

## The Place of Marshall's Principles in the Development of Economic Theory



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## THE PLACE OF MARSHALL'S *PRINCIPLES* IN THE DEVELOPMENT OF ECONOMIC THEORY

THE Editor has asked me, on the occasion of the centenary of its author's birth, to write something about the place of Alfred Marshall's *Principles of Economics* in the development of economic thought.<sup>1</sup> Any attempt to decide what place will finally be assigned to the book in the history of economic ideas would, of course, be foolish. This paper has no such ambitious aim.

Much of what I have to say will be familiar to readers of this JOURNAL. But that is inevitable where the ground has already been worked over by some of the leading economists of the present day.<sup>2</sup>

### I

"My acquaintance with economics commenced with reading Mill, while I was still earning my living by teaching Mathematics at Cambridge; and translating his doctrines into differential equations as far as they would go; and, as a rule, rejecting those which would not go. . . . That was principally in 1867-8."<sup>3</sup> . . . "While still giving private lessons in mathematics, he translated as many as possible of Ricardo's reasonings into mathematics; and he endeavoured to make them more general."<sup>4</sup>

Such is Marshall's own account of the beginnings of his work in economics. It gives us the key to a right understanding of the way in which his greatest and most famous book is related to what earlier writers had done, and to what his contemporaries did, in the same field. For the analytical backbone of Marshall's *Principles* is nothing more or less than a completion and generalisation, by means of a mathematical apparatus, of Ricardo's theory

<sup>1</sup> I have had some difficulty in deciding whether in this context "*Marshall's Principles*" should be taken to mean the book as it appeared in 1890 or the more familiar form which it finally assumed. In the event, I have written with two editions before me—the first (1890) and the seventh (1916). Generally speaking, I have used the former when considering Marshall's relation to his predecessors and contemporaries, the latter when considering his work in connection with the problems and ideas of the present day. Page references to the first edition are in square brackets: the rest are to the seventh edition. When the work referred to is not specified it is the *Principles*.

<sup>2</sup> Including Lord Keynes in his memoir "*Alfred Marshall, 1852-1924*" (ECONOMIC JOURNAL, September 1924: reprinted in *Essays in Biography*; and in *Memorials of Alfred Marshall*, ed. A. C. Pigou—hereafter referred to as *Memorials*); Prof. Pigou ("In Memoriam: Alfred Marshall," in *Memorials*, pp. 81-90); Prof. J. A. Schumpeter ("Alfred Marshall's "*Principles*": a semi-centennial Appraisal": in the *American Economic Review*, June 1941, pp. 236-248).

<sup>3</sup> *Memorials*, p. 412.

<sup>4</sup> *Ibid.*, p. 20.

of value and distribution as expounded by J. S. Mill.<sup>1</sup> It is not, as many have supposed, a conflation of Ricardian notions with those of the "marginal utility" school. Nor is it an attempt to substitute for Ricardian doctrine a new system of ideas arrived at by a different line of approach. True, the process of completion and generalisation involved a transformation more thoroughgoing than Marshall himself was disposed to admit.<sup>2</sup> Nevertheless, so far as its strictly analytical content is concerned, the *Principles* is in the direct line of descent through Mill from Ricardo, and through Ricardo from Adam Smith. It is of the true Ricardian stock, neither a cross-bred nor a sport.

That Marshall greatly admired Ricardo and was much influenced by him is well known. But the idea that what he did was to effect a "compromise" or "synthesis" between Ricardian doctrines and those of other schools—particularly those associated in this country with the name and work of Jevons and on the Continent with the Austrians—dies hard. In a letter to J. B. Clark dated, 24th March 1908, Marshall wrote :

"One thing alone in American criticism irritates me, though it be not unkindly meant. It is the suggestion that I try to 'compromise between' or 'reconcile' divergent schools of thought."<sup>3</sup>

Apparently such criticism (or interpretation) still persists on the other side of the Atlantic. In a recently published American text-book<sup>4</sup> we read :

"It was left to Marshall to synthesise for general use the ideas of Jevons and others, respecting demand, with those of Ricardo and John Stuart Mill, on cost of production and supply, giving the English-speaking world a

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<sup>1</sup> Marshall had not a high opinion of Mill as an economist. "I incline to regard Petty and Hermann and von Thünen and Jevons as classical, but not Mill" (letter to J. Bonar: *Memorials*, p. 374). "J. S. Mill went so far as to maintain that his occupations at the India Office did not interfere with his pursuit of philosophical inquiries. But it seems probable that this diversion of his freshest powers lowered the quality of his best thought more than he was aware; and though it may have diminished but little his remarkable usefulness in his own generation, it probably affected very much his power of doing that kind of work which influences the course of thought in future generations" (*Principles*, p. [313]). "The genius which enabled Ricardo—it was not so with Mill—to tread his way safely through the most slippery paths of mathematical reasoning . . . had made him one of my heroes" (*Memorials*, pp. 99–100). But it was through Mill that he came to Ricardo.

<sup>2</sup> See, e.g., *Principles*, p. [529 n.]. "There is a widely spread belief that [Ricardo's theory of cost of production in relation to value] has needed to be reconstructed by the present generation of economists. The purpose of the present Note is to show cause for not accepting this opinion." There are many passages of similar purport.

<sup>3</sup> *Memorials*, p. 418.

<sup>4</sup> *A History of Economic Ideas*, by E. Whittaker, Associate Professor of Economics in the University of Illinois. New York and London, 1940. The sentences quoted are on p. 453.

broader foundation for value-theory than had been furnished by either of the antecedent schools. . . . While he took over the main conclusions of the Jevonian system . . . Marshall incorporated in his theories the doctrines of Mill on the side of production."

It lingers, too, even in this country. Thus Professor Alexander Gray holds that Marshall

"as a first approach, is perhaps best viewed as representing an endeavour to give Austrian ideas their due place, without becoming swamped in Austrian super-refinements, and then to effect a synthesis of the Austrian ideas with the older Political Economy."<sup>1</sup>

One can easily see how this view arose. It is due to Marshall's unconscionable delay in publishing his results.<sup>2</sup> Indeed, anyone reading through the principal European treatises on economics in the order of their publication<sup>3</sup> and without a knowledge of their inner history could scarcely avoid coming to some such conclusion, unless he paid very particular attention to Marshall's references and acknowledgments.<sup>4</sup> It is mistaken, however, as Lord Keynes' masterly biography clearly brings out. And it obscures what is, to my mind, a central fact in the history of economic thought in this country: that the main line of development from Adam Smith to Marshall is a continuous growth *from a single stem*, with Jevons and (on one side of his work) Malthus standing apart from it. It may therefore be worth while to observe how naturally—one is tempted to say inevitably—the theoretical framework of the *Principles* grows out of an attempt to test, and fill the gaps in, Ricardian doctrines by the use of a mathematical apparatus—in other words, "to translate them into differential equations" and "make them more general." To show this in detail would take too much space. But a few salient examples may be recalled.

(1) Once admit that the (marginal) cost of producing a commodity may vary with the output of it, and the Ricardian

<sup>1</sup> *The Development of Economic Doctrine*. (Edition of 1934), p. 364.

<sup>2</sup> On this and the reasons for it see Keynes, *op. cit.* (*Memorials*, pp. 26-8 and 33-8).

<sup>3</sup> Jevons' *Theory* and Menger's *Grundsätze* both appeared in 1871, nineteen years before the *Principles*. The first part of Walras' *Éléments* was published in 1874, the second in 1877; Böhm-Bawerk's *Kapitalzins-Theorien* in 1884, his *Grundzüge* in 1886, and his *Positive Theorie* in 1889; Wieser's *Ursprung* in 1884, his *Natürliche Werth* in 1889.

<sup>4</sup> Even then he might easily be misled. Marshall thus describes his practice as to acknowledgments. "My rule has been to refer in a footnote to anyone whom I know to have said a thing before I have said it in print, even though I may have said it in lectures for many years before I knew that it had ever occurred to him; I just refer, but say nothing about obligations either way; being quite aware that people will suppose me to imply obligations. Instances are Francis Walker and Fleeming Jenkin" (*Memorials*, p. 416). All the works mentioned in the last note are referred to in the *Principles*.

theorem that the value of each commodity is equal to its marginal cost no longer solves your problem: for each commodity you have two unknowns—price and output—and only one equation. Now both Ricardo and Mill made this admission as regards “raw produce” or, more generally, commodities “of which so much may be produced at a given cost, but a further quantity not without a greater cost” (Mill’s “Third Class”).<sup>1</sup> Hence there was an obvious gap in their theory of value. Either another set of equations, relating the selling-price of each commodity and its amount,—the demand equations—must be introduced or you must assume that everything is produced under conditions of constant cost, in which case generality is sacrificed and indeed the whole Ricardo–Mill system, in which diminishing returns in agriculture are pivotal, falls to pieces.

(2) Ricardo habitually treats the proportions in which the different grades of labour, labour and capital, fixed and circulating capital, and capital of different degrees of durability enter into the production of a given commodity—the “technical coefficients” relating to labour and capital—as fixed. In fact they depend, as Marshall saw, not only on the payments required to secure the services of the factors concerned, but also on the scale on which the commodity is to be produced.<sup>2</sup> Indeed, Ricardo himself had argued both in the chapter on “Machinery” which he introduced into the third edition of his *Principles*<sup>3</sup> and in his chapter on “Value”<sup>4</sup> that a fall in the rate of profit necessary to secure command over capital (or, what amounted in his terminology to the same thing, a “rise of wages”) would cause resort to more capitalistic methods. But in the main body of his argument this influence is ignored and nowhere are its consequences elaborated either by him or by Mill with any degree of precision. Nor, if my memory serves, does either of them pay any attention to the influence of the scale of production in this respect. Here again there was a gap to be filled. Either the theory of value must be confined to the special case in which the technical coefficients relating to labour and capital are constants; or another set of equations must be introduced, connecting this time the proportions in which the factors are combined in the production of each commodity with their prices and with the output of the commodity. This leads straight to yet another gap. For how are the prices of the factors determined?

(3) Partly under the influence of Malthus, partly because of

<sup>1</sup> J. S. Mill, *Principles of Political Economy* (Ashley’s edition), p. 469.

