is desirable to point out that Marshall did not make Pigou's famous mistake of proposing a tax on increasing cost industries.⁹ Consider the following passage:

7. Leijonhufvud, 1968, p. 50 et seq.

8. See, for example, Samuelson: 1967, pp. 112–13.

9. Pigou himself presents a puzzle. Although *Wealth and Welfare* (1912) was dedicated to Marshall, and the work is strewn with deferential references to his teacher, Pigou never mentioned Marshall in the critical chapter, "Divergences of Marginal Social Net Product and Marginal Private Net Product" (especially pp. 176–7), where the calculus of externalities is deployed.

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§6. One simple plan would be the levying of a tax by the community on their own incomes, or on the production of goods which obey the law of diminishing return, and devoting the tax to a bounty on the production of those goods with regard to which the law of increasing return acts sharply. But before deciding on such a course they would have to take account of considerations, which are not within the scope of the general theory now before us, but are yet of great practical importance. They would have to reckon up the direct and indirect costs of collecting a tax and administering a bounty; the difficulty of securing that the burdens of the tax and the benefits of the bounty were equitably distributed; the openings for fraud and corruption; and the danger that in the trade which had got a bounty and in other trades which hoped to get one, people would divert their energies from managing their own businesses to managing those persons who control the bounties.

Besides these semi-ethical questions there will arise others of a strictly economic nature, relating to the effects which any particular tax or bounty may exert on the interests of landlords, urban or agricultural, who own land adapted for the production of the commodity in question. These are questions which must not be overlooked; but they differ so much in their detail that they cannot fitly be discussed here.¹⁰

In a footnote attached to this passage Marshall analyses the effects of a tax on agricultural produce and shows that once producers' rents are included, the tax yields less than the sum of the losses of producer and consumer surplus.

Schumpeter listed the doctrine of external economies as one of Marshall's handy tools. Indeed it is, like such handy tools as adverbs and logarithms.

(3) G. F. Shove credits Marshall with the prominence he gave to the theory of the firm (Shove, 1942, pp. 304–5). This is a valid claim but it deserves some interpretation. Marshall was not interested in the *individual* firm, and his concept of the representative firm was explicitly designed to get away from the complications which arise when one studies a variety (in fact a frequency distribution) of individual firms. The representative firm, to recall, was an average of the individual firms in an industry, average in size, in age, in shares of external and internal economies, in skill of management. Clearly such a firm is studied because it is the very prototype of the industry and its behaviour will be that of the industry.

The introduction of the representative firm, then, is directed not to the

10. Marshall, *Principles*, pp. 472–3 (1st ed., p. 452).

firm's individual differentia but to the role it plays as a decision unit in decentralized industries. It is at the level of the firm that resources are engaged and combined subject to "the principle of substitution." The very purpose of the study of the firm is to deduce from its behaviour the properties of industry demands for inputs and supplies of outputs. It cannot be doubted that Marshall was the first economist to make the analysis of the individual firm an integral part of his theory of production and pricing. He had useful predecessors such as Cournot, but recall that Cournot did not address problems such as the entry or exit of firms from an industry or the implications of falling marginal costs.¹¹

This may be a suitable point at which to enter a dissent from a central theme of Shove's brilliant paper – the theme that the *Principles* is largely explicable as the outcome of Marshall's early translation of "Mill's version of Ricardo's or Smith's doctrines into mathematics". Marshall's contributions to economics were in no sense natural consequences of emending Mill's work, and that is best shown by comparing him with Henry Sidgwick.

Sidgwick was indeed primarily a commentator upon Mill in his *Principles of Political Economy* (1883). This intelligent, wide-ranging work was strictly backward-looking. Its task was to make minor improvements upon Mill's *Principles*. A telling evidence of its orientation is that Sidgwick (1883, pp. 325–6) shared Mill's lurking fear of a contemporary Malthusian population threat.

