Roberto Marchionatti

Economic Theory in the Twentieth Century, An Intellectual History - Volume I

1890–1918. Economics in the Golden Age of Capitalism

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General Introduction: Why Should We Study the History of Economic Theory?

1.1 Mainstream Economics and the History of Economic Theory

"No history of ideas, please, we're economists". In these words, Mark Blaug (2001) describes the current status of the history of economic thought among mainstream economists, viz. those whose ideas are dominant in the leading academic institutions and journals in a particular age. The term mainstream is often used as if it were synonymous with orthodoxy, but we prefer to consider mainstream as a broader term, and we apply orthodoxy to what is considered the dominant school of thought in a specific period, as opposed to divergent approaches called heterodoxy.

Modern economics is often characterized as neoclassical economics,[1] but as Colander (2000) points out, this classification is hardly appropriate today, if we consider that, strictly speaking, neoclassical economics is the theory that focuses on the optimizing behavior of fully rational and well-informed individuals in a static context and the

[1] The term neoclassical was coined by Thorstein Veblen (1899–1900): it was a negative description of Marshall's economics. Then the term came into general use. Hicks (1932) and Stigler (1941) extended the meaning of neoclassical to encompass all marginalist writers.

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equilibria that result from this optimization. In fact, economists today are far more eclectic than neoclassical economists. Economics in its present state appears to be a changing system of ideas. Individuals in the profession often have no perception of this change. Only when we look back, and adopt a longer, historical perspective, does the change become clearly apparent. However, the history of economic thought is of little interest to mainstream, and more or less orthodox, economists today. This negative attitude is the result of the a-historical conception of economics that was dominant after the Second World War (and has only recently been challenged), which maintained that economics must be based on deductive models, be consistent with standard economic principles, incorporate heavy doses of mathematics, and be econometrically tested and applied to reality in order to yield general results which hold true for all times and institutional contexts. This conception of economics has given rise to a distinctive kind of historiography of which George Stigler and Paul Samuelson were the most important theoreticians (see, in particular, Stigler [1969] and Samuelson [1978, 1988]).[2] Stigler introduced the idea that theories are subject to the selection forces of the 'efficient market of ideas', thus maintaining that the current state of economic theory is the benchmark, as it contains the best of previous contributions, which may at most be a primitive version of contemporary mainstream theories.[3] Paul Samuelson argued for a 'Whig history of science' (Freeman et al. 2014)[4]—a term introduced by the British historian and philosopher Herbert Butterfield in a 1931 book—which is more sensitive to the

[2] We should add the Blaug of the first edition of *Economic Theory in Retrospect* published in 1962. Blaug was a pupil of Stigler and adopted his approach in the book that was the most successful history of economics textbook for many decades after its publication. In the 1990s, however, Blaug broke with that approach. On Blaug's historiographic thinking, see Davis (2013).

[3] Blaug (2001, p. 148) wrote that "Some commentators in history of economic thought express belief in the notion that the community of economists represents an approximately perfect market in which new ideas are so efficiently transmitted in a communication network of journals, books, seminars and conferences that there is virtually no loss of significant content. This view of an efficient marketplace of ideas implies that history of economic thought can be safely neglected by modern economists, because what is valuable in the ideas is fully contained in the present curriculum".

[4] On Samuelson as a historian of economic theory, see Medema and Waterman (2010) and Weintraub (2016).

historical context of theories than the efficient market of ideas approach, as it recognizes that different schools of thought exist. Nonetheless, as this conception maintains that the historical trend is toward the eventual success of superior theories, we can speak of a Stigler-Samuelson perspective. In this perspective, the history of economics is a 'rational reconstruction', in the sense that:

- It treats the great thinkers of the past as if they are contemporaries with whom it is possible to exchange views;
- It analyzes their ideas in contemporary terms in order to locate their mistakes and to verify the belief that there has been progress in the course of intellectual history;
- It represents the point of view of those who regard earlier economic doctrine as simply 'the wrong opinions of dead men'.

Dominant today, this conception in mainstream economics is responsible for the increasing loss of interest in the history of economics and its dwindling importance in the post-war era (especially since the late 1960s[5]), when it was marginalized in departments of economics and reduced to a sort of antiquarianism. This conception was a break in the discussion of the role of the History of Economic Thought (HET) in the understanding of economic theory, as it abandoned Schumpeter's more nuanced view.[6]

[5] Donald Gordon's paper presented at the 1965 session of the annual conference of the American Economic Association, which was specifically organized to discuss the contribution of the history of economic thought to the understanding of economic theory, played an important part in this marginalization of HET. Gordon's conclusion was, of course, that the history of economic thought has little or nothing to contribute to comprehending contemporary economics.

[6] On Schumpeter as a historian of economic theory, see Moss (1996), Estrada (2014), and Bögenhold (2017).

1.2 Schumpeter's Legacy: A Different Perspective on the Role of the History of Economic Theory

At the beginning of the 1950s, Joseph A. Schumpeter, one of the giants of the economics of the first part of the twentieth century, had offered a perspective that was more sophisticated than the contemporary mainstream view of the role of the history of economic thought in the research agenda of economics. Asking why we should study the history of economics—that is, "the history of the intellectual effort that men have made in order to understand economic phenomena"—he answers that:

> *We stand to profit from visits to the lumber room*[7]…. The gains with which we can hope to emerge from it can be displayed under three heads: pedagogical advantages, new ideas, and insights into the ways of the human mind. (Schumpeter 1954, p. 3)

First, he emphasized that:

> the problems and methods that are in use at any given time embody the achievements and carry the scars of work that has been done in the past under entirely different conditions. The significance and validity of both problems and method cannot be fully grasped without a knowledge of the previous problems and methods to which they are the (tentative) response…. [In fact] scientific analysis is not simply a logically consistent process that starts with some primitive notions and then adds to the stock in a straight-line fashion. It is not simply progressive discovery of an objective reality. (ibid., p. 4)

Rather, as he goes on to say:

> [scientific analysis] is an incessant struggle with creations of our own and predecessors' minds and it 'progresses', if at all, in a criss-cross fashion, not

[7] Schumpeter warns economists against prolonged visits to the lumber room, but, fortunately, he himself does not heed his warning.

> as logic, but as the impact of new ideas or observations or needs, and also as the bents and temperaments of new men, dictate. (ibid.)

According to Schumpeter, methods, problems, and results are "historically conditioned and are meaningful only with reference to the historical background from which they spring" (ibid.). In short, "the state of any science at any given time implies its past history" (ibid.).

Second, Schumpeter stresses the fact that:

> our minds are apt to derive new inspiration from the study of the history of science…. Beside inspiration…we learn to understand why we are as far as we actually are and also why we are not further. And we learn what succeeds and how and why. (ibid., pp. 4–5)

Third, Schumpeter notes that the study of the history "teaches us much about the ways of the human mind" (p. 6). Lastly, he recognizes that "to a large extent, the economics of different epochs deal with different sets of facts and problems" (ibid.).

Schumpeter's position is partly vitiated by his dichotomy between vision (pre-scientific vision) and analysis,[8] which implies the progressive outlook that a theory could be stripped of its philosophical and historical wrappings and examined from the modern theoretical perspective. Over and above his warnings against the risk of pseudo-explanations and excursions into the past, however, in his work as a historian of economics, there can be no doubt that history, political theory and the philosophical climate of opinion—which cannot be reduced to simple pre-scientific vision—are relevant to economic theory. In this sense, the Schumpeterian perspective is substantially different from the Stigler-Samuelson perspective, which allows no room for 'the vision'. But it needs to overcome its limiting dichotomies.

[8] See the forceful criticism by Viner (1954).

1.3 Our Approach to the History of Economic Theory: A Historical and Intellectual Reconstruction

Our approach assigns an important role to the 'historical reconstruction' (in the sense of a reconstruction of methods and theories in their development over time) of the theoretical contributions of different economists, and it recognizes that historical reconstruction must be combined with 'intellectual reconstruction' in order to recover the thinking of the authors of the past in its entirety and complexity and to grasp their intellectual activity as a whole.[9] The method of study is necessarily pluralistic—indeed, pluralism is the essence of intellectual history.[10] Accordingly, our approach recognizes the key role of the specificity of theories to the historical period and the cultural matrix of discourse in communities of scholars. The approach thus supports the idea of a 'thick' history, thick in the sense employed by the anthropologist Clifford Geertz (1973), who adopted the term introduced by the philosopher Gilbert Ryle (1971) and then also used by Deirdre McCloskey (1988): a thick description of human behavior explains not just the behavior but its context as well.

