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Alfred Marshall: Why He Matters

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1 Introduction

One morning before lunch, while summering in Italy, a professor conceived of a concept so fundamental to the discipline of economics that hundreds of economists now make use of it each year and thousands of students must learn it as part of their economics coursework. The professor's wife reported that her husband was "highly delighted" by his discovery. And yet, today, this breakthrough in economic analysis garners few citations for its discoverer. Indeed, so commonplace is this particular theoretical tool that most economists are unaware of its scholarly source. Such is the status of Alfred Marshall, the inventor of elasticity.

How fundamental is elasticity to the study of economics? No less a luminary than John Maynard Keynes wrote: "I do not think that Marshall did economists any greater service than by the explicit introduction of the idea of 'elasticity' . . . without the aid of which the advanced theory of Value and Distribution can scarcely make progress" (1924, p. 353). Today, of course, economists and non-economists routinely use elasticity without citing Marshall or even knowing who he was. And not only elasticity of demand, but elasticity of supply, elasticity of income, elasticity of advertising, elasticity of scale, elasticity of intertemporal substitution, as well as cross-price elasticity.[1]

Just as the Israelites erected stones to remind themselves of what God had done, it is instructive for economists to put down "stones" to remember how their predecessors shaped who they are today and how

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they enable them to use the toolkit of economic principles.[2] If we were to do so, Alfred Marshall would warrant many stones. Had Marshall only invented the concept of elasticity, he would have contributed more than most economists who toil in the dismal science. But Marshall's *Principles of Economics* (first published in 1890) left an imprint upon the discipline that is exceeded by very few books, if any, on the subject.

To set down stones about Marshall, this paper is divided into three parts. The first is about why Marshall chose to be an economist. What was his sense of vocation? The second is about Marshall's *Principles* itself. Why is the book so prominent? The third is an assessment of the continued relevance of Marshall to the discipline of economics. What is the Marshallian legacy?

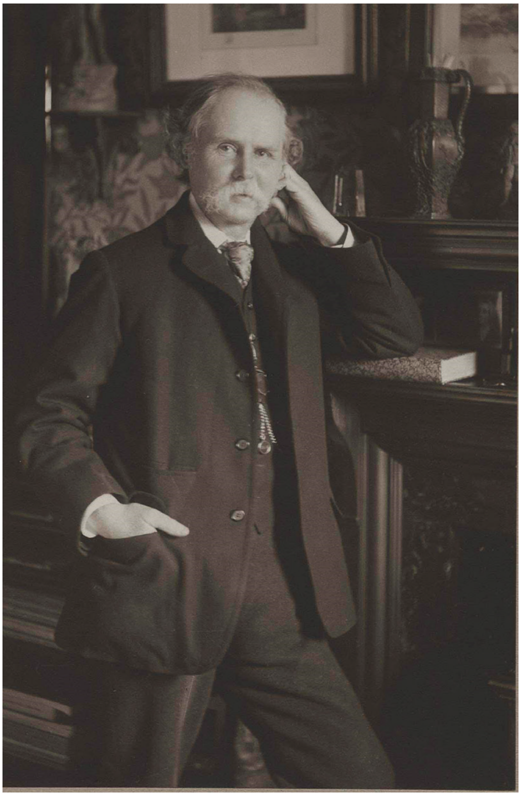
2. Marshall's Calling to Economics

Alfred Marshall was born on July 26, 1842 in Clapham, England, a suburb of London. His father was a bank clerk and a devout Christian. Marshall was educated at St. John's College, Cambridge and his first academic position was a lecturer in moral sciences at St. John's. He married Mary Paley in 1877, later coauthoring *Economics of Industry* with her. After academic positions at University College, Bristol and Balliol College, Oxford, Marshall became Professor of Political Economy at Cambridge in 1865, a post he held for the rest of his career.

Marshall did not follow in the footsteps of his father's career or his father's faith. Keynes wrote that Marshall, while an undergraduate at Cambridge, held dreams of becoming a foreign missionary but, "after a quick struggle religious beliefs dropped away, and he became, for the rest of his life, what used to be called an agnostic" (1924, p. 316). In his early thirties, Marshall wrote that he "became so absolutely convinced that Christ neither believed nor taught any of the leading dogmas of Christianity that I now look upon the fray [theological discussion] with the languid interest of a mere spectator" (a letter to H. S. Foxwell in 1875, recorded in Groenewegen, 1995, p. 117).