<sup>2</sup> *Principles*, p. [401].      <sup>3</sup> *Works* (ed. McCulloch), p. 241.      <sup>4</sup> *Ibid.*, p. 26.

the conditions of the time (it was not till the second half of the century that the large rise of real wages in this country clearly emerged as a persistent phenomenon), the Ricardian analysis proceeds in effect on the assumption that the "natural" rate of wages estimated in "corn" or "food and necessaries" or commodities generally (*i.e.*, the rate to which real wages are always tending and at which they will settle in the stationary state—in modern language, "the long-period supply-price of labour") is approximately constant. By Marshall's time it was becoming evident that a rise in the "market" (*i.e.*, current or "short-period") rate of wages need not be entirely absorbed by an increase of population, but may result, to some extent, in a rise in the standard of life, and hence in the level to which commodity-wages will tend in the long run. This carries with it the corollary that a permanent increase in wages may be necessary in order to secure an increased supply of labour. Thus it was becoming obvious that the Ricardian analysis not only lacked generality, but failed to fit the facts. The commodity-wages of the various grades of labour could no longer be equated to so many constants: a set of *differential* equations was needed connecting the wage of each grade with the amount to be supplied.<sup>1</sup> Further, since the amount supplied depends on the amount demanded, the state of the demand must now be given a position co-ordinate with the conditions of supply in the long-period theory of wages. This brings us to the last of the gaps in the Ricardian system to be noticed on the present occasion.

(4) Both Ricardo and Mill held that the market rate of wages (the short-period price of labour), like the market price of goods, is governed by demand and supply, the demand in this case being identified with the amount of capital, or rather the portion of it which is destined for the maintenance of labour. Mill even went so far as to include labour among the commodities whose value is always determined by demand and supply.<sup>2</sup> And Ricardo had declared that the market rate of wages might remain above the natural rate for an indefinite period.<sup>3</sup> Moreover, he was mainly interested not so much in the "amount" of wages (*i.e.*, wages measured in "corn" or commodities) as in their "value" (*i.e.*, the "quantity of labour" or of "labour and capital" required to produce the real wage at the margin of cultivation),<sup>4</sup>

<sup>1</sup> See below, p. 324, for remarks on the limitations of this method of treating the problem.

<sup>2</sup> *Op. cit.*, p. 450.

<sup>3</sup> *Works*, p. 51.

<sup>4</sup> It is this which he usually has in mind when speaking of a "rise" or "fall" of "wages."

since on his principles it is this which determines the relative shares of labour and capital; and even if the real wage is taken as constant in the long run, the cost of producing it at the margin obviously depends on the position of the margin and hence on the length to which investment is carried. Thus not only in the short period, but in the long period also, wages in the sense which is important in the Ricardian system depend on the conditions governing the supply of capital. But what are these? Neither Ricardo nor Mill explains them at all clearly or definitely. Both hold that there is a minimum rate of profit necessary to secure accumulation and that when the actual rate has fallen to this level, no further accumulation takes place and the stationary state is reached.<sup>1</sup> But they give no indication that it depends on the quantity of capital supplied. In effect they treat it as a *datum*. Yet this makes nonsense of the theorem, common to both, that the rate of profit depends on wages—or, in Mill's phrase, "the cost of labour"—when it is applied to the long period. For if the rate of profit is given from the outset, neither wages nor the cost of producing them has anything to do with it. True, both our authors remark more than once that the supply of capital, the rate at which accumulation proceeds, is stimulated by a rise and checked by a fall in the market rate of profit: Ricardo on the ground that this increases the income of the capitalists and thus augments the source of accumulation—the power to invest;<sup>2</sup> Mill on that ground and also because it enhances the incentive.<sup>3</sup> But vague statements of this kind are not enough to determine the supply of capital. For that purpose we need to put them into the form of a theorem, an equation, establishing a definite relation between the quantity of capital forthcoming and the rate of profit or return.

All these gaps (except perhaps the second) would leap to the eye of anyone trying to "translate" Ricardo's doctrines into differential equations and to "make them more general." Nor

<sup>1</sup> Ricardo, *Works*, pp. 67, 68; Mill, *op. cit.*, p. 731.

<sup>2</sup> *Works*, pp. 41-2, 201, 253; 53, 143.

<sup>3</sup> *Op. cit.*, p. 98. Ricardo's view about the supply of capital fluctuates. Sometimes his argument seems to require the hypothesis that it is constant. Sometimes he inclines to treat it as depending on the rate of profit; sometimes as depending on the excess of aggregate output over what is required to maintain the population at the conventional standard of comfort. On the whole, the last notion perhaps predominates. But he nowhere clearly states that the amount of accumulation is a definite proportion or function of the surplus output. If this hypothesis is introduced, the gap referred to in the text is closed and the Ricardian system becomes, so far as this point is concerned, determinate. In some ways, it is a pity that Marshall did not follow up this strand in Ricardo's thought rather than the idea that the rate of accumulation depends on the incentive.

were the equations that would fill them far to seek. Readers will have noticed that they are in fact those enumerated<sup>1</sup> in Note XXI of the Mathematical Appendix to the *Principles*<sup>2</sup> and set out in the notes which lead up to that one.

Now Marshall himself has put it on record that his "general theory of distribution (except in so far as it relates to the element of time) is . . . contained" in this Note, "to which the preceding notes, and especially XIV-XX, lead up"<sup>3</sup> and for him the theories of distribution and value were indissolubly interlocked. He adds, "My whole life has been given and will be given to presenting in a realistic form as much as I can of my note XXI."<sup>4</sup> The analysis there set forth is indeed the backbone on which the body of Books V and VI in the final version of the treatise (Books V, VI and VII in the first edition) is built up by the introduction of the highly important and original devices for dealing with the time-element (the gradation of short and long periods, quasi-rent, the prime-and-supplementary cost analysis and the rest) and by a continual testing, illustration and qualification of the pure theory in the light of contemporary and historical fact.

This comes out most clearly in the first edition, where the titles of the books and chapters, as well as the text itself, follow the mathematical framework very closely. In later versions, the connection became somewhat blurred by the author's restless quest after realism and the increasing prominence given to the element of time and to the absence of anything which can properly be called a position of long-period equilibrium where increasing returns prevail.<sup>5</sup> But even in them the mathematical framework

<sup>1</sup> With the addition of a set of equations "each of which equates the supply price for any amount of a commodity to the sum of the prices of corresponding amounts of its factors"—the supply equations corresponding to the Ricardian theorem that value equals cost at the margin in the generalised form which allows for the possibility that marginal cost may vary in either direction as output increases.

<sup>2</sup> p. 855. Note XX, p. [745] in the first edition.

<sup>3</sup> *Memorials*, pp. 416-7.

<sup>4</sup> *Ibid.*, p. 417.

<sup>5</sup> The re-arrangement of the book also somewhat obscured the fact that Marshall's theory of value is a theory of *general*, not particular, equilibrium. This is obvious enough in the Mathematical Appendix. It also comes out quite clearly in the text of the first edition, where it is not till we reach Book VII, dealing with the pricing of the agents of production, that "Value" appears on a title-page (the full title of this book is "Value: or distribution and exchange," while Book V, dealing with the equilibrium of particular commodities, is called "The Theory of Equilibrium of Demand and Supply"). In the seventh edition, Book V (which embodies the old V and VI) is entitled "General Relations of Demand, Supply and Value." Book VI (corresponding to the old VII) is headed "The Distribution of the National Income," and we are no longer told, as we had been at the beginning of the old Book VII, that only now are we to "deal with the problem of value as a whole" (p. [540]).



can be traced clearly enough by anyone who reads with close attention.

How far Marshall hit on the missing equations for himself and how far they were suggested to him by the work of other writers is, in a sense, a matter for speculation. On the internal evidence alone, it is open to anyone to suppose that some of them at least were suggested by Jevons and the Austrians. But there is no need to suppose anything of the kind. After all, there are a great many passages in which Ricardo and Mill recognise that the price which a commodity can command rises when the quantity offered contracts, and falls when it expands;<sup>1</sup> and from this to the demand equations is a very short step—a step, too, which Cournot had taken long before Menger or Jevons had written a line. Again, in Book IV of his *Principles* (ch. iii) Mill had argued that the price of any factor will fall when an increased quantity of it is applied to a fixed amount of the others, and rise when a fixed quantity of it is combined with an increased amount of the rest. The chapter calls aloud for translation into differential equations, and Marshall praised it highly;<sup>2</sup> what one misses in it is any indication that the price depends on the marginal productivity of the factor—unless, indeed, we can so construe the proposition that when capital and labour increase together their rate of reward will fall because of the operation of the law of diminishing returns at the margin of cultivation. Then, too, as we have already observed,<sup>3</sup> Ricardo had acknowledged more than once that the technical coefficients depend on the price of the factors, and both he and Mill had on occasion contemplated the possibility that the supply price of labour might rise as the amount demanded increased.<sup>4</sup> Taking one thing with another, the keen eye of a mathematician could find plenty of hints in Ricardo and Mill of the direction in which the completion and generalisation of their theories was to be sought.

Further, the external evidence is all against the view that

<sup>1</sup> *E.g.*, Ricardo, *op. cit.*, pp. 66, 94–5. Mill, *op. cit.*, pp. 446–7, 452, 455. Attention may be drawn in particular to Ricardo's striking discussion of taxes on luxuries (*Works*, pp. 144–5) which comes very near to Marshall's position in regard to the effect of elasticity of demand on the yield of a tax.

<sup>2</sup> p. 824 and *Memorials*, p. 316.

<sup>3</sup> Above, p. 197.

<sup>4</sup> See Ricardo, *Works*, p. 284, where, however, the possibility is stated only to be dismissed as a "trifling exception": and Mill, *op. cit.*, p. 719, where it is set aside on the ground that hitherto the day-labourers have treated any increase in their means of living "simply as convertible into food for a greater number of children."

Marshall drew anything of importance from the marginal utility school. He began his work in 1867-8 before Jevons' treatise or Menger's had appeared, and it was on mathematical lines from the first. The outlines of his system are already discernible in his review of Jevons (1872),<sup>1</sup> his article on *Mr. Mill's Theory of Value* (1876),<sup>2</sup> the *Economics of Industry* (1879)—written in collaboration with Mrs. Marshall—and the chapters on *The Pure Theory of Domestic Values* circulated by Sidgwick in 1879; and although these are all of rather later date than the earliest publications of Jevons, Menger and Walras, we have Marshall's own authority for saying that the theory which can be glimpsed in them was not:—

“My main position as to the theory of value and distribution was practically completed in the years 1867 to 1870, when I translated Mill's version of Ricardo's or Smith's doctrines into mathematics.”