On this methodological basis, this book describes and analyzes the history of economic theory as a sequence of 'scientific paradigms', which arise and develop in localized contexts (characterized by particular historical and cultural factors), that is, intellectual communities of scholars. The concept of 'intellectual community'—little used in the history of economics until recently (Forget and Goodwin 2011)—draws attention to the context, to individuals' cultural identity. Here, the concept of 'research school' (or 'research group') introduced by some historians of science (Morrell 1972; Geisen 1993) is useful in defining the type of intellectual community which mainly characterizes economics. Taking inspiration from this concept, we can define intellectual economics communities as:

[9] On the relationship between the history of economic thought and intellectual history, see Samuels (1974), Viner (1991), and Winch (2016).

[10] As Stefan Collini (2016, p. 16) wrote, "Intellectual history tends to be slyly corrosive of fixed disciplinary identities and boundaries".

1. relatively homogeneous groups of scholars in a single discipline—but often with explicit interdisciplinary connections (the interconnection of economic analysis and other sciences is particularly important, as emphasized, for example, by Weintraub (1999)) and influenced by common visions and cultures—who choose to tackle related problems with similar analysis tools;
2. groups often working together in a common location (which creates an 'atmosphere');
3. organized around a charismatic leader who can influence the construction of a specific school of thought; and
4. dynamic entities generating a system of interacting ideas, evolving across time and generations.[11] They produce programs of research and can create schools of thought and institutional environments (teaching, journals, and academic institutions). Hence the relevance of biographical data, which can explain the circumstances that led an economist to initiate work on a particular theory, and can account for originality and creativity in the work done by members of a community.

These communities interact with other communities: these interactions often take the form of a relationship among leading centers and peripheries, two concepts that are extremely useful for describing the whole of the economic theory—the international community of economists—expressed in a particular era. A center is a locality which is able to become central, a node of hierarchical interactions. The intellectual work produced in the center commands more attention and acknowledgment than works produced elsewhere, so it becomes a source of influence, giving rise to the peripheries. The center establishes the standard of scientific work to be conducted.

Ideas circulate internationally, through a plurality of modes of transmission, and tend to come into contact with and/or vie with other communities, leading to appropriations (of theories, tools, and values by peripheral individuals and communities) (Neves 2017), via imitation and adaptation. Controversies (often in the form of competition between

[11] The idea of the economic profession as a complex system has also been suggested by Colander et al. (2004a, b).

centers in order to achieve scientific leadership) are crucial in this process.[12]

This approach enables us to account for the nonlinear evolution of theories, as underscored by Schumpeter, to emphasize change and innovation in this evolution, and, last but not least, to consider 'the present as history', in the sense that recent developments are illuminated by studying and understanding the past. Consequently, this approach upends the mainstream approach to the history of economics and the marginal position it affords to the history of economic theory and, by shedding light on how economic theory is shaped, justifies the role this history plays.

1.4 The Subject of This Book: Economic Theory in the Twentieth Century

The book is devoted to the history of economic theory in the twentieth century, from the last decade of the nineteenth century, when marginalist-neoclassical thought was systematized by economists like Alfred Marshall, Vilfredo Pareto, and a few others, to the beginning of the twenty-first century, when the mainstream economics of the post-war period seems to have weakened as a result of internal logical-theoretical difficulties, external challenges (e.g., the failure in foreseeing and then in appraising the 2008 crisis), and the challenge of interdisciplinarity.

The period can be divided into three phases, each covered by single volume:

I. Economic theory in the golden age of capitalism: from the last decades of the nineteenth century to the First World War.
II. Economic theory in an age of crisis and uncertainty: between the two world wars.
III. Economic theory in the American age: from the post-war years to the beginning of the twenty-first century.

[12] Also the concept of "network of conversation", introduced by Klamer (2007), can be a useful tool in the analysis of these phenomena.

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Part I

Economic Theory in the Golden Age of Capitalism: From the Last Decades of the Nineteenth Century to the First World War

2

Introduction

2.1 The Historical Scenario: The *Belle Époque* of Capitalism

The twenty-five years preceding the Great War were the final period of the epoch of classical liberal capitalism in much of Europe and other parts of the globe after the first Industrial Revolution. Given its success in the economic sphere, this period is known as the *Belle Époque* of capitalism. It was a period of rapid and stable economic growth in a world economy that was more integrated than it had ever been before. According to economic historians, the high degree of integration achieved in the world economy depended on several factors, and critically on two: the general adherence to the gold standard as the international monetary system and the prevalence of free trade.

The pre-First World War gold standard was the result of increasing numbers of countries defining their currency in terms of gold, as Britain, the first country to adopt the standard, had done since 1717. By the end of the 1870s, nearly the whole world was on the gold standard. The cornerstone of the classic gold standard was the commitment by the governments and central banks of all industrial economies to maintaining

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convertibility of their currency. The consequent low foreign exchange risk was one powerful factor driving the expansion of international trade and finance in the years before the First World War. In fact, exchange rates were quite stable among the core industrial countries, where devaluations were few. At the periphery of the world economy, however, the gold standard functioned with less success, and shocks in prices and financial crises were not rare: many countries were repeatedly forced off the gold standard and into devaluation by financial crises. Moreover, the gold standard tended to lead to fast transmission of business cycles and financial panics around the world. Nevertheless, the international situation was relatively stable for over two decades, and trade and international capital flows expanded: there was significant capital outflow from the industrial core to the industrializing, mineral-rich periphery, with positive economic effects on those economies that received capital inflows. In the world as a whole, wealth, in material terms, increased.

This system's operation was ensured by a political framework of equilibrium between major countries under the political and financial leadership of the United Kingdom, which was not only the richest country in the world until the last years of the nineteenth century but also ruled over a large empire (in 1913, the United Kingdom governed 23% of the world's population).

The world economic system's substantial stability fueled rapid industrialization (known as the second Industrial Revolution), with intense technological progress and the emergence of the electricity, telephone, automobile, and synthetic chemicals industries, among other new developments. The benefits of this growth were not limited to a few countries, but they were pervasive and a process of convergence occurred. New economic powers arose alongside the United Kingdom, starting with the United States and Germany, and many countries—chiefly in Europe—enjoyed a surprisingly high rate of growth. Growth was accompanied by historic social changes in Europe and the United States: mass society, urbanization, social achievements, and improvements in the standard of living. On the other hand, some of the rest of the world came to know the dark side of European growth: colonial expansion.

In the last years of the nineteenth and the first years of the twentieth century, Britain lost its leading industrial position, and Germany and the

United States emerged as new co-leaders. Britain's relative decline depended on its inability to fully take part in the acceleration of growth in productivity, even if levels of productivity remained high. As a result, British companies lost market position, in particular, in the most technologically advanced industries. In 1903, Alfred Marshall wrote that "sixty years ago England had…leadership in most branches of industry…It was inevitable that she should cede much…It was not inevitable that she should lose so much of it as she has done". (Marshall 1926 [1903], p. 405). In the last part of the period, conflicts over market control arose, and free markets shrank. The political and economic tensions spilled over in the Great War.

Later, John Maynard Keynes (1971 [1919], pp. 6–7) was to look back on this era of free trade and free capital flows as a golden age:

> For [the middle and upper classes] life offered, at a low cost and with the least trouble, conveniences, comforts, and amenities beyond the compass of the richest and most powerful monarchs of other ages. The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth…he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages…. He could secure…cheap and comfortable means of transit to any country or climate without passport or other formality…. *But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further improvement, and any deviation from it as aberrant, scandalous, and avoidable (our italics)*.

With the sweeping economic and social changes that made people in many countries certain that they were living at a time of the human race's 'magnifiche sorti e progressive' (magnificent and progressive destiny)—to quote the great Italian poet Giacomo Leopardi—this golden age of classical liberal capitalism is the backdrop to the development of modern economic science and a crucial factor in its positive ideological framework.

2.2 Economic Theory: Background

The Crisis of Classical Political Economy and the Historical School's Criticism

The publication in 1874 of *Some Leading Principles of Political Economy* by John E. Cairnes (1823–1875)—theoretical heir of John Stuart Mill and professor emeritus of Political Economy at University College, London—is usually regarded as the last statement of a classical system that had been in crisis and decline since the middle of the century. By that time, the theoretical problems inherent in Mill's systematization in the *Principles of Political Economy* (1848)—problems essentially connected with the theory of value—and, more generally, the critiques of the scientific status of political economy, as well as its frequent ideological reduction to a sort of free trade tool, had weakened the very idea of an economic science.