Yet, as an English citizen at the close of the 19th century, Marshall imbibed a culture fundamentally oriented around the Christian faith. Writing about Marshall, Joseph Schumpeter asserts:

> He accepted the institutions around him, the privately owned



A photo of Marshall in his study at the time when the first edition of *Principles* was published (Groenewegen, 1995, photo fold)

> firm and the family home in particular, and entertained no doubt about their vitality or the vitality of the civilization that had grown up around them. He accepted the utilitarianized and de-theologized Christianity that prevailed (1941, p. 244).

The principles of Christian charity that grew out of the teachings of Jesus and the precept that men were created in God's image were part of the air that Marshall breathed. And it affected him. Keynes writes that:

> Nevertheless Marshall . . . was as far as possible from adopting an "anti-religious" attitude. He sympathised with Christian morals and Christian ideals and Christian incentives. There is nothing

> in his writings depreciating religion in any form; few of his pupils could have spoken definitely about his religious opinions. At the end of his life he said, "Religion seems to me an attitude," and that, though he had given up Theology, he believed more and more in Religion (1924, p. 317).

If Marshall was a product of his religious milieu, he was equally shaped by the prevailing political thought of the day. Jacob Viner records that Marshall "was a believer in political democracy, meaning by it essentially universal (male) suffrage, decisions reached by free discussion and by majority vote, and an electorate educated at public expense. In the Benthamite tradition, he held these beliefs not on natural rights grounds, but on the utilitarian ground that they were essential for good government" (1991, p. 117). This commitment to democracy was, for Marshall, also a commitment to the welfare and betterment of the individual person. Viner later writes:

> Marshall was an individualist in most of the many senses of the term. His ultimate criterion for appraising the social value of any polity was the nature of its probable impact upon the character and well-being of *individuals*. His appraisals of policies and trends were always in terms of what they did for individuals, singly or in groups, and never in terms of their contribution to the prestige or power of an idealized 'state' distinguishable from its people. His hope for social progress rested primarily on the capacity for industry, thrift, enterprise, voluntary cooperation, and "economic chivalry" of enlightened individuals, and he had limited, though some, faith in the possibilities of betterment through restrictive or coercive legislation or through the direct exercise of governmental enterprise in the economic field (1991, pp. 117–118).

Methodological individualism is part of the DNA of modern economics. Marshall was one of those responsible for its splicing.

As an undergraduate student, Marshall was awarded second wrangler in the Mathematical Tripos at Cambridge and his plans at one point were to become a mathematician (Groenewegen, 1995, pp. 91–94). Then his heart was touched by the plight of the poor. As Marshall put it, "I visited the poorest quarters of several cities and walked through one street after another, looking at the faces of the poorest people. Next, I resolved to make as thorough a study as I could of Political Economy" (quoted in Keynes, 1924, p. 319). He turned his sights away from mathematics and decided to pursue the study of economics. Marshall's motivation was not to master, much less contribute, to the technicalities of the subject though, paradoxically, he did so.[3]

This story about Marshall and "the faces of the poorest people" is compelling today on two different levels of inquiry. First, how many contemporary economists would describe their commitment to the discipline in this way? Or to rephrase the question: How many economists who were drawn to the discipline out of a compassion for the poor have replaced that sense of calling with a passion for the discipline itself? Second, how many students of economics—the serious ones who exhibit genuine talent for the discipline—pursue their studies out of a concern for the poor rather than for the job opportunities in investment banking, management consulting, and other lucrative fields that have solicited the skillset of talented economists?

Viner writes of Marshall's thoughts on poverty:

> Basically, Marshall's political doctrines carried the hallmark also of Victorian complacency and gentility. While he recognized the problem of poverty as a major one, he never revealed any doubt that it could be substantially resolved within the limits of British parliamentary democracy and of a free enterprise economy (1991, p. 118).

Given Marshall's concern for the plight of the poor, did he consider himself a free market economist or a socialist? That depends upon which part of Marshall you asked: his head or his heart. Keynes wrote of Marshall that "he came to know most of the leading co-operators and Trade Unionists of the past generation. In truth he sympathised with the Labour Movement and with Socialism (just as J. S. Mill had) in every way, except intellectually" (1924, p. 358).[4] Schumpeter confirms, "[Marshall] cheerfully sympathized, from a warm heart, with the ideals of socialism, and patronizingly talked down to socialists from a cool head" (1941, p. 244). Shove writes:

> He held that "in moderation" what he called the "financial side" of socialism, "predatory" and "rapacious" though it was, might "even be beneficial," and he was not opposed, in principle at least,

> to far-reaching measures for diminishing inequalities of wealth, provided that they were carried through by "means which would not sap the springs of free initiative and strength of character." It was the "administrative side" of socialism, the proposal to substitute public management for free enterprise and individual initiative, that he viewed with alarm and which led him, in a private letter, to describe the socialistic movement as "by far the greatest present danger to human well-being" (1953, p. 317).