“My doctrine of quasi-rent, though only gradually developed, took on substance in 1868. . . . That went with my translations of all leading economic doctrines into differential equations; and so far as I can tell there is no broad difference on *that* side between my position before 1870 and now [1900].”<sup>3</sup>

He is quite definite, too, about the sources from which he did derive assistance or suggestions. The “kernel” of his theory of distribution

“is based in the first instance on Adam Smith, Malthus and Ricardo, and in the second on von Thünen as regards substance, and Cournot as regards the form of the thought.”<sup>4</sup>

<sup>1</sup> Reprinted in *Memorials*, pp. 93-100.

<sup>2</sup> *Ibid.*, pp. 119-133.

<sup>3</sup> *Memorials*, pp. 416, 417.

<sup>4</sup> From an undated note by A. M. printed in *Memorials*, p. 100. The main point of substance for which he was indebted to von Thünen seems to have been the principle of substitution. In the first edition of the *Principles* he calls it “von Thünen's great Law of Substitution” ([p. 704]). Whether the identification of the demand price for a factor of production with its marginal productivity was also suggested by von Thünen is uncertain. But it was evidently not taken from any other source. See *Memorials*, pp. 412-3: “I cannot recollect whether I formulated the doctrine “normal wages” = “terminal” (I got “marginal” from von Thünen's *Grenze*) productivity of labour before I read von Thünen or not. I think I did so partially at least; for . . . [here follows the passage quoted at the head of this paper]. . . . I rejected the wage doctrine in Book II [of Mill's *Principles*], which has a wage-fund flavour: and accepted that in his Book IV, in which he seemed to me to have been true to the best traditions of Ricardo's method (I say nothing in defence of Ricardo's positive theory of wages), and then to have got very close to what I afterwards found to be von Thünen's position. That was chiefly in 1867-8. I fancy I read Cournot in 1868. I know I did not read von Thünen then: probably in 1869 or 1870. One side of my own theory of wages has been absolutely fixed ever since, to what by title of priority may be called the von Thünen doctrine.” One can readily understand why Marshall praised Mill's Bk. IV ch. iii so highly, if it set him on the track which led to his final theory of distribution. I am half inclined to think that it may have been the starting-point of his whole analysis. But the assertion that it is free from the fallacies of the wage-fund doctrine (*Memorials*, 316) surely

"Under the guidance of Cournot, and in a less degree of von Thünen, I was led to attach great importance to the fact that our observations of nature, in the moral as in the physical world relate not so much to aggregate quantities as to increments of quantities, and that in particular the demand for a thing is a continuous function, of which the "marginal" increment is, in stable equilibrium, balanced against the corresponding increment of its cost."<sup>1</sup>

There is no reason to doubt his word. He was not among the writers who are niggardly in their acknowledgments. He erred, if at all, in the direction of generosity.

We may conclude, then, with Lord Keynes, that "Marshall owed little or nothing to Jevons"<sup>2</sup> and, we may add, nothing of importance to the Austrians. In his theoretical work his debts outside the English classical tradition were to Cournot and von Thünen.

But if the pure theory of the *Principles* sprang, with assistance from Cournot and von Thünen, directly from Ricardo's doctrines, it also, as I have remarked, transformed them. The broad discussion of the effects of progress and taxation on the relative shares of the three great categories of income and on the relative values of wide groups of commodities is replaced by a meticulous examination of the pricing process pursued into every corner of the economic system. The principle of mutual determination everywhere supersedes the idea of a single determinant or a one-way chain of causes. The conditions of demand are everywhere given equal status with those of supply. The determination of "market" values and "natural" values, of value under monopoly and value under competition, of value under constant and under diminishing returns, of rent, wages and profit, is no longer seen as a series of separate problems, sharply distinguished from each other and each with a separate "law" appropriate to itself—all are subsumed under the single unifying idea of the balance at the margin, a balance of small increments of receipts and outgoings, payments and costs, differing in its manifestations and giving different results in different cases, but common to them all, with the principle of substitution acting everywhere as a master-key. All this is entirely foreign to Ricardo's manner of thinking: and to Mill's. If the Ricardian analysis was our

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goes too far. Indeed Mill seems to have arrived at his conclusions that an increase of capital without a change in population raises wages and an increase in population without a change in the amount of capital lowers them by direct inference from that doctrine. At any rate he gives no other reason for accepting them. The doctrine of quasi-rent originated in response to "McLeod's criticisms—now [1902] unjustly forgotten—on the unqualified statement that cost governs value" (*Memorials*, p. 414). But it was Marshall's doctrine, not McLeod's.

<sup>1</sup> *Principles*, [p. x].

<sup>2</sup> *Memorials*, p. 22.

starting-point, by the end of the journey we have entered a new world.

Another difference which distinguishes the *Principles* from its forbears, less fundamental but striking all the same, is the prominence given to the equilibrium of the individual firm. This arises partly, no doubt, from the introduction of the principle of substitution, which in industry operates mainly through the individual entrepreneur or the management of the individual concern.<sup>1</sup> But it is also to be accounted for by the now notorious difficulty of reconciling increasing returns with competitive conditions. As Marshall observes :

Cournot "seems not to have noticed that if the field of each of the rivals were unlimited, and the commodity which they produced obeyed the law of Increasing Returns, then the position of equilibrium attained when each produced on the same scale would be unstable. For if one of the rivals got an advantage, and increased his scale of production, he would thereby gain a further advantage, and soon drive all his rivals out of this field. Cournot's argument does not introduce the limitations necessary to prevent this result."<sup>2</sup>

And though in this matter it was Cournot's work rather than Ricardo's that he completed (and developed), the problem is inevitably raised by an attempt to generalise the Ricardian analysis so as to cover the possibility that marginal cost may vary in either direction when output expands. In his solution of it, Marshall uses three expedients (two of them at least entirely novel) : external economies, the imperfection of the market and that perpetual shift of advantage from one firm to another under the influence of luck, errors of judgment and the waxing and waning of the managers' efficiency which was given succinct expression in the famous concept of the representative firm. The second and third of these expedients become more prominent or more sharply defined in later versions of the treatise than they had been in the first edition.<sup>3</sup> But all three were present, at

<sup>1</sup> *Principles*, p. 663.

<sup>2</sup> *Ibid.*, p. [485-486].

<sup>3</sup> For instance, when he first makes his appearance ([pp. 548-9]), the marginal shepherd's net product is equated to the value of the twenty sheep which he adds to his employer's output, without the warning which appeared in later editions that "theoretically a deduction from this has to be made for the fact that, by throwing twenty extra sheep on the market, the farmer will lower the price of sheep generally, and therefore lose a little on his other sheep" (p. 517 n.); and in the first edition the mathematical note which states the principle of substitution in algebraic form (Mathematical Appendix, note XXV in the first edition, note XIV in the seventh) stops short at the end of the first paragraph (which deals with the "Crusoe" case of an individual making things for himself and aiming at his own maximum satisfaction), and accordingly does not include the careful discussion of the comparative magnitude of these two elements in the marginal net product and of their significance when things are being made by a profit-taking entrepreneur for sale on the market (pp. 849-50). But the qualifications were soon introduced (Mr. Guillebaud informs me that they were first inserted in

least in embryo, from the beginning,<sup>1</sup> and they involved a shift of the centre of interest which opened up a field of speculation and enquiry scarcely touched by previous writers.

So far we have considered Marshall's equations as expressions of purely objective phenomena—that the price of a thing falls when more of it is put on the market, that real wages have to be raised permanently in order to obtain an increase in population, that the amount of investment forthcoming expands or contracts as the return on it rises or falls, that entrepreneurs choose what they consider to be the cheapest method of producing their output, and so on. Neither the mathematical apparatus of the *Principles* nor its main conclusions in the realm of pure theory really require anything more than external data of this kind. But in his search for generality Marshall, as everyone knows, went deeper and saw the behaviour of the market-place as a reflection of a balancing of divergent motives in the minds of men—"satisfactions" (or the impulse to obtain them) on the one hand and "dissatisfactions" (or aversions from them) on the other, "utilities" and "disutilities." This in his view, was the common element running through all economic behaviour—in our own system of free-enterprise and money-exchange, in the custom-ridden societies of the Middle Ages and the Orient, in barter-economy, in the isolated self-supporting household (if such could be found) and in those other possible worlds at which he allowed himself an occasional glance.<sup>2</sup> It was as an analysis of men's behaviour in a department of life where the strength of their motives is measurable that for him economic theory reached the highest level of generality.

Nor is this surprising in one who grew up when the utilitarian philosophy was still dominant and who came to economics from a study of moral science. The surprising thing is rather that, in spite of the close connection which had always existed in this country between the utilitarians and the economists, it was not till the seventies and eighties of last century that any systematic attempt was made here (avowedly by Jevons<sup>3</sup> and in effect by Edgeworth<sup>4</sup>) to formulate a theory of economics based on the

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the third edition, dated 1895), and Marshall was too good a mathematician not to have been aware of them from the outset. One would guess that the note dealing with this point existed substantially in its present form before 1890, the latter part being left out to avoid complicated detail.

<sup>1</sup> For the representative firm, see *e.g.*, pp. [375-7], [413-4], [523], and for market-imperfection, pp. [400], [523-4].

<sup>2</sup> Pp. [383], [151], [85], [653 n.], [390], [298-9], [513-5], [79 n.], *Memorials*, 169-70.

<sup>3</sup> *Theory*.

<sup>4</sup> *Mathematical Psychics* (1881).

Benthamite pleasure-pain calculus. Marshall, however, was not trying to do that. His system does not rest upon the utilitarian psychology or ethic. From the first he insisted that to say that the strength of the motives at work in the business world is measurable does not imply any assumption as to their character or "quality," still less as to their ethical value.<sup>1</sup> They may be as altruistic as you like; their objective need not be the acquisition of wealth for its own sake; it may equally well be distinction or approval; they need not spring from the desire for pleasure or the avoidance of pain, they may be based on ethical notions about what is "fair" or "right" or "noble."<sup>2</sup> Though in the first edition of the *Principles* the Benthamite terms "pleasure" and "pain" are not infrequently used to denote men's "positive" and "negative" motives,<sup>3</sup> they are jostled even there by more neutral expressions, and as time went on they were almost entirely eliminated. The conception of *measurable* motives—that, and in the end that alone, is what Marshall carried over into economic theory from the utilitarian philosophy.