The Historical School—which had its foundations in the nineteenth-century German philosophical movement *Historismus* (historism)—was crucial to the critical attitude that emerged in Germany between the mid-1840s and the early 1850s with the works of Wilhelm Roscher (1817–1894), *Grundriss zu Vorlesungen über die Staatswirtschaft nach geschichtlicher Methode* (*Outlines of Lectures on Political Economy from the Viewpoint of the Historical Method*, 1843), Karl Knies (1821–1898), *Die politische Oekonomie vom Standpuncte der geschichlichen Method (Political Economy from the Standpoint of the Historical Method*, 1853) and Bruno Hildebrand (1812–1878), *Die National ökonomie der Gegenwart und Zukunft (Economics of the Present and the Future*, 1848). Though primarily a German phenomenon, the Historical School was also present in the United Kingdom, Italy and other European countries (see Cardoso and Psalidopoulos 2016), the United States, and also Japan. The Historical School's criticism can be considered a crucial cause of the crisis of classical political economy: it rejected universal laws in economics and objected to the deductivism of the classical approach and its excess of abstract reasoning (above all, in Ricardian theory). Moreover, it proposed a more inductive and empirical approach while strongly criticizing laissez-faire

economic policy precepts, and it was in favor of social reforms and state intervention. The methodological creed of the Historical School was that the economist should be primarily an economic historian. Schumpeter gives us a compelling description:

> The basic and distinctive article of the historical school's methodological faith was that the organon of scientific economics should mainly—at first it was held that it should be exclusive—consist in the results of, and in generalization from, historical monographs. So far as the scientific part of his vocation is concerned, the economist should first of all master historical technique. By means of this technique…he should dive into the ocean of economic history in order to investigate particular patterns or processes in all their live details, local and temporal, the flavor of which he should learn to relish. And the only kind of general knowledge that is attainable in the social sciences would then slowly grow out of this work. This was the original core of what became known as the Historical Method in economics. (Schumpeter 1954, pp. 807–808)

While the historical approach is the hallmark of the methodological credo voiced by the different generations of this school, it must also be emphasized that history was normally coupled with statistics, along with an interest in ethnography: not unusually, Wilhelm Roscher, in his *Grundriss*, the book generally regarded as the origin of the German Historical School, considered Adam Smith to be one of the forefathers of historical economics. However, the younger generation of the Historical School,[1] led by Gustav Schmoller (1838–1917)—and including, among other minor authors, Lujo Brentano (1844–1931), Georg F. Knapp (1842–1926), and Karl Bücher (1847–1930)—expressed hostility toward the classical tradition and harshly criticized its method and pure theoretical work. Unavoidably, this led to a methodological controversy. This controversy, the famous *Methodenstreit*, was sparked by Schmoller's unfavorable review of the 1883 book by one of the pioneers of marginalism, the Viennese Karl Menger (see Chap. 8), on the method of social sciences.

[1] A chronological distinction between two generations, the older and the younger, is generally accepted. However, it should be noted that the term 'school' applies, above all, to the second generation.

Another critical strand emerged in the years that the Historical School held sway: Marx's critique of classical political economy. This, though, was another story. Essentially, Marx's work began to attract scholarly attention in the last two decades of the nineteenth century (see Marchionatti 1998). When it was published in 1867, *Das Kapital* was largely ignored in the German academic world—in the Postface to the second edition of 1872, Marx wrote that the bourgeois economists had tried "to kill *Das Kapital* with silence"—with the exception of the 1868 review by a then-famous scholar, Eugen Karl Dühring (1833–1921), who taught economics and philosophy at the university of Berlin. Dühring took what was to become the typical attitude of academic economists toward Marx's work: he admired the historical part of the book but was critical of the theoretical sections. Some years after, in 1873 and 1874, Knies and Roscher contested Marx's work in Germany: Knies asserted that the theory of value was invalidated from the start by logical contradictions, a critical line later adopted by Eugen Böhm-Bawerk (see Chap. 8); Roscher criticized the book's language and mode of expression, at the same time considering Marx's use of history tendentious. By contrast, Marx's historical analysis of capitalism was widely appreciated in the British literature of the late 1870s and early 1880s, as well as in the United States, even if the lack of an English translation of Book I of *Das Kapital* until the end of the 1880s limited these countries' acquaintance with Marx. Access to translations of *Das Kapital* was better elsewhere, as a French version published in the early 1870s facilitated the discussion in France and Italy. In 1872, the German-French economist Maurice Block (1816–1901) wrote an article in the *Journal des économistes* entitled "Les Théoriciens du Socialisme en Allemagne", which was strongly critical of Marx's theory of value and his idea of class antagonism. Block's criticism was reiterated twelve years later, in a debate on Marx in the same journal, in response to the defense of Marx mounted by Paul Lafargue (1842–1911), Marx's son-in-law and the 'official' French Marxist at that time. This discussion, and an article by the Italian economist Achille Loria in the same journal and in *La Nuova Antologia* (1883), anticipated the beginning of the core debate and controversy on Marx's theories of the following two decades.

The Legacy of the Marginalist and Neoclassical Revolution

The Theoretical Turning Point of the 1870s and 1880s

In hindsight, William Stanley Jevons's (1835–1882) *Theory of Political Economy* (1871) can be considered as the moment of passage from the classical system to a new marginalist framework of thought intended to re-establish the scientific status of political economy, as it was the first incisive attack on the labor and Ricardian cost-of-production theories. Jevons, who at the time his *Theory* was published held professorships of Political Economy and of Mental and Moral Philosophy at the University of Manchester and from 1876 was Professor of Political Economy at the University of London, pronounced a radical judgment on the status of political economy: "We find the state of the [economic] science to be almost chaotic" and maintained that Ricardo, an "able but wrongheaded man", "shunted the car of economic science on to a wrong line" (Jevons 1879, p. li). Moreover, he called a priori *laissez-faire* prejudice a 'metaphysical incubus' from which he thought political economy must be freed.

Jevons's work played an essential part in the multi-localized process of intellectual change, which has been called the marginalist or neoclassical revolution in economics. This revolution is generally considered to have begun in the early 1870s, given the number and importance of the works—all very different but sharing a common set of characteristics—that were produced at that time in a number of places. In the United Kingdom, these works included Jevons's book and then Alfred Marshall's (1842–1924) two essays (*Pure Theory of Domestic Values* and *Pure Theory of Foreign Trade*, written in the early 1870s and printed privately in 1879 but already well known in Marshall's Cambridge circle), followed a few years later by Francis Ysidro Edgeworth's (1845–1926) *Mathematical Psychics* (1881). In France, we have *Eléments d'économie politique pure* (*Elements of Pure Economics*) (1874–1877) by Léon Walras (1834–1910), at that time Professor of Political Economy at the Academy of Lausanne, and in Austria, Karl Menger's (1840–1921) *Grundsätze der Volkswirtschaftslehre* (*Principles of Economics*, 1871). The latter two books did not become widely known until a decade later. At the beginning, in

fact, each of these pioneers was quite isolated (Marshall in Cambridge was to some extent an exception), with a meager awareness of having other fellow travelers as well as precursors.[2] Individually, however, they were quite conscious of their mission to reform political economy. They became aware of each other's existence some years after their books were published, and this fact raised the issue of priority. The correspondence between Walras and Jevons in May 1874, published in the June issue of the French *Journal des économistes* (Jevons and Walras 1874), deals precisely with the 'priority problem' in the mathematical theory of exchange. Walras first sent Jevons his memoir 'Principe d'une théorie mathématique de l'échange'. In response, Jevons sent Walras his 'Brief Account' (1862) along with a cover letter that pointed out that their theories were strongly concurrent. Walras answered, acknowledging that their theories concurred and that Jevons's theory of exchange of two commodities had chronological priority. Marshall's 'rather grudging' (Whitaker 1975) review of Jevons's *Theory* betrayed the Cambridge economist's disappointment and surprise at the theoretical exploit of an author who had hitherto only been known, and well regarded in England, for his statistical investigations and for his applied (rather than theoretical) work. Marshall (1872) wrote that Jevons's *Theory* did not contain "any important proposition which is new in substance" and that its main merit "does not lie in its more prominent theories, but in its original treatment of a number of minor points, its suggestive remarks and careful analyses". More important, Marshall criticized Jevons's emphasis on the applicability of mathematical method to political economy.[3] In Austria, Menger's

[2] Marshall was more aware of his precursors than Jevons. He had read the French philosopher and mathematician Antoine Augustin Cournot (1801–1877) and the German proto-marginalists Johann H. von Thunen (1783–1850), Hans von Mangoldt (1824–1868), and Hermann Gossen (1810–1858) between the end of the 1860s and the early 1870s. Edgeworth discovered political economy in 1879 thanks to his encounter with Jevons. He built on the works of Jevons, Marshall, Walras, and Cournot. Walras built on the work of his father Auguste and Cournot. It was only later that they discovered other forerunners. The changes in the bibliography of Jevons' *Theory* between 1871 and 1879 are indicative of this progressive increase in awareness.

[3] This type of criticism was a *leit-motiv* at that time. The old John Stuart Mill was similarly ill-disposed: in a letter to Cairnes of December 5, 1871, he wrote: "I have not seen Mr. Jevons's book, but as far as I can judge from such notices of it as have reached me, I do not expect that I shall think favourably of it. He is a man of some ability, but he seems to have a mania for encumbering questions with useless complications, and with a notation implying the existence of greater precision in

isolation was considerable until the early 1880s. In 1883, the year in which the *Methodenstreit* started, he began to correspond with Walras. Menger recognized the similarity of his value theory with Walras's but was skeptical about mathematical method, which, in sharp contrast with Walras, he rejected as a method of inquiry (see Yagi 2011, 92 *ff*).