Simon Cook offers this explanation of Marshall's concerns about the direction the socialist movement had taken in his time:

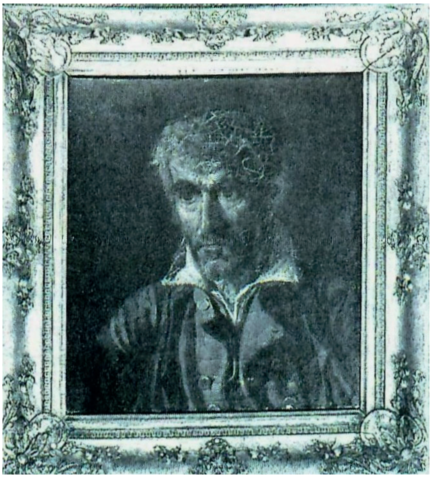
> This [the Trafalgar Square riot of 1886] provides the context against which Marshall in 1886, in concluding a discussion in his lecture notes of what he carefully labelled "modern socialism," voiced his fear that this socialist movement was "likely to lead to violence" (quotes from Marshall taken from his unpublished "Lectures on Socialism & the Function of Government" in 1886, found in the Marshall Archive, Marshall Library, Cambridge University, and quoted in Cook, 2008, p. 21).

Cook explains that Marshall's position on socialism is often confused because, at the time, the modern socialist movement (to which Marshall was opposed), which displayed strength and violence in the Trafalgar Square riot and was permeated with Marx's rhetoric and economic thought, was much different than the thought of earlier socialist writers (with whom Marshall was sympathetic) such as Owen, Fourier, St. Simon and Louis Blanc (2008, p. 22). The earlier socialists were defined by a call toward social cooperation, while the later movement was defined by its clamor for state control. In his *magnum opus*, Marshall wrote:

> There is a 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 (1961, p. 713).

For those who take pleasure in economics as the imperialistic science, it is sobering to read Marshall's final assessment of his life as an

The painting of Marshall's "patron saint" (Groenewegen, 1995, photo fold).



economist: "If I had my life over again I should have devoted it to psychology. Economics has too little to do with ideals. If I said much about them I should not be read by business men" (Keynes, 1924, pp. 345–346).[5] But during his lifetime, Marshall *was* devoted to "ideals" and to the lives of the ordinary working person. In a profoundly revealing story about his life, Marshall recounts:

> About the time that I first resolved to make as thorough a study as I could of Political Economy (the word Economics was not then invented) I saw in a shop-window a small oil painting [of a man's face with a strikingly gaunt and wistful expression, as of one 'down and out'] and bought it for a few shillings. I set it up above the chimney-piece in my room in college and thenceforward called it my patron saint, and devoted myself to trying to fit men like that for heaven. Meanwhile I got a good deal interested in the semi-mathematical side of pure Economics, and was afraid of becoming a mere thinker. But a glance at my patron saint seemed to call me back to the right path (Keynes, 1924, p. 346).

For Marshall, economics always came second. It was clearly a means to a very direct and comprehensible end. Viner describes Marshall's call:

> Marshall is said by his biographers to have come to economics from ethics. But his early interest in ethics arose out of his search for a guide to his conscience rather than from an intellectual interest in the metaphysical aspects of moral philosophy. In his younger days at Cambridge as student and teacher the conflict waged hot between utilitarian and idealistic theories of ethics, but there is no evidence that Marshall ever took real interest in this controversy or believed that it had immediate significance for his economics. It would be more accurate, I think, on the basis of the available evidence, to say that Marshall came to economics from his morals, from his zeal to make a contribution to the social betterment of man . . . (M)any passages in his writings . . . reveal Marshall's conviction that it is the duty of educated men to strive for the improvement of social conditions, and that a sound and moralized economics is a valuable instrument to this end (1991, pp. 118–119).

3. Marshall's *Principles of Economics*

There are two "it's all in" expressions in economics. Some economists claim "It's all in Smith," meaning that most of what is important in the discipline can be found in Adam Smith's *The Wealth of Nations*.[6] Other economists have claimed "It's all in Marshall," meaning that most of what's important in the discipline can be found in Alfred Marshall's *Principles*.[7] No one would dispute that both books are long and important. But in terms of what would be taught in a principles course today, there is far more from Marshall than Smith. Yet it would be idle to contend that there is no link between the two books. G. F. Shove writes:

> 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.[8] This mode of treatment is in marked contrast to the method of Ricardo and Mill. It is a throw-back to Adam Smith (1942, p. 308).[9]

More than that of any other book in economics, it is instructive to read the *title page* of Marshall's *Principles*. There is an epigraph that reads *Natura non facit saltum* (loosely, "nature does not make leaps").[10] [11] Here Marshall signals to the reader—new to economics—that this subject, in Marshall's sure hands, will have a laser-like focus on what happens *at the* *margin*—because nature does not make leaps. In Marshall's *Principles*, whether the object of attention is the consumer or the business firm, the reader will encounter the powerful notion that in matters economic what occurs at the margin really matters. Economics is a subject where tails actually do wag dogs.