In so doing he moved still further away from Ricardo. The "supply price" of a commodity now becomes the sum of the prices which have to be paid to "call forth" "the efforts and sacrifices" which are required for making it and constitute its "real cost of production"—a quite un-Ricardian notion.<sup>4</sup> For Ricardo, labour is not a "disutility," but the productive force available to the community, the stuff, so to speak, by means of which commodities are made, and the cost of a thing is the quantity of this force or stuff, together with the quantity of capital, absorbed in its production, not the effort and sacrifice entailed in providing it. And though in his view the minimum rate of profit was the necessary compensation for the "trouble and risk"<sup>5</sup> (to which Mill, following Senior, added the "abstinence"<sup>6</sup>) undertaken by the investor, both he and Mill habitually conceive of the second element in cost also (the capital employed) in objective terms—as the quantity or value of the wages advanced and the length of time for which the advance is made, not as a subjective discommodity or sacrifice.<sup>7</sup> With the

<sup>1</sup> *Principles*, pp. [78–85].

<sup>2</sup> *Ibid.*, pp. [82–3], [80], [293–4], 16, 17n., 22–7, 92–3. *Memorials*, p. 160–1.

<sup>3</sup> *Memorials*, p. 161.

<sup>4</sup> Pp. [399–400].

<sup>5</sup> *Works*, p. 68.

<sup>6</sup> *Op. cit.*, pp. 407, 31–3, 463–6.

<sup>7</sup> See Ricardo, *Works*, pp. 51, 22, 24, 25, 18, 123–4, 87; Mill, *op. cit.*, pp. 54, 479–80, 463–6. The nearest approach these authors make to a psychological conception of real cost is in their explanation (on Smithian lines) of the differences between the rates of wages and of profits in different occupations. A psychological interpretation of cost similar to Marshall's is, however, to be found in Senior. See his *Political Economy*, p. 97.

emergence of the psychological conception of "real cost" we enter not merely a different world from Ricardo's, but a different universe. As before, however, we have reached it by gradual steps through the endeavour to climb from the Ricardian starting-point into higher and higher levels of generality and unification—the search for "the one in the many, the many in the one." Though one cannot speak with confidence, one may hazard the guess that Marshall began with the objective demand and supply schedules, the phenomena of the market-place, and worked back from them to their psychological basis, not (as was the case with Jevons) the other way about. Certainly he held that of the two steps which "had brought about a great change in the manner of economic thought" in his generation—namely (1) the use of "semi-mathematical language for expressing the relation between small increments of a commodity on the one hand and on the other hand small increments in the aggregate price that will be paid for it"; and (2) "formally describing these small increments of price as measuring corresponding small increments of pleasure"—the former, which had been "taken by Cournot" in 1838, was "by far the more important."<sup>1</sup> And to the end he kept his schedules and curves and equations in a form which was capable of numerical or statistical expression and might afford a basis for those "quantitative studies" which he regarded as the main task before the rising generation."<sup>2</sup>

## II

So much for the mathematical apparatus and the pure theory of the book. But for Marshall pure theory was "a very small part of economics proper and by itself sometimes even—well, not a very good occupation of time."<sup>3</sup> As to mathematics, he thus describes his attitude:

"I had a growing feeling in the later years of my work at the subject that a good mathematical theorem dealing with economic hypotheses was very unlikely to be good economics: and I went more and more on the rules—(1) Use mathematics as a shorthand language, rather than as an engine of inquiry. (2) Keep to them till you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life. (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3. This last I did often."<sup>4</sup>

Thus, while the mathematical apparatus translated into English and the non-mathematical extension of it to cover the element of time formed the skeleton of the *Principles*, the bare bones had to be clothed in flesh before they could appear in public or claim to

<sup>1</sup> P. 101.

<sup>2</sup> "The Old Generation of Economists and the New." In *Memorials*, p. 301.

<sup>3</sup> *Memorials*, p. 437.

<sup>4</sup> *Ibid.*, p. 427.

rank as economics proper. To that end, Marshall read widely in history, pored over statistics and reports, travelled and observed; and the *Principles* became a storehouse of information as well as a monument of ingenuity. This mode of treatment is in marked contrast to the method of Ricardo and Mill. It is a throw-back to Adam Smith; and here perhaps the notion that Marshall tried to reconcile divergent schools of thought is not altogether without foundation.

For at the time when he wrote, the whole Ricardian method was under fire from the Historical School. He does not seem to have derived any results of importance directly from this school, and his view of the relation between history and economics differed widely from theirs. But Hegel's *Philosophy of History* was an influence which he shared with them, and there can, I think, be little doubt that sensitiveness to their criticism and anxiety to meet what was sound in it account in some measure for the form which the *Principles* took and for certain features in its general outlook and detailed exposition. Marshall conceded that the Ricardians had confined their attention too narrowly to the facts of their own time and country<sup>1</sup> and that many of their conclusions had not the universality claimed for them by their followers and popularisers<sup>2</sup>; and was constantly on his guard against falling into a similar mistake. He recognised more fully than Mill and much more fully than Ricardo the influence of social customs and institutions on economic behaviour; and tried to weave it into the fabric of his system. He was acutely conscious that the freedom of competition—or, as he would have it, the “freedom of enterprise”—characteristic of the modern economy of the West was a very recent growth and that there were many parts of the world which it had as yet only begun to reach.<sup>3</sup> The historical setting in which he saw the industrial system he was to analyse become somewhat veiled from his readers when the chapters on the growth of free industry, and enterprise with which the first edition opened were relegated to an appendix: but he himself never lost sight of it. His reply to the historians' attack on analytical economics was the same as Jevons': the usefulness of one method does not necessarily imply the uselessness of the other; there is room for both and both are needed.<sup>4</sup> But his solution of the difficulty it raises was different. While Jevons fastened his hopes on a division of labour, a break-up of the science into

<sup>1</sup> Pp. 762–3 [62–3].

<sup>2</sup> Pp. [63<sub>a</sub>] [66–7].

<sup>3</sup> *E.g.*, p. [91].

<sup>4</sup> Pp. [76–7]. For Jevons' view, see *Principles of Economics and Other Papers*, pp. 195–6.



separate branches or even separate sciences,<sup>1</sup> Marshall's counter-measure was rather by way of a combination of methods—not only history permeated by theory but theory (as in the *Principles*) nourished, modified and illustrated by historical and contemporary fact. If any school of thought outside the Ricardian tradition set its mark on the *Principles* it was the Historical School, rather than the marginal utility school, that did so.

There were other fronts, too, to defend. Closely allied to the historians' assault was the line of attack developed by the "sociologists" —Comte, in particular—who held that "all the aspects of social life are so closely connected that they ought to be studied together" and urged economists "to abandon their distinctive rôle and devote themselves to the general advancement of a unified social science."<sup>2</sup> Then there were the moralists and romantics. Ruskin's fulminations had followed the thunderings of Carlyle, the comparatively good-humoured chaff of the *Mudfog* sketches (1837–9) had led up to the acid satire of *Hard Times* (1854) and more widely, perhaps, than ever before (though this type of opposition had persisted from the very beginning of the century) "political economists" were now "regarded as cold-blooded beings devoid of the ordinary feelings of humanity"<sup>3</sup> who neglected the imponderables for hard facts and stressed the sordid pursuit of material gain to the exclusion of the tender emotions and higher aspirations of man—as Gradgrinds, in short. Meanwhile, the clear-cut maxims with which Political Economy had been associated in the popular mind had been so riddled with exceptions that they were coming to be accepted, if accepted at all, rather as practical rules of thumb than as scientific laws. Mr. Mill himself had lately (1869) thrown over what had been accounted one of its leading principles without putting anything in its place. A number of other writers (Cairnes, Meleod and Hearn, for example) had been picking holes of more or less importance in its accepted doctrines. Its practitioners were known to be at variance not only on questions of practical policy, but also about the scope and method of their subject. Altogether, Political Economy had by the seventies lost a good deal of its once proud reputation. In the middle of the decade Bagehot could write :

"It lies rather dead in the public mind. Not only does it not exert the same influence as formerly, but there is not exactly the same confidence in it. Younger men either do not study it, or do not feel that it comes home to them, and that it matches with their most living ideas. . . . They ask, often

<sup>1</sup> *Op. cit.*, pp. 197–8, 200–1.   <sup>2</sup> Pp. [65], 701.   <sup>3</sup> Jevons, *loc. cit.*, p. 190.

hardly knowing it, will this "Science," as it claims to be, harmonise with what we know to be sciences, or bear to be tried as we now try sciences? And they are not sure of the answer."<sup>1</sup>

Marshall set himself to rehabilitate it in the general esteem. The *Principles* is an apologia for economics as well as an exposition of it: a kind of counter-Reformation, as one might say, directed against doubts within and denunciation from without the fold.

Hence, I fancy, comes (in part at least) a feature of the book which grates a little on the modern ear: its reiterated insistence of the importance of character in economic affairs and those pious phrases and moralising asides which nowadays seem so out of place in a scientific treatise. Though allowance must be made for Marshall's own temperament (typical of that earnest and self-critical age), it is difficult to resist the impression that his concern to set economics to rights with the moralists shows itself here. But a more scientific influence may also have been at work, derived this time from the sociologists. With the sociologists' doctrines there could, indeed, be no synthesis. For, broadly speaking, they had no doctrines to synthesise. Comte and Herbert Spencer, despite their "unsurpassed knowledge and great genius," could "hardly be said even to have made a commencement with the construction of a unified social science."<sup>2</sup> Marshall's own view was that "the whole range of man's activities in society is too wide and various to be analysed and explained by a single intellectual effort."<sup>3</sup> He refused firmly, as Mill had when he found his feet, to admit that a separate science of economics was impossible. Nor would he accept Mill's suggestion that it must be purely hypothetical, based on the abstraction of certain motives and the assumption that men are governed by them alone, the necessary qualifications being introduced when its abstract principles are applied to concrete problems. It must and could deal with man as he is, seen in the round. Its claim to an autonomous existence was grounded on the fact that it is concerned with a field of activity in which the motive force of the desires, aspirations and emotions springing from man's nature (the whole of it) could be measured: no abstraction from these was necessary.<sup>4</sup> But in his *Logic* Mill had maintained that the general science of society must be founded on what he called "ethology"—a science of human character—and in particular "political ethology"—"the theory of the causes which determine

<sup>1</sup> *Fortnightly Review*, 1876, p. 216. Quoted by Jevons, *loc. cit.*, p. 191, and reprinted in *Collected Works*, Vol. vii, pp. 92-3.

<sup>2</sup> P. 770.