The works of these economists gave rise to lines of research that, though different, were all consistent in their attempt to replace—more or less radically—the classical-Ricardian approach as a scientific expression of the principles of political economy in their common reference to a set of (partially) new theoretical tools. Starting from the theory of demand and the consumer, moving on to the theory of the firm and production, and to the theory of distribution, the new approach sought to redefine the boundaries and issues of political economy as an autonomous discipline resting, in part or in whole, on subjective and utilitarian foundations. Jevons's and Walras's research projects, as well as Menger's, represented the more radical, anti-classical side of this 'revolution'. In Jevons's and Walras's work, the new definition of economics as the science which considered the (static) problem of the allocation of given resources was explicit. By contrast, Marshall's work can be considered 'neoclassical' in the sense that he tried to reach a difficult compromise between the old classical economists and the new marginalist approaches. Undoubtedly, a fundamental aspect of this theoretical turn, with the notable exception of Menger, was the use of mathematics: in fact, a feature of much of this work was its adoption of mathematical reasoning. As Schumpeter rightly remarked, the use of infinitesimal calculus in pure economic theory brought about a changing attitude in political economy:

> The logic of the calculus may be expressed in terms of a small number of concepts such as variables, functions, limits, continuity, derivatives and differentials, maxima and minima. Familiarity with these concepts—with such notions as systems of equations, determinateness, stability, all of

the data than the questions admit of" (quoted in Maas 2005, p. 2). As Maas (2005) shows, many other English economists, whether late classical or members of the Historical School, maintained a critical attitude or had reservations. Only in the 1880s did the younger generation of economists begin to appreciate Jevons's ideas (see Schabas 1990).

> which admit of simple explanations—changes one's whole attitude to the problems that arise from theoretical schemata of quantitative relations between things: problems acquire a new definiteness; the points at which they lose it stand out clearly; new methods of proof and disproof emerge. (Schumpeter 1954, p. 955)

Jevons was the first to maintain that the classical deductive method needed to be reformed by using mathematical techniques. Building on Jevonian foundations, Edgeworth saw economic calculus as the study of the equilibrium of a system of hedonistic forces that tend to maximize individual utility. Mathematics, the 'sovereign science', as Edgeworth called it, was considered the guarantee of scientific quality because it made it possible to adopt rigorously deductive reasoning. Jevons's statement at the beginning of his *Theory of Political Economy*—"it is clear that economics, if it is to be a science at all, must be a mathematical science" (p. 3)—was substantially shared by the other pioneers (with the exception of Menger), even though they may have agreed in a different or more limited way. The generally adopted mechanical analogy from classical physics made mathematical language the natural expression of an economic reasoning that seemed clearer, simpler, and more precise than Ricardo's or Stuart Mill's language. Marshall (see Chap. 3), once again, was 'different': given the complex nature of economic material, he believed that the use of mathematics in economics should be limited and emphasized the risk of its misuse.

Undoubtedly, however, the new principles these scholars introduced were particularly appropriate for treatment with mathematical tools. Mathematical calculus seemed the most effective instrument for describing and understanding the general quantitative relations of the hypotheses upon which the pure theory was based. One of these hypotheses was the fundamental common feature of the new approach: the so-called hedonistic hypothesis, which holds that individuals' action is motivated by their desire to obtain the greatest satisfaction of their needs through the least effort. Differential calculus was ideal for such an issue. As Edgeworth emphasized, the main inquiries of pure economics could be

seen as problems of determining a maximum starting from quantitative relations of the form '*x* is greater or less than *y*; and increases or decreases with the increase of *z*'.

The Main Analytical Contributions to the Pure Theory by Jevons, Walras, Menger, Marshall, and Edgeworth Before the End of the 1880s

Jevons

In the preface to his *Theory*, Jevons declared that he intended to treat political economy by analogy with the science of mechanics as a calculus of pleasure and pain expressed in mathematical form. His theory proceeds from feelings to utilities. Utility is what arises from a commodity that is exchanged. For this reason, the theory of exchange is the focal point of his book. Jevons's theory is based on several assumptions that were later widely adopted by the neoclassical economists: that every individual exchanges goods "from the pure regard to his…private interests"; that competition is perfectly free; and that all traders have perfect knowledge of the conditions of supply and demand and the consequent ratio of exchange. In a market under these hypotheses, the same price prevails—that is, the law of indifference is at work. Jevons then introduces the equation of exchange, whereby, in equilibrium, the given ratio of exchange of two commodities equals the inverse ratio of the final degree of utility (or 'marginal utility'). In mathematical form: $\varphi_1(a - x)/\psi_1 y = y/x = \varphi_2 x/\psi_2 (b - y)$, where $\varphi_1(a - x)$ denotes the final degree of utility of a commodity (corn) for A and $\varphi_2 x$ the corresponding function for B, $\psi_1 y$ denotes A's final degree of utility for another commodity (beef), and $\psi_2(b - y)$ B's similar function. This has been called Jevons's "most substantial contribution to distinctly mathematical analysis" (Young 1912). A major implication of Jevons's theory is that exchange maximizes every person's utility. As he emphasizes, this theory is totally distinct from a theory of the cost of production.

Walras

Walras's aim in the *Eléments* was to build a science of political economy that paralleled Newtonian mechanics. The heart of Walras's work is the theory of general economic equilibrium. In sections II–V of the *Eléments*, he tackles the problems whose solutions were to define the theory of general economic equilibrium in exchange, production, and capitalization. Walras begins by assuming that two commodities are exchanged for each other and that there is no money. On the basis of the Cournotian concept of demand curves, he derives the supply curve of the one commodity from the demand curve of the other and determines the equilibrium price ratio at the intersection of the demand and supply curves of a commodity. He then derives the demand curves of commodities from each individual utility curve for these commodities and from the individual's given initial stock. He does this by applying the law of the equality of the ratio of marginal utility to price—for marginal utility, Walras uses the term *rareté*, introduced by his father Auguste Walras (1801–1866)—whereby each of the two individuals is maximizing his or her satisfaction. He then extends his analysis to cases involving three or more commodities.

Walras's general equilibrium analysis is constructed on the basis of certain assumptions. What he takes as 'givens' are the quantities of m finished goods to be consumed, the supplies of n factors of production to be offered in the factor market, the technical coefficients of production, and the *rareté* functions of individuals for goods and factor services. What he takes as 'unknowns' are the quantities of n productive services offered, the quantities of m finished goods demanded, the prices of n productive services, and the prices of m finished goods. Mathematically, the solution of the general equilibrium equation is the solution of a system of simultaneous equations. As regards the theory of the production of goods, Walras demonstrates that equilibrium can exist under certain conditions—equality of demand and supply in the market of factors of production and in the market of consumer goods, and if there is equality between the selling prices of products and of the cost of the services employed in making them. He finds that in equilibrium, the entrepreneurs make neither a

profit nor a loss. Lastly, Walras considers the production of new capital goods and savings, and then presents his theory of capitalization and credit, arguing that the price of capital goods depends on the price of their services or revenues. In equilibrium, the rate of net revenue on all types of capital resources must be the same and must be equal to the market rate of interest for credit. In solving his system of equations, Walras tries two solutions—one theoretical or mathematical and the other 'practical'. The theoretical solution seeks to confirm the equality of unknowns and the number of equations. The practical solution is his theory of *tatônnement* (a term introduced by Cournot), which explains how the problem of equilibrium is solved by the mechanism of competition in the markets.

Menger

Menger's subjectivism in the field of value theory owed little to utilitarian concepts. Rather, it was very much a part of the Austro-German tradition, which had its roots in medieval scholastic doctrines and where a subjective approach to a theory of value was based on the concepts of value in use and scarcity. The structure of Menger's *Principles* was typical of this tradition, to which Wilhelm Roscher, one of the leaders of the old German Historical School—to whom Menger dedicated his *Principles*—also belonged. According to Menger, the aim of a scientific theory of economic phenomena is to explain the source of value. First, he discusses the meaning of goods and their relations with human values. For a useful thing to have what he calls 'goods-character', Menger writes, it is necessary that a causal connection between the good and its ability to satisfy a need be recognized. He ranks goods according to their relationship to want satisfaction: consumer goods which can satisfy needs directly are 'first-order goods' in this classification; goods that satisfy needs by being transformed into first-order goods are called 'goods of higher order'. The latter derive their 'goods-character' from first-order goods. Once he has established the concept of a good, Menger gives his definition of an economic good: one which is not available in sufficient quantities to satisfy people's requirements. At this point he gets to his theory of value, where

value is not a property of goods, but "the importance that individual goods or quantities of goods attain for us because we are conscious of being dependent on command of them for the satisfaction of our needs" (Menger 1871, p. 115). Menger then defines the concept of marginal utility, making it an analytical tool of general applicability. In fact, the concepts of marginal and total utility refer to consumer wants, but Menger goes on to say that the means of production come within the concept of economic goods because they indirectly satisfy consumers. Schumpeter (1954, p. 913) wrote that this was "a genuine stroke of genius" because "it…extends the range of the principle of marginal utility over the whole area of production and distribution": "The whole of the organon of pure economics thus finds itself unified in the light of a single principle—in a sense in which it never had been before".