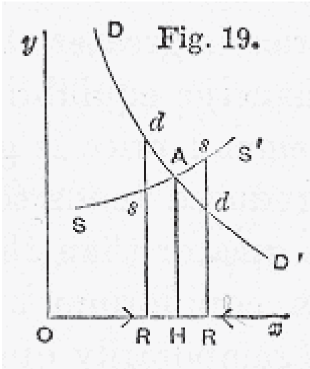
Marshall cannot be credited with showing, before anyone else, that marginal analysis is important. William Stanley Jevons (and others) had this insight as well. But Marshall understood and demonstrated that marginal analysis was an essential paradigm for understanding economic behavior. Accountants may look at averages but the economic way of thinking is to look at the margin. No one in the history of economics did more to drive that point home than Marshall—in part because of the way he communicated this truth, in part because his book had such prominence (or so little competition) at the time, in part because Marshall occupied such a prominent academic position, and in part because Marshall had students who themselves became prominent.

Marshall's *Principles* is not only remarkable because of its content. The book also garnered praise for its style. To quote Keynes again:

> (The book) . . . is elaborately unsensational and under-emphatic. Its rhetoric is of the simplest, most unadorned order. It flows in a steady, lucid stream, with few passages which stop or perplex the intelligent reader, even though he know but little economics. Claims to novelty or to originality on the part of the author himself are altogether absent. Passages imputing error to others are rare; and it is explained that earlier writers of repute must be held to have *meant* what is right and reasonable, whatever they may have said (1924, pp. 354–355).

Marshall's most intrepid biographer, Peter Groenewegen, describes *Principles* as having a "deceptively easy style" (1995, p. 784).

Today, every student enrolled in a principles course is introduced to "supply and demand." Many students who enroll in an introductory course come to think economics is all about learning how to work with and apply demand and supply curves.[12] While the notions of demand and supply can be found in classical economics, Marshall in his *Principles* was able to demonstrate with words and graphs how costs (operating through the supply curve) and utility (operating through the demand curve) interact to determine a market price.



Marshall's graph depicting his foundational theorization on the interaction between supply and demand (Marshall, 1961, p. 346).[13]

Schumpeter writes of Marshall's graphical and diagrammatic approach:

> Geometrical illustrations of economic arguments had been used before, especially by Cournot. By now, many of us have grown out of humor with them, because the use of the easy two-dimensional variety unavoidably implies oversimplification. But still they are inestimable vehicles of fundamental, if elementary, propositions. They victoriously clear up many a point. They have proved a boon in countless classrooms. *And practically all the most useful ones we owe to Marshall* (1941, p. 241, emphasis added).

For students left wondering whether demand or supply is more important in price determination, Marshall offers a brilliant analogy: a pair of scissors. Just as it requires both blades of the scissors to cut paper, both demand and supply are important in bringing prices into equilibrium.[14] In other words, market prices do not "make leaps," just as nature does not make leaps. Rather, prices move in accord with the interaction of the forces that determine both supply and demand.

Within his framework of demand and supply, Marshall extracted a host of principles and concepts that make up much of what is called microeconomics today.[15] As William Breit and Roger Ransom (1971, p. 20) put it:

> The present subject matter of price theory in terms of its methodology, divisions, terminology, and the conclusions regarding the implication of various economic policies does not deviate in its essentials from those Marshall developed. The modern concept of the demand curve, the elasticity of demand, the nature of consumer's surplus, the use of long-run and short-run analysis, quasi-rent, partial equilibrium, and comparative statics—all owe much to this pioneering genius of the science of economics.[16]

Had Marshall only invented elasticity, or only laid out the basics of the demand and supply model, this by itself would have assured his place in the economics hall of fame. But Marshall's true genius was to see what many students miss when they conclude that economics is only about demand and supply curves. Marshall saw beyond the graphs. He was not a technician. Indeed, Marshall was critical of making economics too mathematical (even back then!).[17] Marshall's student and successor at Cambridge, A. C. Pigou, explained that Marshall was wary of mathematizing economics not because Marshall lacked mathematical talent but instead because mathematics indicated a departure from the realm of real, messy, and evolving facts, and because it made economic principles too difficult for the comprehension of the intelligent layperson.[18]