<sup>3</sup> *Ibid.*

<sup>4</sup> Pp. 26-7. *Memorials*, p. 299.

the type of character belonging to a people or an age." <sup>1</sup> May we not find in this line of thought (which was characteristic of the epoch) a partial explanation of much that distinguishes Marshall's *Principles* from earlier and from later work?

At any rate we may be sure that Marshall did not modify his scientific doctrines simply for the sake of appeasement or to curry favour with the critics. "Truth is the only thing worth having: not peace. I never compromised on any doctrine of any kind." <sup>2</sup> He must have been convinced that "the way in which the character of man affects and is affected by the prevalent methods of the production, distribution and consumption of wealth" <sup>3</sup> was of the first importance *scientifically*: otherwise he would not have given it the prominence he did give it. Hegel, the historical school, the sociologists, the moralists and the romantics were all influences making for that conviction. To them must be added yet another element in the intellectual atmosphere of the time: the turn lately taken by the natural sciences.

"At the beginning of last century the mathematico-physical group of sciences were in the ascendant; and these sciences, widely as they differ from one another, have this point in common, that their subject matter is constant and unchanged in all countries and in all ages. . . . As the century wore on, the biological group of sciences were slowly making way, and people were getting clearer ideas as to the nature of organic growth. . . . At last the speculations of biology made a great stride forwards; its discoveries fascinated the attention of the world as those of physics had done in earlier years; and there was a marked change in the tone of the moral and historical sciences. Economics has shared in the general movement; and is getting to pay every year a greater attention to the pliability of human nature." <sup>4</sup>

Perhaps Marshall rather exaggerated the influence of this development on the work of his immediate predecessors, particularly Mill's. <sup>5</sup> His own was profoundly affected by it.

Biological conceptions of growth and decay, elimination and selection, are, as we have seen, brought in to solve even the problem of statical equilibrium. Consciousness that "if the subject-matter of a science passes through different phases of development, the laws of the science must have a development

<sup>1</sup> *Op. cit.*, pp. 498, 500. Of course, "character" in this context is to be taken as equivalent to the untranslatable term *ἦθος*, which includes a great deal more than "moral" character in the popular (and narrow) sense. My point is that a belief in the importance of a people's *ἦθος* in determining its economic behaviour may have helped to reinforce Marshall's insistence on the importance in that connection of the "moral" elements included in the wider term—as well as explaining much else in his handling of economic problems.

<sup>2</sup> *Memorials*, p. 408.

<sup>3</sup> *Principles*, p. 764 [65].

<sup>4</sup> *Ibid.*, p. 764: [64-5].

<sup>5</sup> The first edition of Mill's *Principles* was published eleven years before the *Origin of Species*: the third edition (in which the discussion of future changes in the social order took what was to all intents and purposes its final shape) seven years before.

corresponding to the things of which they treat" <sup>1</sup> led to the explicit recognition that economic doctrines must to a great extent be relative to time and place.<sup>2</sup> Further, and more important, Marshall's whole conception of the nature of economic change is coloured by what may be called the biological approach. For him, economic development can never be interpreted in terms of merely mechanical expansion or dynamic movement; it is essentially a process of "organic growth" and the methods of the science must be adapted accordingly. Hence the very restricted sphere (more restricted as time went on) which he assigned to the path-breaking ideas of an "equilibrium price" and an "equilibrium amount." In spite of the care lavished upon them, the long-period supply and demand curves were cast for a minor rôle only. They may serve a useful purpose by provisionally isolating for separate and preliminary analysis some of the forces making for change at a particular moment and indicating the direction of their pressure. They cannot be used to forecast accurately and for any considerable distance into the future the direction in which outputs and values are likely to move, still less the position at which they may be expected to arrive. For any disturbance of the "equilibrium" position is liable to alter the conditions of the problem by modifying tastes, habits and technical knowledge—the swing-back will not follow the same course as the swing-out or return to the point of departure;<sup>3</sup> and, above all, the forces isolated operate in an ever-changing medium which they modify and in turn are modified by. In the struggle for survival, new species of business organisation are constantly emerging and old ones being eliminated according as they are fit or unfit to profit by their environment. With alterations in business organisation man alters too—mentally and morally: the alteration in his character alters the survival-value of the different types of business organisation: and so on endlessly. Marshall's conception of economic change as "organic growth" almost certainly explains why he never developed a mathematical theory of economic dynamics. Quite certainly it reflects the intellectual climate of his age. "The Mecca of the economist lies in economic biology rather than in economic dynamics."<sup>4</sup> The epigram carries its date on its face.

<sup>1</sup> *Principles*, pp. [65], 764.

<sup>2</sup> *Ibid.*, p. [90].

<sup>3</sup> *Ibid.*, pp. [425-7]. In the chapters circulated by Sidgwick the irreversibility of movement along the curves is indicated by bars on the amount-axis.

<sup>4</sup> *Principles*, p. vii.

## III

Thanks to Jevons and Menger and, in a lesser degree, to Walras, the revival of economic theory had begun before Marshall's work saw the light. But the *Principles* made a big contribution to it, more especially in England. The impact of the book on the public mind has been described by Lord Keynes,<sup>1</sup> and need not be described again. It shows how exactly Marshall had gauged what was wanted at that moment: and how closely his outlook was attuned to the temper of his time. In scientific circles, too, its success was decisive and far-reaching.

In England, it gradually acquired a position if not of such exclusive dominance as Mill's *Principles* had had in the generation after 1850, at least comparable with that. For the part of the field which it covers it became a leading text-book not only in its author's own University but wherever economics was seriously studied. A whole generation of students—more than one, indeed, as academic generations go—was brought up on it. The equilibrium of demand and supply as the all-pervasive element in the pricing process, the balancing of small increments of costs and receipts, "marginal productivity," "elasticity," "substitution," the distinction between long and short periods, "quasi-rent," "prime" and "supplementary" cost, the elegant and serviceable expository device of plane-curves, became the stock-in-trade of the professional economist. Ideas of this sort might very likely have permeated English political economy in any case. They were in the air. But as a matter of plain historical fact their prevalence is due to Marshall. In its country of origin Alfred Marshall's *Principles* stands with Adam Smith's *Wealth of Nations* and Ricardo's *Principles* as one of the three great watersheds in the development of economic ideas: with the usual qualifications, we may divide the history of English political economy into three distinct epochs—the Classical, the Ricardian and the Marshallian or reformed-Ricardian.

That the book powerfully affected theoretical economics in the United States is also evident.<sup>2</sup> Thought in the "Melting-Pot"

<sup>1</sup> *Memorials*, p. 47.

<sup>2</sup> It is difficult for an Englishman to gauge the extent to which the book affected the course of ideas abroad. Tracing "influences" in the thought of a country which one does not know from inside is always risky: one is so apt to get the emphasis wrong and *nuances* elude one. For information about the United States I have relied on the writings of American economists. As regards Germany and Austria, I have been much assisted by a letter from the authoritative pen of Prof. Schumpeter; as regards Italy by a conversation with Mr. P. Sraffa, who

is naturally somewhat eclectic, and in recent years one major schism at least has developed there. But both directly and through the work of such influential writers as F. W. Taussig and Prof. T. N. Carver (to name only two out of a number), the *Principles* played an important part in forming the ideas of the succeeding generation.<sup>1</sup> To all appearances it must be accounted one of the foundation stones of modern American economics. Let two American witnesses corroborate :—

“Probably it is true that the bulk of the economic writings which have appeared in English since 1890, in their treatment of the problem of value, have been based on the ideas of J. B. Clark and Alfred Marshall, especially the latter. . . . American students, to a large extent, obtained their ideas on the marginal theory of value directly or indirectly from Clark, but . . . even in the United States Marshall’s writings had great influence.”<sup>2</sup>

“The position of economic theory in the United States is at present [1928] too chaotically diverse to permit any precise generalising. But one might hazard the statement that a large part of it owes more to Marshall than to anyone else. . . . Alfred Marshall . . . still dominates the field of economic theory in a remarkable fashion in England, and to a lesser degree in the United States.”<sup>3</sup>

On the Continent of Europe, the effect of the book was much less decisive—partly, no doubt, because of the delay in its publication. By 1890, Central European economics had become largely impermeable to the new Ricardianism. In Austria the pioneering work of the great trio had already established a new and independent tradition, and the ideas and methods which they had introduced had taken too firm a hold to be easily overthrown or radically modified from outside. Böhm-Bawerk and Marshall were, of course, well acquainted with each other’s contributions to the thought of the time and some minor inter-actions may perhaps be traced between them, but there was nothing like a fusion or large-scale borrowing on either side.<sup>4</sup> In Germany,

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knows the economics both of that country and of England from the inside. To both of them, I offer my grateful thanks—and my humble apologies if my attempt to distil what they have told me into a few sentences has resulted in errors.

<sup>1</sup> Prof. Carver dissented on some points, but in the main his well-known *Distribution of Wealth* (1904) follows Marshall’s method, while the apparatus used to expound the theory of value in Taussig’s widely-read *Principles of Economics* is wholly Marshallian.

<sup>2</sup> E. Whittaker : *A History of Economic Ideas* (1940), p. 453. Clark, who in years was nearly contemporary with Marshall, seems in the main to have worked independently and though his *Distribution of Wealth* (1899) has some remarkable resemblances to Marshall’s work its principal affinities are with the Austrians.

<sup>3</sup> P. T. Homan : *Contemporary Economic Thought*, p. 269 and p. x.

<sup>4</sup> Marshall’s work has, however, not been without influence even in Austria. Prof. Schumpeter writes : “My own generation—starting their University training, say, from 1900 to 1905—did read Marshall in the student stage. I know I did at all events. Later on, especially after the war, he came for a time into his own, though only with a restricted group to which, however, he became a teacher.”

the home of the historical school, abstract theory was at a heavy discount and the concessions which Marshall made to the historians' attack on Ricardian method do not seem to have been fully appreciated. At any rate German economic thought continued to develop on non-mathematical and non-analytical lines. Meanwhile, for those continental economists whose bent did lie in the direction of pure theory, Walras had provided a rival system, the more formidable because it displayed its mathematical apparatus to full view in all its undraped attraction instead of relegating it to foot-notes and appendices and wrapping it round with realistic qualifications and illustrations and the circumlocutions of ordinary speech. Thus the three streams of economic theory which took their rise in the seventies tended to flow in separate channels—the Austrian school, the Lausanne school and the English or Marshallian—instead of merging into a single flood, though there were, of course, more or less important percolations from one to the other.