Marshall

Although Marshall began to develop his theoretical system at the same time as the other three pioneers, he published his thinking only later. Marshall's early exposition of this system was that presented in his *Pure Theory of Domestic Values* and *Pure Theory of Foreign Trade* (1879). The two essays had been meant to become chapters in a book to be entitled *The Theory of Foreign Trade, with Some Allied Problems Relating to the Doctrine of Laissez-Faire*. Although this book was never produced, Henry Sidgwick (1838–1900), eminent Cambridge moral philosopher, obtained Marshall's permission to print the two essays privately for use in economic discussion at Cambridge. Marshall was later to draw extensively from *The Pure Theory of Domestic Values* in his *Principles*. The work, as its name implies, is devoted to the theory of value—that is, to inquiring about the causes that determine the relative prices of commodities produced in the same country under conditions of free competition. The first chapter analyzes the consequences of the great central law of economic science: that the price a producer offers for a commodity is equal to the sum of the economic measures of the efforts and sacrifices needed to produce that commodity. In this essay, Marshall made extensive use of diagrams: he believed that the pure theory of economic science required

the aid of mathematical calculus but considered diagrams "of great service in interpreting to the eye the processes by which the methods of mathematical analysis obtain their results" (Marshall 1930 [1879], p. 5).[4] He represents the quantities of a commodity along the *ox* axis, and his prices along the *oy* axis. He draws a demand curve and posits that the demand curve is inclined negatively at each point, that is, its slope is negative. He bases this on the law that holds that greater quantities of a commodity can be sold at lower prices. Marshall then draws a supply curve. He observes that the law that governs the shape of this curve is not as simple as the corresponding law for the demand curve. The shape of the supply curve can be positive or negative. This depends on the fact that an increase in the product may give rise to an increasing, a decreasing, or a constant cost. Marshall then formulates the proposition that equilibrium is the intersection of the supply and demand curves and that this equilibrium can be stable or unstable. He discusses the alterations of the equilibrium positions that can be derived from changes in the conditions of supply and demand.

Edgeworth

Part I of Edgeworth's *Mathematical Psychics* is devoted to justifying the use of mathematics in economics. Edgeworth's conception of man as a pleasure machine is introduced in order to facilitate the employment of mechanical terms and mechanical reasoning in social science. Part II approaches the two fields into which the calculus of pleasure may be divided—Economics and Utilitarian Ethics. Economical Calculus investigates the equilibrium of a system of hedonic forces, each tending to maximum individual utility. Edgeworth holds that a contract is a type of action according to which a self-interested agent acts with the consent of others affected by his action. He directs his attention to the degree to

[4] The graphical method of curves in the analysis of exchange—in a form very similar to that set out by Marshall—was also used in the United Kingdom by a contemporary of Jevons and Marshall, H. C. F. Jenkin, a professor of engineering at the University of Edinburgh. His paper, 'The Graphic Representation of the Laws of Supply and Demand, and Their Application to Labour' (1868), also seems to have afforded the stimulus, which led Jevons to publish his *Theory*.

which a contract is indeterminate. Edgeworth's theory of exchange is based on Jevonian foundations. Like Jevons, Edgeworth begins with a case of barter: two individuals, X and Y, exchange two commodities of the amounts x and y. The utility functions for X and Y are $P = F(x,y)$ and $\Pi = \Phi(x,y)$ respectively. This equation turns out to be the first use of a general form of utility function in all of economics. He then inquires into when the two individuals will reach equilibrium. He concludes that the contract generally does not supply conditions sufficient enough to determine the solution. However, what the contract supplies is one condition alone. Edgeworth expresses this condition by writing an equation that corresponds to Jevons's equation of exchange. The locus of points (x,y), which satisfy the equation, is called the contract-curve. The equilibrium point is the point where the individuals' lines of indifference coincide. This point of equilibrium is a relative maximum. Edgeworth illustrates the two-person, two-good case by plotting a diagram that measures the wages paid by Crusoe along the abscissa and measures the labor given up by Friday along the ordinate. This case, he concludes, clearly illustrates the characteristic evil of indeterminate contract: it is an "undecidable opposition of interests". The opposite of this is "the smooth machinery of the open market". Edgeworth then investigates the degree to which a contract is determinate in cases of imperfect competition. As he proceeds, he introduces additional competitors into the field until the limit case of the perfect market is reached: here the contract is then determined. He indicates that competition generally needs to be supplemented by arbitration and that arbitration between self-interested contractors is based upon the greatest possible sum-total utility. Edgeworth proved a theorem that the equilibrium of exchange is determinate only in the case of perfect competition—a theorem then called Edgeworth's equivalence theorem—because it shows the equivalence of two different approaches to the problem of exchange in the market, the Cournot-Walras approach and the Jevons-Edgeworth approach.[5]

[5] Shubik (1959) was the first to make the connection between Edgeworth's contract theory, coalition, and game theory.

2.3 The Map of Economic Theory from the Last Decade of the Nineteenth Century to the First World War: Leading Centers and Peripheries

In the period between the last decade of the nineteenth century and the First World War, the economic theory that arose with the marginalist-neoclassical revolution of the 1870s took definitive form through the efforts of, above all, Alfred Marshall, Vilfredo Pareto, Eugen von Böhm-Bawerk, Knut Wicksell, Philip Wicksteed, and Irving Fisher, and the group of scholars who collaborated with them—without forgetting the contribution of the American marginalist J. B. Clark, and of a young Viennese economist, Joseph Schumpeter, who was able to move through different approaches and epochs, dealing in a very original way with the issue of dynamics. From the methodological standpoint, the work pursued by Marshall and Pareto on the nature and method of political economy was one of the higher points of the methodological reflection on this key issue in the history of economics. From the analytical standpoint, these scholars made contributions to systematizing the theory in many fields: from consumer demand theory—whose innovations lay in the attempt to provide non-hedonistic accounts of consumer behavior, principally by building on Edgeworth's concept of indifference curves (Pareto); the theory of partial and general equilibrium and the concept of competition (Pareto and Marshall); the theory of distribution as a part of the theory of value—where the key issue was to investigate the conditions under which the factor shares determined by marginal productivity would completely exhaust the product (Wicksteed and Wicksell); the theory of capital (mainly Böhm-Bawerk); the theory of money—with the discussion of the quantity theory of money, the development of the cash balance approach, and the cumulative process (Marshall, Wicksell, and Fisher); and the trade cycle and dynamics theories (many scholars, but certainly, above all, Schumpeter). In general, these contributions put marginalist-neoclassical theory on a systematic basis, while preserving differences, often quite significant, between the many groups of scholars

and schools. This gradually became the mainstream approach in many countries.

At the same time, different strands of thought—historical, institutionalist, Marxist, and neo-Ricardian—maintained, or gained, an important presence, contributing to a diversified theoretical pattern in the discipline of economics. These strands included the Young and Youngest Historical Schools, active chiefly in Germany, with Gustav Schmoller, who published his *magnum opus* in 1900–1904, and Max Weber; the institutionalism in the United States with Thorstein Veblen, without forgetting the heretical thought, related to institutionalists, of John Hobson in England; and the Marxist and the new Neo-Ricardian thinking in the German-speaking area, stimulated by the posthumous publication of the second and third books of Marx's *Das Kapital*. These approaches, relatively little represented in the academic world outside of Germany, gradually became heterodoxy, in opposition to the emerging marginalist-neoclassical orthodoxies that dominated the main intellectual centers.

Actually, the theoretical pattern formed by these many strands of thought was quite diversified. It was expressed in a network of relationships between several centers and peripheries. First, there was Cambridge in Britain, with Marshall as leader. Here, Marshall took the chair of political economy in 1885, and a wide community of scholars formed as many young economists, historians, and mathematicians gathered around him. This gave rise to the so-called Old Cambridge School. The eight editions of the *Principles* published between 1890 and 1920—and embodying, as Schumpeter wrote, "the classical situation that emerged around 1900"—established Cambridge as a hub of evolving theoretical thought and home to the most complete expression of neoclassical economics. The central feature of Marshallian Neoclassicism is traditionally considered to be the economics of partial equilibrium. In fact, however, Marshall's approach is better characterized as the line of the new economics that was most careful to build a theory capable of dealing with the complexity of the real world. New institutions supported the program of Marshallian economics and helped it succeed beyond England's borders: the *Economic Journal*, edited by Edgeworth, for many decades the most important journal of economics in the world, and the Royal Economic Society, of which Marshall was a founding member.