At the outset of *Principles*, Marshall contended that economics was to be about the "ordinary business of life" (Marshall, 1961, p. 1). Unlike the majority of economists populating academia today, Marshall was particularly concerned with being "read by businessmen" (Groenewegen, 1995, p. 413) and took pains to render his theses in English as opposed to mathematics for the sake of these readers.[19] Schumpeter writes that enshrined in the pages of this highly intellectual *magnum opus* "are the results of his tireless and sympathetic observation of contemporaneous business life which he understood as few academic economists ever did" (1941, p. 238).

This commitment to the flourishing of ordinary people so drove Marshall's entire economic inquiry that Keynes writes:

> (Marshall) had an inclination to undervalue those intellectual parts of the subject which were not *directly* connected with human well-being or the condition of the working classes or the like, although *indirectly* they might be of the utmost importance, and to feel that when he was not pursuing them he was not occupying himself with the Highest (1924, p. 345).

Economists owe the distinction between the short run and the long run to Marshall's *Principles*. Like elasticity, the short-run versus long-run distinction is so embedded in the DNA of economics that it is easy to overlook how fundamental the concept is to economics. Schumpeter understood the importance. He writes:

> Though Marshall's distinction between the long run and the short does not quite satisfactorily express what Marshall presumably intended to express by it, it spelled a great advance in clear and realistic thinking and is fully entitled to the homage that was rendered to it by its ready acceptance. Marshall himself used it extensively and by so doing taught us a lesson from which our generation was and is eager to profit: by slow accretion a whole branch of economics has developed, Short Time Analysis (1941, p. 246).

Keynes also recognizes how fundamental to the progress of economic science was the Marshallian contribution of "time." He writes:

> The explicit introduction of the element of Time as a factor in economic analysis is mainly due to Marshall. The conceptions of the "long" and "short" run period are his, and one of his objects was to trace "a continuous thread running through and connecting the applications of the general theory of equilibrium of demand and supply to different periods of time" (1924, p. 351).

Marshall also made time central to his theory of the firm. In the short run, some factors of production the firm uses are fixed, others are variable. In the long run, all factors become variable. Time also matters in the decision calculus of consumers. Time affects elasticity because over time the availability of substitutes may change. In his assessment of Marshall's *Principles*, George Stigler places *time* front and center. As Stigler explains:

> First and foremost, Marshall made time itself a major factor in the theory of value. Where there had previously been scraps of recognition of the role of time in price determination, it now became a central force and a fundamental basis for classification (1990, p. 5).

Another major principle that Marshall pushed into the apparatus of economic analysis is consumer surplus. The importance of consumer surplus today in antitrust economics, environmental economics, and modern welfare economics could never have been anticipated by Marshall. Much of the credit for the importance of consumer surplus is due J. R. Hicks (1941, 1943). But without gainsaying the encomia due Hicks, Marshall's emphasis on consumer surplus provided the taproot for Hicks' major breakthroughs with the concept.

The development of external and internal economies also came from Marshall's *Principles*. Along with the role of time, George Stigler considered this to be the other major contribution of *Principles*. He writes:

> Besides enriching the theories of production and price, the distinction (between external and internal economies) played a major role in welfare economics: for example, it was absolutely central to Pigou's *Wealth and Welfare* (1912) and *The Economics of Welfare* (1920 and later) (1990, p. 6).

Students still work their way through external and internal economies in price theory courses in a manner not much different than Marshall's exposition.

The last major theory that merits attention in any assessment of Marshall's *Principles* is the theory of the firm. It was Adam Smith who gave the discipline of economics its most iconic firm: a pin factory, from which generations of students learned about specialization and division of labor and got hints of the efficiencies of mass production. In the writings of Marshall, there is no such iconic firm. There is instead "the representative firm."

Marshall's representative firm is a reflection of many firms found in many markets. By the study of a representative firm, Marshall showed how to think about many firms and, from this inductive approach, think about how firms might function in many different markets. Marshall's representative firm is not any particular firm, nor is it all firms in general. Marshall's choice of terms is spot on: the firm is representative. It is, in Biblical hermeneutics, a *type*.

When students are taught about the Marshallian representative firm, they learn how firms in general respond to changes in input costs, changes in demand, and changes due to the passage of time. The skills of running a business are not taught through the theory of the representative firm *per se*, but perceptive students, tutored in how this representative firm behaves, will be able to think rationally about the marginal adjustments that are at the heart of the firm in short-run economic analysis.