This does not mean, however, that the influence of the *Principles* on Continental thought was negligible. On the contrary, it was felt everywhere and in two countries at least which have made distinguished contributions to pure theory—Italy and Sweden—it was very strong. In Italy, as is well known, Marshall's ideas were introduced at an early stage by Pantaleoni—the source in this case being in the first instance the chapters on *The Pure Theory of Domestic Values* circulated by Sidgwick and, in a less degree, *The Economics of Industry*. And though Pareto—a more original thinker than Pantaleoni—built largely on foundations laid by Walras, since his time what may be called the Marshallian tradition, albeit intermingled with other elements, seems on the whole to have got the upper hand of the Walrasian in the work-a-day teaching of the Italian school. In Swedish thought; the Lausanne influence has perhaps been more powerful. But here too the *Principles* left an evident and indelible mark.<sup>1</sup>

Thus outside England and Austria, where the native systems established almost undisputed sway, Marshall's *Principles* and the writings of Walras acted side by side to stimulate and mould

<sup>1</sup> Among the channels through which it did so, the work of Prof. Cassel may be selected for particular mention. No doubt his explicit references to Marshall are usually critical, but the whole form of the thought in his *Nature and Necessity of Interest*—the conception of interest as a "price" paid for "waiting" and determined by the demand for and supply of it—is essentially Marshallian and in his *Theory of Social Economy*, a Walrasian analysis is completed and made more general by the introduction of Marshall's principle of substitution—though this is rather oddly described as "supplementary."

the renaissance of theoretical economics in Europe. Without attempting to assess the relative importance of the various influences, it may safely be said that the English work must be given a place in the front rank.

Marshall once defined a "classical" author as one who "by the form or the matter of his words or deeds has stated or indicated architectonic ideas in thought or sentiment, which are in some degree his own, and which, once created, can never die, but are an existing yeast ceaselessly working in the Cosmos."<sup>1</sup> On the first count he easily qualifies for the title. Beyond dispute, the *Principles* contained "architectonic ideas" which were "in some degree his own." How has it stood the test of time?

#### IV

In some ways it has obviously "dated." Its pious asides and prim moralisings are, as we have already observed, not in the modern taste, and the line of attack against which they were in part a defence has faded out, while ambitious projects for a unified social science (to which, as I have suggested, the stress laid on moral character may have been in some sort a concession) no longer excite the same interest. On that point, Marshall's scepticism is now very generally accepted—except among those who still cling to the doctrines of that other eminent Victorian, Karl Marx. The political attitude, too, which shows through the argument in many places, and occasionally comes to the surface, is not sympathetic to the present generation. Individualism is, for the moment at least, a "creed outworn," and Marshall was individualist to the core. Not that he adhered to the dogmatic maxims of *laissez-faire*. On the contrary, one of the outstanding features of the *Principles* (it had appeared even in the earliest draft) was a logical refutation of *laissez-faire* theory—its practical limitations had, of course, long been recognised. Nor was he among those who defended the distribution of incomes which the existing social system had brought about, either on the ground that it was just or by the plea that it was necessary in order to maintain the supply of capital.<sup>2</sup> He held that "in moderation" what he called the "financial side" of socialism, "predatory" and "rapacious" though it was, might "even be beneficial,"<sup>3</sup> and he was not opposed, in principle at least, to far-reaching measures for diminishing inequalities of wealth, provided that

<sup>1</sup> Letter to J. Bonar, *Memorials*, p. 374.

<sup>2</sup> See, for example, *Principles*, pp. 229-30; *Memorials*, p. 463.

<sup>3</sup> *Memorials*, p. 462.



they were carried through by "means which would not sap the springs of free initiative and strength of character."<sup>1</sup> It was the "administrative side" of socialism, the proposal to substitute public management for free enterprise and individual initiative that he viewed with alarm<sup>2</sup> and which led him, in a private letter, to describe the socialistic movement as "by far the greatest present danger to human well-being."<sup>3</sup> This attitude makes very little appeal to most present-day students of economics, young or old. It springs both from the intellectual climate and, what is more significant, from the industrial environment of Marshall's time—more particularly of his earlier years, always of the most crucial period in forming a man's general outlook.

For Marshall's main work was done when competitive capitalism was at the zenith of its achievement. In little more than a century the system of "free enterprise" or "economic freedom" had revolutionised industrial technique, transport and communications and had increased the productive power of the country—indeed its production—out of all knowledge. There were shameful blots on its record, as Marshall was well aware:<sup>4</sup> abuses and a large "residuum" of grinding poverty remained, which he was as anxious as anyone to remove.<sup>5</sup> But since the middle of the century at least it had steadily and substantially (though not without temporary set-backs) raised the real income of the mass of the people in spite of a rapid increase in their numbers. Even after the "good years" had come to an end, and throughout the dragging deflation of the later seventies and eighties, the improvement had gone on (it was not till near the turn of the century, when Marshall was already past middle-age, that a check definitely declared itself). All this had been accomplished through individual initiative, the "restless energy" of business men going their own way and with no great help from Government beyond what was involved in razing obstacles and removing restrictions. Moreover, with his broad historical perspective, Marshall saw it as a brief episode at the end of a long vista of comparative stagnation. With the removal of the barriers of custom and regulation at the end of the eighteenth and the beginning of the nineteenth century, economic development and the wealth of the nation had leapt forward at a pace almost, if not quite, unparalleled.<sup>6</sup> Can we

<sup>1</sup> *Principles*, p. 714.

<sup>2</sup> *Ibid.*, pp. 712-13.

<sup>3</sup> *Memorials*, p. 462.

<sup>4</sup> *Principles*, pp. 11, 177, 749, 750.

<sup>5</sup> *Ibid.*, pp. 2, 714-5.

<sup>6</sup> For an account of the achievements of nineteenth-century capitalism from a source which is certainly not prejudiced in its favour, see S. and B. Webb, *The Decay of Capitalist Civilisation*, pp. 78-84.

be surprised if for him individual initiative, the "bold" and "free" enterprise of the innovator, was the one thing above all others to be nursed and encouraged in order that progress might continue? or if he was haunted by the fear that in a new form the shackles might be clamped on it once more and technical advance settle down again into the old sluggish *tempo*? Our experience has been different and our outlook has changed with the environment, but one wonders sometimes where the "progressive" intellectuals, so glib now with their sneers at "orthodox" or "apologetic" economics, would have stood if they had been Marshall's contemporaries.

To suppose that Marshall treated the capitalist system as part of the order of nature, or even that he thought of it as having been established once and for all would, of course, be ludicrous. Like Mill, though with less confidence, he looked for the eventual emergence of new forms of organisation and some kind of new social order.<sup>1</sup> His concern was lest they should come in a manner that would throttle enterprise and experiment and before the institutional and technical environment had evolved new motives and new traditions of behaviour that would preserve a driving-force for progress.

"There is strong *prima facie* cause for fearing that the collective ownership of the means of production would deaden the energies of mankind, and arrest economic progress; unless before its introduction the whole people had acquired a power of unselfish devotion to the public good which is now relatively rare."<sup>2</sup>

One of his few ventures into practical politics was the suggestion, designed to reconcile public control with individual initiative, that undertakings which must necessarily have a monopolistic status should be leased for a limited term by public authorities to corporations tendering competitively, the competition turning on the "price or the quality, or both, of the services or goods, rather than on the annual sum paid for the lease."<sup>3</sup> And here and there he caught a glimpse of the way in which current changes

<sup>1</sup> See, e.g., p. 752, *Memorials*, p. 367. I doubt whether Marshall thought that the new order would or should be founded on the public ownership of property. As I read them, the indications are to the contrary. In comparing his attitude to the capitalist system (and to socialism) with Mill's, one must remember that Mill's *Principles* belongs to the first half of the century, when the improvement in the position of the mass of the people had not decisively declared itself. So, too, though the first volume of *Das Kapital* was not published till 1867, Marx was then forty-nine years of age and his basic ideas had been formed long before and in a different environment.

<sup>2</sup> *Principles*, p. 713.

<sup>3</sup> From his presidential address to the Economic Section of the British Association, 1890. *Memorials*, p. 277.

in industry might be developing motives and behaviour-patterns by which progress might be preserved under new forms of organisation. In a noteworthy passage, he points to the growth of professional pride, intellectual ambition, the desire for reputation, distinction and group-approval, among the technicians and the new managerial class brought into prominence by large-scale undertakings as forces which might counteract "the tendency to ossification" set up by "the growth of large businesses, and especially those under public control."<sup>1</sup> It is the note of caution, the suspended judgment and the estimate of the speed of social change (comparable with the secular evolution of biological species) which so sharply distinguish his outlook from that of the present generation.

But, after all, what is important and interesting about Marshall is his contribution to science, not his political opinions or his valuation of the capitalist system. Of these there are scarcely any explicit statements in the *Principles*. And though they may have had something to do with the tone of the book and its turns of expression, they did not, I think, have any substantial effect on his scientific conclusions. Except perhaps in one particular—namely, that he was inclined to over-estimate the strength of competition in its struggle against the tendencies making for monopolisation. For he dreaded monopoly almost as much as he dreaded premature socialisation: and largely for the same reason—that it was likely to deaden initiative and keep down constructive ability.<sup>2</sup> Moreover, if monopoly was coming anyhow, the case against socialisation was greatly weakened. There is danger of misjudging him here. The evidence we have now was not at his disposal. Nevertheless, it looks to me as though in this matter the wish was to some extent father to the thought.

Be that as it may, the decay of what may be called "atomic" competition—i.e., competition between a large number of small, closely-knit units—is the main change in industrial structure which distinguishes our time from his and has done more than anything else to render his theoretical analysis inapplicable to the world of to-day. The analysis does not, indeed, proceed on the assumption that competition is perfect. At the outset of his studies Marshall had "believed it was possible to have a coherent though abstract doctrine of economics in which competition was the only dominant force," but he came to "regard that position

<sup>1</sup> *Memorials*, pp. 308-9. From *The Old Generation of Economists and the New* (1896).