The second great (from the theoretical point of view) center of the new economics was the Academy (later the University) of Lausanne, where Walras was appointed to the chair of political economy in 1870. It was there that he wrote and published the first edition of his *magnum opus* in 1874. His isolation ended around the end of the 1880s–early 1890s when economists with a solid mathematical background, like Ladislaus von Bortkiewicz, Vilfredo Pareto, Enrico Barone, Irving Fisher, and others, began to correspond with him. In 1893, Pareto succeeded Walras to the chair of political economy. A school formed around Pareto which is referred to as the Lausanne School or, alternatively, the 'Mathematical School' (due to its stress on mathematical exposition) or the 'Italian School' (given the early presence of so many Italians in its ranks), with the *Giornale degli Economisti* as its flagship journal. The central feature of the Lausanne School is generally considered its construction of general equilibrium theory. However, the developments introduced by Pareto go well beyond the pure theory of general equilibrium and concern methodological questions and pure and applied theory, as well as its relationship with other sciences.

The third main center was Vienna. Here, a group of economists followed Menger's footsteps. The group that collectively became known as the Austrians was led by Eugen Böhm-Bawerk and Friedrich von Wieser, colleagues and brothers-in-law. The main achievements of this school lay in the development of Menger's radically subjectivist approach, with Wieser's theory of imputation in production and alternative costs, and Böhm-Bawerk's time-theoretic approach to capital and interest. Two Viennese students of both men, Joseph A. Schumpeter and Ludwig von Mises, made some original contributions in the field of dynamics and money.

Throughout the 1890s and 1910s, Böhm-Bawerk and Wieser also locked horns with the Marxian school, which was particularly well represented in Viennese society by such prominent figures as Max Adler, Otto Bauer, and Rudolf Hilferding—known as 'Austro-Marxists'. Actually, they were an example of non-marginalist and neoclassical theories in the centers. The main center of this heterodox thought was undoubtedly Berlin and, more generally, the German-speaking area, where the Historical School of Gustav Schmoller, and later the members of the Youngest

Historical School—including Werner Sombart, Arthur Spiethoff, and Max Weber—were dominant. In 1872, under the urging of Schmoller, Lujo Brentano, and Adolph Wagner, the *Verein für Socialpolitik* (German Economic Association) was founded. On the political side, the *Verein für Socialpolitik* generated a movement toward social reforms, and indeed, it was in two of its meetings in 1909 and 1914 that a debate erupted among proponents of the Historical School, the so-called *Werturteilsstreit* or battle of Value Judgments between Weber and Schmoller.

In the other main centers or their areas of influence, dissent against dominant thinking was limited, though there were several significant instances. Wicksteed and Hobson in England are an example: Wicksteed represented a marginalist conception of economics that differed from Marshall and his followers and was more similar to that expressed by the Viennese school; Hobson was a heretic who anticipated Keynes's theory of effective demand. The German-speaking area was substantially divided between Austria, dominated by the new marginalist Austrian school, and Germany where the historical and Marxist schools were largely dominant.

The peripheries had various relationships with the centers. Due to the important work of Knut Wicksell, certainly the most influential European economist outside the main centers, and Gustav Cassel, Sweden was the most important periphery in Europe, followed by Italy, with Maffeo Pantaleoni in Rome and Luigi Einaudi in Turin, both of whom represented eclectic mixtures of different strands of the new theories. The French-speaking area, with the notable exception of Lausanne, made no significant contributions. In the United States, there was no clear dominance on the part of any particular stream of thought: the old classical school was still influential and marginalist-neoclassical thought had not yet entered the mainstream throughout the country—although it produced such leading theoretical economists as Irving Fisher and J. B. Clark—while institutionalism, with Thorstein Veblen and his first followers, occupied a prominent position.

On the whole, we can say that by 1900 marginalist-neoclassical thought had become the international mainstream, and Marshall and the old Cambridge school approach had taken the leading role in a context marked by controversy and lively interchanges of ideas. However, different views continued to have a relatively important role and were

influential in many cultural areas. In general, the map of economic theory in this period is highly diversified, far from the traditional view of a largely homogeneous body of economic theory, resulting from the marginalist 'revolution' and its systematization.

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3

Economics in Cambridge: Alfred Marshall, the Old Cambridge School, and Their Opponents in England

3.1 Alfred Marshall (1842–1924)

The University of Cambridge that Alfred Marshall entered in 1862 was an élite institution, which dominated British higher education and forged the British ruling class. In the following three decades, the university of Newton strengthened its position as a world scientific center and gained preeminence in political economy: an achievement that can be credited to Marshall. In his inaugural lecture as he took the chair of Political Economy in December 1884, Marshall presented what he considered to be his task and, implicitly, what political economy meant for him, socially and ethically. He affirmed:

> It will be my most cherished ambition, my highest endeavour, to do what with my poor ability and my limited strength I may, to increase the number 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. (Marshall 1885, pp. 266–267)

R. Marchionatti, *Economic Theory in the Twentieth Century, An Intellectual History - Volume I*, https://doi.org/10.1007/978-3-030-40297-6_3

In great measure, Marshall succeeded in this task. "His success was as great as A. Smith's", wrote Schumpeter (1954, p. 830), comparing the two great economists, both for their intellectual accomplishments and for their vision:

> Marshall and A. Smith have more in common than similarity of success and of position in the history of economics…We find strong similarities in the vision or general conceptions of the process and, in particular, with respect to economic evolution. (ibid., 835–836)

Actually, Schumpeter fully realized the importance of Marshall's work, "the classical achievement of the period", which he fittingly called "the Marshallian age". He thus wrote:

> Marshall's great work is the classical achievement of the period, that is, the work that embodies, more perfectly than any other, the classical situation that emerged around 1900. (ibid., p. 834)

Biographical Note[1]

Alfred Marshall was born in Bermondsey, Surrey (now London), on July 26, 1842, the second child of William, a clerk in the Bank of England, and Rebecca Oliver. Educated at St John's College, Cambridge, he studied mathematics (graduating in 1865 as 'Second Wrangler'[2]), philosophy, and ethics.

The years of his education were a period of cultural ferment and crisis in Cambridge, which involved an entire generation of intellectuals. This was due to a series of revolutionary events—first of all, the publication in 1859 of Charles Darwin's *Origin of Species*, followed a few years later by Herbert Spencer's *First Principles*, which spurred a shift away from religious faith toward agnosticism. Marshall was introduced to this ferment through the cultural circle around Henry Sidgwick (1838–1900),

[1] For the intellectual biography of Marshall, see Keynes (1924) and Groenewegen (1995).

[2] A Wrangler is a student who gains first-class honors in the third year of the University's undergraduate degree in mathematics. The highest-scoring student is the Senior Wrangler, the second highest is the Second Wrangler.

philosopher—one of the most influential ethical philosophers of the Victorian age—and economist. Actually, it was in that setting that Marshall turned to political economy in the second half of the 1860s, driven by an interest in practical ethics. As Keynes (1924) recalls, the concern with ethics that induced Marshall to study economics (as well as psychology) emerged from the question: how far do the conditions of life of the British (and other) working classes generally suffice for fullness of life? In the mid-1860s, he traveled to Scotland and the industrial north of England, visiting the working-class districts. Returning to Cambridge, he became a lecturer in political economy in 1868.

Marshall came to economics at a time when the influence of the classical tradition was in full retreat from the challenge of the German Historical School and Jevons's new economics, not to mention Marxist attack. From 1868 to 1877, Marshall was "laying the foundations of his subject but publishing nothing" (Marshall 1925, p. 13). He reminisces that between 1867 and 1870, "as a mere pupil in the hands of great masters, especially Cournot, von Thunen and Ricardo", he "translated Mill's version of Ricardo's or Smith's doctrines into mathematics" (ibid., p. 417). The sources of Marshall's thinking also included William Whewell, Master of Trinity, a pioneer in mathematical economics, and known for his mathematical formulation of Ricardian doctrines. At the same time, Marshall was exploring the historical approach: "One of the first books on economics that I came across", he writes, was that of Richard Jones, the English pioneer of the historical method: "Jones gave a direction to a good deal of my subsequent thinking" (1892, p. 510). Roscher, Marx, Lassalle, and other socialists also attracted him.