Notwithstanding all the tools that Marshall's *Principles* provides the discipline of economics, the whole exceeds the sum of the parts. Schumpeter made the point this way:

> But there is something about Marshall's work that is much greater than anything he actually accomplished—something that assures immortality or, let us say, vitality far beyond the lifetime of any definite achievement. Over and above the products of his genius which he handed to us to work with and which inevitably wear out in our hands, there are in the *Principles* subtle suggestions or directions for further advance, manifestations of that quality of leadership that I have made an effort to define at the start (1941, p. 245).

Shove summarizes the influence of *Principles* in light of the myriad economic concepts given life in its pages:

> 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 water-sheds in the development of economic ideas (1942, p. 313).

The tools that Marshall provided were to be a means of investigating how the economy worked and affected humanity. Marshall never saw them as the final word. Before he achieved the acclaim that ultimately was his, in Marshall's inaugural lecture at Cambridge he said:

> While attributing high and transcendent universality to the cen-

> tral scheme of economic reasoning, I do not assign any universality to economic dogmas. It is not a body of concrete truth, but an engine for the discovery of concrete truth (recorded in Keynes, 1924, p. 342).

At its taproot, this is the central theme of Marshall's *Principles* for students to understand: Economics is an engine of analysis useful for uncovering what is often the hidden economic logic in what Marshall called the "ordinary business of life."

4. Marshall's Legacy

Alfred Marshall died on July 13, 1924. His life spanned 81 years. The legacy Marshall undertook to establish was clear. His 1885 inaugural lecture ends with his greatest hopes:

> It will be my most cherished ambition, my highest endeavor, to do what with my poor ability and my limited strength I may, to increase the numbers of those whom Cambridge, the great mother of strong men, sends out into the world with cool heads but warm hearts, willing to give some at least of their best powers to grappling with the social suffering around them; resolved not to rest content till they have done what in them lies to discover how far it is possible to open up to all the material means of a refined and noble life (recorded in Keynes, 1924, p. 367).

Central to Marshall's legacy is a focus on partial equilibrium. At the graduate level of instruction in economics today, partial equilibrium analysis plays second fiddle. But at the undergraduate level of instruction, students continue to cut their teeth on individual markets moving to equilibrium. In the arena of government analysis, partial equilibrium analysis continues to play a major role. In graduate schools of business, strategic analysis of firms and markets is done through partial equilibrium analysis. What general equilibrium is to the Lausanne School of Walras and Pareto, partial equilibrium is to Marshall.[20]

Illustrative of Marshall's legacy and his importance to the discipline of economics is the prominence of economists who wrote about Marshall.[21] These include: John Maynard Keynes, A. C. Pigou, Joseph Schumpeter, G. F. Shove, Ronald Coase, George Stigler, and John Whitaker. For those who want to learn more about Marshall, their papers would be a good starting point. But scholarship about Marshall did not end here.

The most exhaustive biography of Marshall is Peter Groenewegen's 874 page volume (1995). A shorter, more portable biography is by David Reisman (1990). The list of articles in books about Marshall is long. A dozen distinguished contributors are found in John Whitaker's *Centenary Essays on Alfred Marshall* (1990). The *Elgar Companion to Alfred Marshall* (Raffaelli, Becattini, & Dardi, 2006) has 99 short papers on many aspects of Marshall's life and works by 70 authors representing 13 different countries. Whitaker's herculean task of editing Marshall's letters resulted in 3 volumes. (Whitaker, 1996).

Groenewegen attempts to quantify the scholarly success of *Principles* through its contemporary book reviews, book sales over the decades, and a citation analysis. He writes:

> . . . a statistical analysis of citations by Stigler and Friedland over the periods 1886–1923 and 1925–1969 revealed that only Marshall among economists "whose main work was done before 1900" appeared among the top 41 most frequently cited economists in the second of these periods (in fact, he ranked sixth for the first, ninth for the second) despite the substantial illusion imparted to such data through the disappearance of important ancestors from the citation index. After all, "thoroughly successful contributions may become so widespread that authorship is first taken for granted and then forgotten." Marshallian concepts like the "short run, elasticity of demand, quasi-rent, and external and internal economies" are prime examples of this phenomenon in which "proper" acknowledgment to their originator tend not to be made (quotes and data taken from Stigler and Friedland (1982, pp. 182–184) by Groenewegen (1995, p. 436)).