<sup>2</sup> *Principles*, p. 8.

as untenable from an abstract as well as from a practical point of view,"<sup>1</sup> and, as we have seen, market-imperfection assumed increasing prominence in his treatment of the theory of value as time went on. Nor did he neglect monopoly proper. The pure theory relating to it is worked out, if not completely, at least very fully and with great elegance in Book V, ch. xvi, of the *Principles*. It is the territory between atomic competition and absolute monopoly that the pure theory of the book does not cover at all satisfactorily. And it is precisely this territory which has been so greatly enlarged by the development of the joint-stock company and the advantages (or necessity) of large-scale control. The conflict of interests within the firm; the interpenetration of interests between firms through interlocking directorates, shareholdings, subsidiary concerns and the like; the domination of an industry by a few large units; the intermixture of public and private control as seen in the various types of semi-public corporation and of regulating boards and devices;—these are the features of modern industrial structure which find little or no place in the analytical framework of the *Principles* and give it a rather obsolete appearance. References to them are not wanting.<sup>2</sup> Indeed, the tendency for an industry in which internal economies act strongly "to fall almost entirely into the hands of a few large firms"<sup>3</sup> is a recurring theme. But even in that case we are simply told that

"The production of [the] commodity really partakes in a great measure of the nature of a monopoly; and its price is likely to be so much influenced by the incidents of the campaign between rival producers, each struggling for an extension of territory, as scarcely to have a true normal level."<sup>4</sup>

There the matter is left. Partly, no doubt, because it is closely related to the problems raised by combinations and trusts which were expressly reserved for consideration in a later volume;<sup>5</sup> partly perhaps because Marshall held that combinations tended to develop into consolidations approximating to full monopoly.<sup>6</sup> But the last sentence in the passage just quoted suggests that he also accepted the view that value under monopolistic competition is theoretically indeterminate, and concluded accordingly that pure analysis could not accomplish much in that field. At all events, when the promised continuation at last appeared<sup>7</sup> the treatment was almost entirely historical and descriptive and made no attempt to fill the gap in the pure theory. Meanwhile

<sup>1</sup> *Memorials*, p. 414.

<sup>2</sup> P. 397.

<sup>3</sup> Pp. x, v, 660, 722.

<sup>7</sup> *Industry and Trade* (1919).

<sup>2</sup> See, for example, pp. 604, 304.

<sup>4</sup> *Ibid.*; cf. p. 805.

<sup>6</sup> *Memorials*, pp. 271, 274.

that gap had been widened by a small but highly significant change introduced in the sixth edition of the *Principles*. After the famous "trees of the forest" simile, earlier editions had proceeded "as with the growth of trees, so is it with the growth of businesses . . ." <sup>1</sup> In the sixth, the sentence was re-written so as to read, "so *was* it with the growth of businesses as a general rule before the great recent development of vast joint-stock companies, which often stagnate, but do not readily die. Now that rule is far from universal, but it still holds in many industries and trades." <sup>2</sup> This inconspicuous change of wording really knocks away—so far as a large and growing section of industry is concerned—the main prop on which the reconciliation between atomic competition and increasing returns had rested. For external economies, though they may explain how a diminishing supply-price may arise where internal economies do not exist, do not constitute an effective obstacle to the elimination of the small unit when these do exist: while market-imperfection, through the openings it affords for advertisement, selling-devices, proprietary brands, goodwill and the rest, acts almost as strongly in favour of large-scale businesses as against them.

As yet very little has been done, in England anyhow, towards filling this gap. The development of the scientific analysis has not kept pace with the development of the subject-matter of the science. Recent elaborations of the pure theory of "imperfect competition" have followed closely the lines laid down by Marshall more than forty years ago. The device of setting the cost or supply curve of the individual firm against its own individual demand curve is due to him—as Mr. Sraffa acknowledged in the celebrated article to which its present vogue is due. <sup>3</sup> Moreover, the two leading propositions derived from it and now so familiar in every lecture-room—namely, that in equilibrium (1) the scale of the firm is determined by the equation of the final increment of its receipts with the final increment of its outlay, and (2) the number of firms in an industry by the rule that the total receipts of the firm on the margin of entry must be equal to its total costs—are essentially his. <sup>4</sup> True, the "marginal revenue curve" is a neat and handy tool which has

<sup>1</sup> Fifth edition, p. 316.

<sup>2</sup> P. 316.

<sup>3</sup> ECONOMIC JOURNAL, Vol. XXXVI, p. 526.

<sup>4</sup> The first is clearly stated in the Mathematical Appendix, Note XIV, pp. 848-50. For the second see, in particular, pp. 373, 377, 459-60.

Marshall usually writes of the costs of the "representation" not of the "marginal" firm. But this only makes his theory more general by allowing for the case in which individual firms may rise and fall while the output of

been used with effect both in expounding these propositions and in problems of monopoly, and it has evidently come to stay. But useful as it is, it is no more than a geometrical version of Marshall's algebra. The change which has occurred in this part of the subject is pedagogic. For expository and educational purposes, it has been found convenient to bring the general case in which a firm's output appreciably affects price into the foreground, so as to illuminate the common element running through the particular cases of monopoly, atomic competition in an imperfect market and perfect competition; whereas Marshall preferred to keep all this in the background and to go straight to the special cases which he thought important in a preliminary survey of the forces at work in the industry of his time. This change also has probably come to stay. It means that the *Principles* will lose, is indeed already losing, its pre-eminence as a text-book. But, once again, it is a change in the manner of exposition, not in the substance of the doctrine expounded. It in no wise extends or modifies the theory of the *Principles* so as to cover recent modifications of industrial structure. Markets have not become less perfect in the last fifty years—rather the contrary: the significant developments have been the domination of industry by large units ("oligopoly"—to use the fashionable phrase) and the increasing complexity of the controls. Valuable work has lately been done by various workers (Dr. Zeuthen,<sup>1</sup> Prof. Chamberlin<sup>2</sup> and Mr. Kahn,<sup>3</sup> for instance) on the theory of duopoly and of bi-lateral monopoly and Prof. Pigou's analysis of "exploitation" is an important contribution to the distributional aspect of this type of problem.<sup>4</sup> Nevertheless the general theory of value and distribution as a whole has scarcely advanced at all into that part of the field at which the *Principles* stopped short. It is still concerned almost exclusively with the case of pure monopoly on the one side and on the other with atomic competition, "perfect" or "imperfect."

In England, indeed, there has been some tendency to retreat by confining the theory of imperfect competition to the special

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the whole industry remains unchanged. When he resorts to a more narrowly statical analysis, the marginal firm, in fact though not in name, duly appears (see his construction of the "particular expenses curve," Appendix H, p. 811 and *op. p.* 373).

<sup>1</sup> *Problems of Monopoly and Economic Warfare* (1930).

<sup>2</sup> *The Theory of Monopolistic Competition* (1933).

<sup>3</sup> *ECONOMIC JOURNAL*, 1937, pp. 1-20.

<sup>4</sup> *Economics of Welfare*, pp. 556-7, 813-4. See also his *Principles and Methods of Industrial Peace* and the corresponding chapter in *Economics of Welfare* (Part III, ch. vi.).

(and almost non-existent) case in which the individual firm produces only one "line" and cannot affect the demand for its output by advertisement and other selling devices: <sup>1</sup> a tendency which illustrates a more general departure from the example set by the *Principles*.

The attempt to fuse realistic study with theoretical analysis has, on the whole, not been followed up. By and large, recent theory, so far as it relates to the problems of value and distribution, is at a higher level of abstraction than Marshall's. The limited rôle which he assigned to mathematics has generally been accepted in his own country, notably by those few economists who have had a mathematical training.<sup>2</sup> (Contrast in this respect the work of Lord Keynes, who came to economics from the Mathematical Tripos, with that of Prof. Pigou, who came to it from history.) But analytical and descriptive work have tended to fall into separate compartments and even into different hands—in accordance with Jevons' forecast rather than with Marshall's practice. Allied to that development is the tendency within the theoretical compartment for mechanical concepts and analogies to regain their primacy. Partly no doubt this has been due to the itch for precise results: not all of us are content to act on the late Prof. Wildon Carr's admirable motto (which might well have been Marshall's), "It is better to be vaguely right than precisely wrong." Partly, perhaps, it may be attributed to the stress laid—unavoidably—in academic teaching on those parts of the subject which the beginner finds most difficult. Would it be fanciful to connect it also with the fact that among the natural sciences physics has once more taken over the lead from biological studies (in the popular imagination at least), and to see in it evidence of some kind of cyclical movement in ideas which affect all scientific enquiries alike? Whatever the explanation, the fact is plain. In those parts of economics with which the *Principles* was concerned, there has been a distinct reversion to Ricardo's method and away from the Marshallian blend of realism and abstraction: a return to the mechanical as against the biological approach. How far this development also will be

<sup>1</sup> This is not true of the United States. Prof. Chamberlin's pioneer *Theory of Monopolistic Competition* treats at length of selling devices and product-differentiation as well as oligopoly.

<sup>2</sup> Marshall's hope that economics would attract students trained in the mathematical and physical sciences (*Memorials*, pp. 171–2) has, on the whole, not been fulfilled in his own University. Not only his successor in the chair, but the great majority of the teaching staff at Cambridge since his time have been recruited from the "literary" subjects.

lasting it is impossible at present to say. There are already some signs of a reaction—in a form which would have been especially welcomed by Marshall—viz., an attempt to check and modify theoretical analysis by the use of statistics. But as yet it has not made much headway.

Meanwhile, the fading out of biological analogies has not been accompanied, as might perhaps have been expected, by any widespread attempt to analyse the process of economic change in terms of dynamics. Some movement in this direction there has been,<sup>1</sup> but up to the present it has not resulted in a wide or far-reaching advance, still less in a re-statement of the theory of value and distribution superseding Marshall's. Yet this is the point at which the apparatus of the *Principles* strikes one as least satisfactory and where its author seems to have been least satisfied with it. Marshall was well aware that the plane curves of demand and supply are not a fully adequate instrument for dealing with an irreversible process in which a change in demand may permanently affect the conditions of supply and vice versa.<sup>2</sup> Hence the very restricted place which he gave to them (and to the corresponding equations) and the stress he laid on the limitations of statical assumptions when the economies of large-scale operations act strongly.<sup>3</sup> Hence also, it may be, the somewhat greater prominence accorded as time went on to the particular equilibrium of individual industries. For, although the device of representing the price that has to be paid for labour and for capital as a function of the aggregate amount required was an improvement on the practice of treating them as constants, the irreversibility of the process to be analysed is even more patent here. The rising long-period supply price of labour definitely depends on the effect of high earnings on habitual standards of life and the rate at which capital is forthcoming is significantly influenced both by the income to which those who supply it have been accustomed and the expectations which experience has implanted in them. It is noteworthy that Marshall, while arguing, after a very cautious survey of the evidence, that labour, capital, and ability-in-command-of-capital had at the time when he wrote definite supply-prices, never actually applied his supply and demand curves to the agents of production. In fact, his apparatus is adapted to display some only of the major influences on which the determination of the system of prices depends. He was

<sup>1</sup> *E.g.* in the work of Prof. J. R. Hicks and the Swedish school.