(4) Marshall's introduction of and emphasis upon consumer surplus was a significant step in the development of welfare economics. The introduction (I do not say discovery, since he knew Dupuit's work) was greeted with a good deal of controversy, and treated thereafter with a good deal of neglect. His nephew, Claude W. Guillebaud, has recounted Marshall's later feelings:

He [Marshall] told me on one occasion that a major disappointment in his life was the recognition, which gradually forced itself on him, that his concept of consumer's surplus was devoid of important prac-

11. It should be said in Cournot's defence, however, that he never made the blunder of which Marshall accused him, of believing that falling marginal costs were compatible with competition. Compare *Principles*, p. 459n (1st ed., pp. 485n–6n), with Cournot's explicit recognition of the problem, "It is, moreover, plain under the hypothesis of unlimited competition, and where, at the same time, the function [marginal cost] should be a decreasing one, that nothing would limit the production of the article" (Cournot, 1927, p. 91).

tical application, because it was not capable of being quantified in a meaningful way.¹²

The major credit for the revival of the concept belongs to J. R. Hicks, with his famous articles on the subject (1941, 1944).

Consumer surplus is now widely used, for example in environmental and recreational studies. In the litigation over the Cadiz oil spill in 1978, France based vast claims on the loss of consumer surplus of tourists (but without success). Marshall's role in this literature is surely prominent though long delayed in fruition.

(5) Finally, Marshall contributed a variety of other advances which had a lasting effect upon economic doctrine. These advances are perhaps minor in scope but add up to a significant part of Marshall's legacy.

Consider the chapters (Book VI, Chapters 4–5) in which he analyses the differences in compensation of labourers and the content of the proposition that it is the “net advantages” of different occupations that are equalized by competition. In reviewing the first edition of the *Principles*, Edgeworth (1890, p. 165) offered the following challenge:

We recommend the economist who wishes to test this judgment [on Marshall's performance] to write out, before reading the latter part of the *Principles of Economics*, what he himself has to say in answer to questions like the following: What are the peculiarities in the action of demand and supply which determine the wages of the labourer, or the profits of the employer? Then let him compare the suggestions of his own memory and meditation with our author's original and exhaustive treatment of the subject. He must be a very great, or a very small, man who, in making this comparison, does not recognize his superior.

The correct inference is that Marshall contributed significantly to what has become the theory of human capital.

Marshall's development of the Cambridge theory of monetary economics, including the demand for money, was presented primarily in testimony before Royal Commissions and in an oral tradition. Keynes discussed this work in some detail (1924, pp. 27–33) and concluded:

There is no part of Economics where Marshall's originality and priority of thought are more marked than here, or where his superiority of insight and knowledge over his contemporaries was greater. There is

12. Guillebaud, 1971, p. 6.

Table 1.1. Cambridge Economists Graduated
from 1908 to 1930

E. H. Dalton	F. W. Paish
H. D. Dickinson	D. H. Robertson
M. H. Dobb	H. M. Robertson
R. F. Kahn	E. A. G. Robinson
H. D. Henderson	J. Robinson
F. Lavington	G. F. Shove
J. E. Meade	

Chief source: Mark Blaug, *Who's Who in Economics*
(2d ed.). Cambridge: MIT Press, 1986.

hardly any leading feature in the modern Theory of Money which
was not known to Marshall forty years ago.¹³

We would not credit this work with great influence if it had not strongly
influenced his disciples.

III The Teacher

When Marshall came back to Cambridge in 1885, he transformed Fawcett's trickle of popularization into the premier fountain of economics in the English-speaking world. Indeed, judged by the next half-century, he turned Cambridge into the premier fountain of economics in the entire world.

Marshall's direct students at Cambridge include A. C. Pigou, his successor to the chair; J. M. Keynes, A. L. Bowley, S. J. Chapman, J. H. Clapham, H. H. Cunyngame, C. R. Fay, and D. H. Macgregor. Then followed a second generation of whom the more prominent are listed in Table 1.1.

The names of Dobb and Dalton are enough to demonstrate that all products of Cambridge economics did not share Marshall's views on public policy. In general, however, Marshallian value theory was accepted by these Cambridge economists even when they eventually followed different paths in monetary and macroeconomic theory. One could add some Cambridge noneconomists who came under Marshall's influ-

13. Keynes, 1924, p. 27.