Schumpeter was of two minds in assessing Marshall's legacy. He wrote:

> In one sense Marshallian economics has passed away already. His vision of the economic process, his methods, his results, are no longer ours . . . . We may love and admire it as we love and admire a Madonna by the Perugino, recognizing that she embodies to perfection the thought and feeling of her time, yet recognizing also how far we have traveled from her (1941, p. 236).[22 23]

That said, he added:

> In another sense, however, Marshall's teaching can never pass away. Its influence will last for an indefinite time not only because teaching of such breadth and force merges into the inheritance of subsequent generations, but also because there is about it a peculiar quality which effectively resists decay (1941, p. 237).

5. Conclusion

In an era in which scholarly output is tabulated by citation counts, what does one make of a scholar whose contributions have become so embedded in the discipline's terminology that the scholar is no longer cited and may not even be known much less acknowledged for his contributions and breakthroughs? On this subject Keynes writes, "As time has gone on, moreover, the intellectual qualities of the book [*Principles*] have permeated English economic thought, without noise or disturbance, in a degree which can easily be overlooked" (1924, p. 356).

Another way to account for (if not actually count) a scholar's contributions to a discipline is to listen to what other great scholars say; to use words rather than numbers. Consider the words of two economists who were not modest about their own contributions to the discipline of economics. John Maynard Keynes wrote of his teacher Alfred Marshall, "As a scientist he was, within his own field, the greatest in the world for a hundred years" (1924, p. 12).[24] George Stigler wrote: "Viewing Marshall with the increased objectivity that comes from the passage of 65 years and the absence of filial obligations, I find this judgment [by Keynes] as valid today as it was in 1924" (1990, p. 12).

Endnotes

1 Not everyone agrees that elasticity was a major accomplishment of Marshall. Stigler, after quoting Keynes' encomium, offered his own assessment: ". . . [elasticity] is simply devoid of substantive economic significance. Elasticities sometimes offer elegant formulations of relations and have provided an unlimited number of examination questions in elementary economics. That is all" (1990, p. 3). Joseph Schumpeter falls between Keynes and Stigler. He writes: "Again, the

concept of elasticity of demand may not quite merit all the praise that has been bestowed on it. Still it set a fashion of reasoning in terms of elasticities which all of us find convenient. There are nearly a dozen elasticity concepts now in use. Among them, the elasticity of substitution ranks first in importance" (1941, p. 245).

2 The remembrance of God's work by the setting down of marking stones can be seen in Genesis 28, 31 and 35 by Jacob, Exodus 24 by Moses, Deuteronomy 27 and Joshua 4 and 24 by Joshua.

3 Of Marshall's vocational turnabout, Schumpeter writes, "He was driven to it from ethical speculations by a generous impulse to help in the great task of alleviating the misery and degradation he observed among the English poor" (1941, p. 239).

4 Marshall writes in the Preface to *Industry and Trade* (1919): "For more than a decade, I remained under the conviction that the suggestions, which are associated with the word 'socialism,' were the most important subject of study, if not in the world, yet at all events for me. But the writings of socialists generally repelled me, almost as much as they attracted me; because they seemed far out of touch with realities: and, partly for that reason, I decided to say little on the matter, till I had thought much longer. Now, when old age indicates that my time for thought and speech is nearly ended, I see on all sides marvelous developments of working-class faculty: and, partly in consequence, a broader and firmer foundation for socialistic schemes than when Mill wrote. But no socialistic scheme, yet advanced, seems to make adequate provision for the maintenance of high enterprise and individual strength of character; nor to promise a sufficiently rapid increase in the business plant and other material implements of production . . . It has seemed to me that those have made most real progress towards the distant goal of ideally perfect social organization, who have concentrated their energies on some particular difficulties in the way, and not spent strength on endeavoring to rush past them" (quoted in Keynes, 1924, 358).

5 Marshall's aim to be read by businessmen was no hollow sentiment. Groenewegen records (along with other Marshall biographers) that Marshall actually took pains to simplify his argumentation and even sent free copies of *Principles* to "mechanics institutes and trade union leaders" so that his material would not atrophy in an ivory tower but inspire change in the ground floor of industries across England (1995, p. 784).

6 I have never heard this expression with regard to Smith's *The Theory of Moral Sentiments*.

7 Groenewegen mentions the obituary of one of Marshall's academic grandchildren, Frank Lavington. Lavington is recounted as often explicitly asserting that it was, indeed, "all in Marshall" (Groenewegen, 1995, p. 758).

8 Keynes provides insight into Marshall's intellectual moment: "Marshall's serious study of Economics began in 1867. To fix our ideas of date: Mill's *Political Economy* had appeared in 1848; the seventh edition, in 1871, was the last to receive Mill's own corrections; and Mill died in 1873. *Das Kapital* of Marx appeared in 1868; Jevon's *Theory of Political Economy* in 1871; Menger's *Grundsatze der Volkswirtschaftslehre*, also in 1871; Cairne's *Leading Principles* in 1874. Thus when Marshall began, Mill and Ricardo still reigned supreme and unchallenged. Roscher, of whom Marshall often spoke, was the only other influence of importance" (1924, pp. 327–328).