In the 1870s, he wrote a small number of tracts on international trade and the problems of protectionism. In 1879, many of these works were compiled together into *The Pure Theory of Foreign Trade: The Pure Theory of Domestic Values*. In the same year, he published *The Economics of Industry*, written with his wife Mary, which gave Marshall a measure of fame that contributed, after the death of William Jevons in 1881, to his becoming the leading British economist of the new economics—then called neoclassical—of his time. In 1877, Marshall had married his former student Mary Paley and was thus obliged to give up his Cambridge Fellowship: in those days, Cambridge professors lived in the colleges and

could not be married. Accordingly, Marshall moved to Bristol as the Principal and Professor of Political Economy of the local University College. From Bristol, Marshall went to Oxford (1883–1884), to replace the economic historian Arnold Toynbee (1852–1883) after the latter's sudden death. He returned to Cambridge to become Professor of Political Economy in December 1884 on the death of Henry Fawcett (1833–1884), who had held the chair since 1863. Marshall held it for more than twenty years, from 1885 until 1908, when he retired from the university, and the position was taken up by his young pupil Arthur C. Pigou. Marshall had begun to work on the *Principles of Economics* in 1881 and spent much of the decade at work on this treatise, which gradually expanded to become a two-volume compilation on the whole of economic thought. The first volume was published in 1890. In 1919, he published *Industry and Trade* and in 1923 *Money, Credit, and Commerce*, a broad amalgam of previous economic ideas, published and unpublished.

As professor at Cambridge, Marshall was invited by the British government on many occasions to provide evidence or be a member of official government inquiries: the 1886 Royal Commission on the Depression of Trade, the 1887 Gold and Silver Commission, the 1899 Indian Currency Committee, and the Royal Commission on Labour (1891–1894). As Groenewegen writes, "this activity must…be seen as an important part of his life as the leading academic economist in Britain" (Groenewegen 2007, p. 82).

Marshall died on July 13, 1924, at the age of eighty-one.

Marshall's Economics: The *Principles of Economics*, 1890–1920

Prologue

In his preface to the first edition of the *Principles*, Marshall writes that economics is a science of slow and continuous growth. In his opinion, the marginalist revolution is not a "real breach of continuity in the development of the science" (Marshall 2013 [1890], p. xix), but, simply, "the new doctrines…have extended, developed, and sometimes corrected

them [i.e., the older doctrines], and often have given them a different tone by a new distribution of emphasis; but very seldom have subverted them" (ibid.). Therefore, he writes, "the present treatise is an attempt to present a modern version of old doctrines with the aid of the new work, and with reference to the new problems, of our own age" (ibid.). He adds that economic laws "are merely a part of the material which Conscience and Common-sense have to turn to account in solving practical problems, and in laying down rules which may be a guide in life" (ibid.). In this context, "ethical forces are among those of which the economist has to take account" (ibid.).

The *Principles* went through eight editions, the most important, after the first (1890), being those published between 1895 and 1910. It was planned as a two-volume work, which was to cover all major themes of economics. This plan was, however, abandoned by the time the sixth edition appeared in 1910. The *Principles* are organized in six books. Book I contains a preliminary survey and a lengthy introduction of methodological issues. Book II, "Some Fundamental Notions", is devoted to the presentation of concepts such as wealth, production, consumption, labor, income, and capital. Book III, "Of Wants and their Satisfaction", deals with the theory of demand and consumption. Book IV, "Agents of Production. Land, Labour, Capital and Organization", deals with production and supply with particular reference to industrial organization. Book V, "General Relations of Demand, Supply and Value", contains the core of his analytical work: market equilibrium between demand and supply. Book VI, "The Distribution of National Income", is devoted to the distribution of national income and economic progress over the long term. The Appendixes cover aspects of the history of economic thought and economic history, and there is also a Mathematical Appendix with the mathematical notes that Marshall preferred not to incorporate into the text.

On the Nature and Method of Economics

Marshall defines economics as "a study of men as they live and move and think in the ordinary business of life" (Marshall 2013, p. 1). Economics

studies "the actions of individuals…in relation to social life", so it deals with "man as he is: not…an abstract or 'economic man'; but a man of flesh and blood" (ibid., p. 22). It focuses on that side of life in which "man's conduct is more deliberate and in which he most often reckons up the advantages and disadvantages of any particular action before he enters on it" (ibid., p. 17). This subject is amenable to quantification and therefore, to some degree, "to treatment by scientific machinery" (ibid., p. 13). Economics is thus a science. However, it differs from the 'harder' sciences, particularly mathematical physics: it cannot attain their simplicity and precision because of the variety and uncertainty of human actions. We may say that economics for Marshall is a discipline which aspires to be a science dealing with social complexity (see Marchionatti 2003, 2004; Cassata and Marchionatti 2011). This complexity has several facets, as Marshall writes in Appendix C of the Principles, "The scope and method of economics":

> The forces of which economics has to take account are more numerous, less definite, less well known, and more diverse in character than those of mechanics; while the material on which they act is more uncertain and less homogeneous. (Marshall 2013, p. 637)

Marshall compares the laws of economics to those of biology (ibid., p. 637): "Economics, like biology, deals with a matter, of which the inner nature and constitution, as well as the outer form, are constantly changing".[3] The subject matter of economics is in fact the "living and ever-changing economic organism" (ibid., p. 635). This raises the problem of how the economist is to deal with complexity—that is, the problem of method. Marshall writes that the economist must start from the analysis of facts—"The economist must be greedy of *facts*" (ibid., p. 32). As "facts by themselves teach nothing", he must use reason: "*reason* alone can interpret and draw lessons" from the "sequences and coincidences" that history tells us of, where "reason" means deductive or abstract

[3] For the intellectual connection between Darwin and Marshall, see Cassata and Marchionatti (2011). More in general, on Marshall's evolutionary economics, see Raffaelli (2003) and Hart (2012).

reasoning. However: "The work to be done is so various that much of it must be left to be dealt with by *trained common sense*", which is "the ultimate arbiter in every practical problem" (ibid.). It follows that:

> economic science is but the working of common sense aided by appliances of organised analysis and general reasoning, which facilitate the task of collecting, arranging, and drawing inferences from particular facts. (ibid.)

According to Marshall, trained common sense is concerned with complexity, gives flexibility to reason, contextualizes theoretical models, and avoids the risks of abstract reasoning. The crucial position that he assigns to trained common sense has an important implication for the language of economics. Marshall writes that "[economics]…*must* endeavour to conform itself to the familiar terms of everyday life, and so far as possible must use them as they are commonly used" (ibid., p. 43). For him, everyday language makes it possible to maintain the *shades of meaning* that every word has in common use, which can be interpreted "by the context" (ibid., p. 51). This 'complex' approach to the economic problem requires that the good economist have many qualities. Marshall writes:

> The economist needs the three great intellectual faculties, perception, imagination, and reason: and most of all he needs imagination, to put him on the track of those causes of visible events which are remote or lie below the surface, and of those effects of visible causes which are remote or lie below the surface. (ibid., p. 36)

In dealing with complexity, deductive reasoning plays a limited role, because it by no means exhausts the economist's entire reasoning. It is "an essential but a very small part of economics proper". To cope with complex problems, the economist first divides them into parts in order to reduce them to simple problems, using the hypothesis of ceteris paribus and excluding the influence of time (i.e., adopting the statical method which assumes static or stationary conditions). He then proceeds step by step to successive approximations. But this procedure is effective for the earlier stages of economic reasoning. Marshall writes:

> There is a fairly close analogy between the earlier stages of economic reasoning and the devices of physical statics. But is there an equally serviceable analogy between the later stages of economic reasoning and the methods of physical dynamics? I think not. I think that in the later stages of economics better analogies are to be got from biology than from physics; and consequently, that economic reasoning should start on methods analogous to those of physical statics, and should gradually become more biological in tone…. The method will become ever more remote from the physical and more akin to the biological. (Marshall 1898, p. 39)

Marshall, as one of the pioneers of the mathematical revolution in economics, shared the opinion that mathematics was a necessary instrument for deductive reasoning, but he put strict limits on the function and role of mathematical reasoning in economics. The mathematical engines used in physics, which "[work] out large volumes full of mathematical formulae and figures" cannot be applied to economics (ibid., p. 39). Applications of mathematics to economics "aim at throwing a bright light on some small part of the great economic movement rather than at representing its *endless complexities*". The function of mathematical reasoning in economics "is not to forge a *few long chains of reasoning*"—Marshall writes in *Principles*, Appendix C (Marshall 2013 p. 638; see also Appendix D, "Uses of Abstract Reasoning in Economics")—"but to forge rightly *many short chains* and single connecting links". Hence, Marshall maintains that it is the nature of economic material that limits the use of mathematics. He points out that the attempt to translate a complex problem into a system of equations is bound to fail for considerations "connected with the manifold influences of the element of time" (ibid., p. 700).

Consumers' Choice, Utility, and Demand

In Book III, Marshall discusses what will become known (together with Pareto's analysis) as the (neo)classical analysis of consumers' choice. He begins by observing that "the subject of demand…has been somewhat neglected" (ibid., p. 70), but "recently several causes have combined to give the subject a greater prominence in economic discussions"

(ibid.)—he was alluding, in particular, to Jevons. He continues by maintaining that Ricardo laid "disproportionate stress on the side of cost of production, when analysing the causes that determine exchange value" (ibid.), and, conversely, that Jevons was not right in maintaining that the theory of consumption is the scientific basis of economics because (Marshall 2013, p. 76):

> much that is of chief interest in the science of wants, is borrowed from the science of efforts and activities. These two supplement one another; either is incomplete without the other. But if either, more than the other, may claim to be the interpreter of the history of man,…it is the science of activities and not that of wants.