<sup>2</sup> See above, p. 312.

<sup>3</sup> Pp. 460-1, 805-12.



constantly feeling his way to a more complete solution. As, for instance, in the following passage :—

“ The unsatisfactory character of these results [relating to increasing returns] is partly due to the imperfections of our analytical methods, and may conceivably be much diminished in a later age by the gradual improvement of our scientific machinery. We should have made a great advance if we could represent the normal demand and supply price [of a commodity] as a function both of the amount normally produced and of the time at which that amount became normal.”<sup>1</sup>

and in the footnote attached to it, containing suggestions for a three-dimensional diagram. One might have anticipated that an attempt to supply the deficiency would have presented itself to his readers as the outstanding task to be undertaken now that the confusions of the older statical theory had been cleared up and the gaps in it filled.

That so little has been done in this direction may be partly explained by a feature in the economic history of our own time which has tended to divert attention to a matter of much more urgent practical importance—the problem of unused capacity, of workless men and idle or half-idle plant. The extent and persistence of unemployment in the last quarter of a century distinguishes the experience of our generation from Marshall's even more strikingly than the growth of concentrated and complex controls. And here theory has made a big advance, involving what may prove to be a really radical departure from the standpoint adopted in the *Principles*. From that “ preliminary volume ” monetary factors are excluded by the assumption that the purchasing power of money is constant.<sup>2</sup> This corresponds to and was probably suggested by Ricardo's assumption that the money-stuff, the *numeraire*, is a produced commodity with a constant marginal cost in terms of capital and labour and that the technical coefficients relating to it constitute a kind of norm about which those relating to other commodities are distributed :<sup>3</sup> an assumption which simplified his problem by limiting it to what was in effect a sort of barter-economy and contributed not a little to the traditional separation of the theory of money from the theory of value and distribution. In its Marshallian form (which is in part a reflection of the increased importance of credit-instruments as compared with hard money) its implications are subtler, more far-reaching and in a sense more treacherous because they are less easy to trace. To follow them out in detail or to inquire how far Marshall's

<sup>1</sup> P. 809; cf. p. 463 n.

<sup>2</sup> Pp. 62, [9].

<sup>3</sup> *Works*, pp. 28–30.

assumption succeeded in shutting out monetary influences would take us too far. It must suffice to remark that in determining the scale of the whole system of outputs monetary influences, as we can all see now, play a leading part, and that therefore a theory of general (as distinct from particular) equilibrium must take them into account if it is to explain even approximately the forces at work in the real world to determine the relative values of the commodities which make up the system and the rewards of the agents used in producing them. In explaining the different levels of economic development achieved by different races or in different parts of the world or in widely separated historical epochs and the causes underlying the slow climb from primitive savagery to mechanical civilisation, a somewhat exclusive stress on "prospectiveness" and "self-control," the comparative weight given to present and future benefits, to leisure and acquisition, does no great harm. (The *Principles* is more concerned with explanations of that kind than is commonly supposed.) Moreover, at a time when the capitalist system had not lost its initial *élan* and the underlying psychological and technical conditions were making strongly for further expansion, a theory of value and distribution which provisionally ignored the money mechanism did not involve a very serious distortion of contemporary fact. Even so, it was incomplete and lacked both generality and precision. For it did not cover some of the principal factors on which (on any but a very telescopic view) the rate of progress and hence not only the aggregate volume of investment and output but also the system of relative outputs and prices must always to some extent depend in a monetary economy.

There is some recognition of this in a neglected passage at the end of the *Principles* which points forward to what was to have followed in the later volumes.<sup>1</sup> But it does little more than underline the qualifications of Say's Law, which had been clearly stated in an early essay of Mill's<sup>2</sup> (and rather covered up in his *Principles*)—namely, that the power to buy does not necessarily imply the will to buy and that the periodical recessions of industry are due to people's (more especially business men's) refusal, principally owing to lack of confidence, to lay out the money and credit at their disposal. Unlike Malthus, who had anticipated him by insisting in the teeth of Ricardo's opposition that the interaction of supply and demand is paramount at every point in the pricing process, Marshall did not attempt to apply the supply

<sup>1</sup> Pp. 710-11.

<sup>2</sup> *Essays on Unsettled Questions in Political Economy*, pp. 69-72 (2nd ed.).

and demand apparatus to output as a whole. And Malthus' attempt was baulked by his failure to shake himself free from the associations of the Ricardian barter-economy. It was left to Lord Keynes, approaching the problem from the monetary side, to carry this line of thought through to a triumphant conclusion and to revolutionise all our ideas by doing so. The re-integration of the theory of money with the theory of value and distribution which is thus called for has not yet been accomplished. It is too early to say how large a departure from the Marshallian analysis it will involve. That some re-statement will be necessary is already evident.

Thus in two outstanding respects—viz., (1) the comparatively slight treatment of competition and bargaining between large units and of complex industrial controls, and (2) the neglect of aggregate money demand and money cost in the analysis of general equilibrium—the superstructure of the theory contained in the *Principles* shows obvious traces of the conditions prevailing when it was built up.<sup>1</sup> It is a subtle and masterly analysis of the leading forces at work in the determination of relative prices when individualistic capitalism had got well into its stride and had transformed industrial technique but still retained much of its initial expansionist force; and when the new forms of organisation opened up by the principle of limited liability and the monopolistic tendencies inherent in the economy of large-scale operation were making themselves felt but had not yet overrun a great part of the field. Inevitably it is less well adapted to the conditions which have emerged after the passage of more than half a century.<sup>2</sup>

But underlying the superstructure was a broader and more general system of ideas.<sup>3</sup> How far can these still be of service in handling the problems of the present and the coming generation?

Prophecy in such a matter is rash, but at present many of

<sup>1</sup> It must be remembered, however, that combinations and money were reserved for later treatment.

<sup>2</sup> The relativity of economic doctrine was a well-recognised principle with Marshall. See, for example, *Principles*, p. 37: "Every age and every country has its own problems: and every change in social conditions is likely to require a new development of economic doctrines": also the letter written in 1915 to Mr. C. R. Fay: "A thousand years hence 1920-70 will, I expect, be the time for economic historians. It drives me wild to think of it. I believe it will make my poor *Principles*, with a lot of poor comrades, into waste paper" (*Memorials*, pp. 489-90).

<sup>3</sup> The task which Marshall set before his own generation of economists was not so much to construct formulae immediately applicable to practical affairs as to build—or rather finish building—an *organon*, an instrument of thought, applicable to a variety of differing problems. See his Inaugural Lecture delivered at Cambridge in 1885 (*Memorials*, pp. 171; 159-61).

them certainly look like permanent acquisitions. The principle of mutual determination, for instance; the balancing of marginal investments of cost and advantage; the distinction between the short-period and long-period elements in cost; the notion of "elasticity"; are all playing a lively part somewhere or other in the various branches of current economic theory. Witness, for example, Lord Keynes' application of the demand and supply schedules to output as a whole and the part played in his analysis by the balancing of the marginal productivity of capital against the price that has to be paid to compensate for liquidity preference. Witness also the numerous recent discussions of the principles which should govern a collectivist state in determining the amount of investment and the distribution of its resources between alternative uses.<sup>1</sup> And they correspond, surely, to actual phenomena which must persist in one shape or another under any form of organisation and in any social system.

At first sight, it might appear that in a totalitarian régime what Marshall seems to have regarded as the most general and universally applicable element in his construction, the psychological conception of real cost, must be ousted by the notion of "opportunity cost." But on second thoughts is that so certain? The last few months have indeed shown clearly enough that the pre-war stresses and strains between the peasants and the industrial or dominant elements in the U.S.S.R. arose partly from the necessity of choosing between "guns and butter." But did they not also represent a conflict between the rival claims of jam to-day and more jam to-morrow—the divergent pulls of the desire to consume now and the advantages offered by long-term investment? and was not the line actually adopted the outcome of some kind of balance between these pulls? Again, two of our most eager admirers of the Soviet régime attribute the inequality of incomes which it has instituted (or preserved) between various grades of labour to the necessity of providing an incentive which would induce workers to undertake prolonged courses of training or to sacrifice their leisure in acquiring technical skill.<sup>2</sup> You may drive out real cost with a pitchfork, but it has an awkward way of coming back.

<sup>1</sup> *E.g.*, H. D. Dickinson, *Economics of Socialism* (1939); E. F. M. Durbine, *Economic Journal*, 1933, pp. 676–690; M. H. Dobb, *Economic Journal*, 1939, pp. 713–28.

<sup>2</sup> S. and B. Webb: *Soviet Communism* (1936), p. 710. Compare pp. 711 and 715 where it appears that wage-rates are adjusted not only to the "difficulty of the work" but to "the sanitary conditions" under which it is done and local variations introduced in order to induce people to move to or stay in the places where they are wanted.

The main difficulty, in this connection and in others, seems to lie in applying precise scientific methods to the action of large masses, particularly when they are composed of heterogeneous elements whose interests may diverge. It may be that material of this kind is beyond the reach of exact analysis and determinate results. If so, the future of positive economic theory, as distinct from welfare economics, is not bright. The refinements of exact analysis may still be helpful in ascertaining how public authorities and large-scale private associations *ought* to behave—in determining “ideal” outputs, the distribution of resources which would yield “maximum satisfaction” and so on. They will be of little or no use in explaining how they *do* behave—what outputs and what distribution of resources they can in fact be expected to produce. On the other hand, it may be that a solution will be found in the direction to which Marshall’s ingenious contrivance of “compromise benefit”<sup>1</sup> and his modest application of it in *Industry and Trade*<sup>2</sup> seem to point. But this is speculation. The economics of group-action, of collective control, massive competition and mass bargaining have yet to be written. What we can say with confidence is that Marshall’s *Principles* contributed to the corpus of scientific ideas elements which were not only “architectonic” and “in some sense his own,” but are still “an existing yeast working in the Cosmos” and far from dying. On the evidence so far available, its author abundantly deserves the title “classical” even on his own somewhat exacting standard.

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<sup>1</sup> *Principles*, pp. 488-493.

<sup>2</sup> Pp. 425-6.