9 Indeed, there would have been even more from Marshall if he had ever completed his highly anticipated second volume. *Principles*, throughout the lengthy period of its composition, was meant to be a predecessor to another equally comprehensive and original work.

10 Groenewegen suggests that Marshall's choice of epigraph may be an homage to Darwin's *Origin of Species* (1859) in which the same epigraph is included. This claim merits attention due to the fact that Marshall's intellectual milieu was saturated with evolutionary thought and, specifically, Marshall appreciated biology and the evolution of the economy through time (Groenewegen, 1995, p. 411).

11 Marshall himself did not "make leaps" in the writing of *Principles*. He wrote to a colleague (W.A.S. Hewins) that "he thought he wrote on average seventeen words an hour and often when he had finished one chapter and gone on to the next, the development of the argument in the new chapter forced him to scrap the former one" (Groenewegen, 1995, p. 400).

12 Those introductory students in economics who have been introduced to calculus inevitably wonder why the axes seem to be reversed in the demand and supply model. For this too they have Marshall to thank (or blame).

13 This picture file is drawn from the Library of Economics and Liberty. URL: http://www.econlib.org/library/Marshall/marP30.html#a10

14 As Marshall put it, "We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production" (1961, p. 348).

15 Ragnar Frisch, a Norwegian economist who was awarded the Nobel Memorial Prize in Economic Sciences in 1969, is sometimes credited with coining the terms "micro-economics" and "macro-economics" and for recognizing the distinction and relationship between them. This credit is usually tied to his 1933 article "Propagation Problems and Impulse Problems in Dynamic Economics." However, in the actual paper Frisch is translated as using the terms "micro-dynamic" and "macro-dynamic" to describe the different branches of inquiry (Frisch, 1933, pp. 2–3). Frisch also is credited with coining the term "econometrics" (Bjerkholt, 1995, pp. 3–4).

16 Breit and Ransom add: "Furthermore, [Marshall] shares with Jevons the distinction of having developed the technique of marginal analysis" (1971, p. 20).

17 Marshall writes that he 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 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" (Taken from a letter by Marshall to Macmillan in 1887, originally recorded in Pigou's *Memorials of Alfred Marshall* (1925, p. 427) and reprinted in Groenewegen, 1995, p. 413).

18 As described in A. C. Pigou's *Alfred Marshall and Current Thought* (1953, pp. 5–12).

19 Groenewegen draws this from J. A. Schumpeter (1952).

20 Schumpeter considers Marshall to be the father of econometrics (1941, p. 247). If this attribution of paternity is true, then Marshall's place in the pantheon of economists is even loftier. To be the father of partial equilibrium analysis *and* econometrics is like winning Olympic Gold Medals in both sprints and long distance events. What is the basis of Schumpeter's thesis? He claims that Marshall, by innovating such concepts as elasticity and consumer surplus and short run costs versus long

run costs, encouraged economists to quantify these variables. While Adam Smith contributed precepts such as specialization and division of labor, Marshall contributed principles that called out for quantification.

21 Joan Robinson was not attracted to Marshall despite his concern for the poor. She writes: "The more I learn about economics, the more I admire Marshall's intellect and the less I like his character" (Robinson, 1953, p. 14).

22 Later, Schumpeter writes: "It is the common fate of all classics in all fields. . .there is a significant analogy between the relation of modern economic theory to the theory of the *Principles* and the relation of modern physics to the physics of the '90s" (1941, p. 236).

23 In a footnote, Schumpeter writes, "I hereby acknowledge my debt to that 'Memoir,' ["Memoir of Marshall" by J. M. Keynes, reprinted in Pigou's *Memorials of Alfred Marshall* (1925) and Keynes' own *Essays in Biography* (1933)] which I regard as one of the outstanding masterpieces of biographical literature." References are to the 1933 volume (1941, p. 236).

24 Praising Marshall for his work outside of *Principles*, Keynes writes, "We must regret . . . Marshall's postponement of the publication of his *Theory of Money* until extreme old age, when time had deprived his ideas of freshness and his exposition of sting and strength. There is no part of Economics where Marshall's originality and priority of thought are more marked than here, or where his superiority of insight and knowledge over his contemporaries is greater. There is hardly any leading feature in the modern Theory of Money which was not known to Marshall forty years ago" (1924, pp. 335–336).

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