In establishing the law of demand in Chap. 2, Marshall links demand to utility and derives a demand schedule as a function of price. His starting point is the measure of utility, or desire, or want: this measure is "the price which a person is willing to pay for the fulfilment or satisfaction of his desire" (ibid., p. 78). He writes:

> There is an endless variety of wants, but there is a limit to each separate want. This…tendency of human nature may be stated in the law of…diminishing utility thus: The total utility of a thing to anyone…increases with every increase in his stock of it, but not as fast as his stock increases. (ibid., p. 78–79)

If we call the utility of a person's marginal purchase its marginal utility to him, the law can be expressed as follows: "The marginal utility of a thing to anyone diminishes with every increase in the amount of it he already has" (ibid., p. 79). Marshall then translates this law of diminishing utility into terms of price: "the larger the amount of a thing that a person has the less…will be the price which he will pay for a little more of it: or in other words his marginal demand price for it diminishes" (ibid., p. 80). This is true under the condition of "other things being equal", that is "the purchasing power of money and the amount of money at his command being equal" (ibid.). Adopting the ceteris paribus technique entails developing a partial equilibrium analysis. Marshall takes no

account of changes in the marginal utility of money, or general purchasing power. So "the prices he is just willing to pay for two commodities are to one another in the same ratio as the utility of those two commodities" (ibid., p. 81). Marshall then considers how much of a thing a man would be willing to purchase at each of the prices at which it is likely to be offered: demand is expressed by a demand schedule or a list of the prices which he is willing to pay, that is, "by his several demand prices for different amounts of it" (ibid.). Such a demand schedule can be translated into a negative sloping curve called the demand curve. At this point, Marshall passes from a single individual's demand to market demand. Total demand is defined as the sum of the demands of all individuals. And the general law of demand is that the amount demanded increases with a fall in price and diminishes with a rise in price. The consumer demand curve is not derived from an explicit optimization procedure, although Marshall deals with the maximization problem of the consumer in some notes of the Mathematical Appendix. Then, in Chap. 4, Marshall introduces the concept of elasticity (or responsiveness) of demand in a market: elasticity is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price. Although the notion of price elasticity had been suggested in earlier literature (by Cournot), it was Marshall who was able to express it with precision. In symbols, as expressed in the Mathematical Appendix: $E_d = (dQ/Q)/(dP/P)$. In Chap. 6, Marshall introduces the concept of consumer surplus, a measure of the gain in well-being (in terms of utility) enjoyed by the consumer in a competitive market.

The Theory of Competitive Equilibrium

The theory of competition—the core of Marshall's theory—springs from analyses outlined in several parts of Books IV and V of the *Principles*. In Book IV, Marshall's notion of competition appears as a process in which elements of partial and temporary monopoly exist, and competition rests fundamentally on the openness of markets rather than on atomistic price-taking behavior. Here, the analysis of competition goes along with the theory of the firm's and industry's growth. Marshall's analysis of the firm

and the competition process in Book IV is closely linked to that of classical economists, particularly Adam Smith. On the other hand, Book V of the *Principles*, entitled "General Relations of Demand, Supply and Value" is the "classical masterpiece" (Schumpeter 1954, 836) of partial analysis. It is also an attempt to maintain at least some of the dynamic character of industrial competition, as described in Book IV, in a stationary context. Book V thus isolates the chief economic forces at a high level of abstraction in order to identify an equilibrium point. This equilibrium is conceived as a mechanical equilibrium. Its purpose is to lay the way for the study of equilibrium as resembling a "balancing…of the forces of life and decay" (ibid. p. 269).

Marshall studies the theory of value with regard to the normal cost of production of a commodity relative to a given aggregate volume of production in a competitive context over the short and long terms. First, he considers the equilibrium of normal demand and supply of a commodity that obeys the law of diminishing returns and under the hypothesis of ceteris paribus. Under conditions of diminishing returns, the supply curve of the firm (and the industry) is rising because production of the profit-maximizing output causes the firm to be producing on the rising portion of its marginal cost curve. The equilibrium value is the result of the working of the two component parts of supply and demand, that is, the cost of production and the utility, and they can be compared to the two blades of a pair of scissors:

> 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. (ibid., p. 290)

In the analysis of long-term equilibrium, Marshall does not go so far as to assume that "every business remained always of the same size and with the same trade connections" (ibid., p. 305). Rather, he introduces the 'representative firm'. This is a 'normal firm'—in the sense that it "must be one which has a fairly long life, and fair success, which is managed with normal ability, and which has normal access to the economies, external and internal, which belong to that aggregate volume of production" (ibid., p. 265). This firm grows with an increase in the aggregate volume

of production. Some firms rise and others decline. The representative firm is "in a sense a average firm" (ibid.).

The difficulty and risks of assuming the ceteris paribus condition "reach their highest point in connection with industries which conform to the law of Increasing Returns" (Marshall 1898, p. 49). The analysis of equilibrium with reference to increasing returns—he writes—is the most important case in which the use of the hypothesis of ceteris paribus is not practicable. In a note in Chap. 12 of Book V, Marshall writes:

> Abstract reasoning as to the effects of the economies in production, which an individual firm gets from an increase of its output are apt to be misleading, not only in detail, but even in their general effect. This is nearly the same as saying that in such case the conditions governing supply should be represented in their totality. (2013, p. 381n)

He maintains that in the case of commodities whose expenses of production diminish rapidly with every increase in the amount produced, "the causes that govern the limits of production are so complex that it seems hardly worth while to attempt to translate them into mathematical language" (ibid., p. 699). According to Marshall, economic reasoning must abandon the mechanical method at this point of complexity and become "more biological in tone" in order to solve this difficulty.

Economies of production, Marshall writes, depend on the division of labor. Marshall groups them into two classes, internal economies—"those dependent on the resources of the individual houses of business engaged in it [i.e., the industry], on their organization and the efficiency of their management" (ibid., p. 221)—and external economies—"those dependent on the general development of the industry" (ibid.). Both are discussed in Book IV—the external economies in connection with "the concentration of specialized industries in particular localities" and the internal economies in connection with the "industrial organization". Internal economies are achieved by firms through large-scale production: "the chief advantage of production on a large scale are economy of skill" and "economy of machinery" (ibid., p. 232), as well as the ability to reap economies of buying and selling. Marshall says that a firm could become a monopoly by taking substantial advantage of internal economies and

increasing its efficiency, that is, by taking advantage of increasing returns. In effect this had been Cournot's conclusion: increasing returns and competition cannot coexist. However, Marshall disagreed with Cournot's view on increasing returns. The representative firm is the fundamental device Marshall used to solve 'Cournot's dilemma'. The term appears in Book IV, after Marshall summarizes the typical 'cycle of life' of a firm. Marshall maintained that, to the extent that factors such as skill, inventiveness, and entrepreneurial energy—which are needed to exploit potential internal economies—exist, a firm can grow rapidly. Yet, the tendency to monopolization is not inevitable because the rise of diminishing returns in the life cycle of the firm opposes it. A firm's monopolization of the market can, at most, be partial and temporary. The appropriate concept of equilibrium for representing this continuous change, according to Marshall, is biological equilibrium, so defined:

A business firm grows and attains great strength, and afterwards perhaps stagnates and decays; and at the turning point there is a balancing or equilibrium of the forces of life and decay. (ibid., p. 269)

Accordingly, this "business firm" is typical, or *representative*, from a biological point of view, in the sense that it represents the typical growth path of a firm. With the representative firm, Marshall sought to bring together the assumptions of the industry's equilibrium and of the disequilibrium of the individual firms in that industry, where some firms are rising and others are declining. The representative firm thus provides a representation "in miniature", to use Frisch's (1950) expression, of the industry's supply curve. This 'construction of the mind' is representative with respect to size and unit cost: it is like a typical tree in a virgin forest because it is always representative of the average life cycle of the firm in the industry. Adopting the assumption of a stationary state makes it possible to maintain the link with the problem of the firms' growth, in which Marshall was chiefly interested. The process of growth is explained in the language of stationary equilibrium. Hence, according to Marshall, the representative firm represents the application of the correct method of inquiry. Marshall considers this device to be necessary from an essentially methodological point of view, deriving from his interpretation of the role of "Theory":

> In my view 'Theory' is essential. No one gets any real grip of economic problems unless he will work at it. But I conceive no more calamitous notion than that abstract, or general, or 'theoretical' economics was economics 'proper'. It seems to me an essential but a very small part of economics proper: and by itself sometimes even—well, not a very good occupation of time …. General reasoning is essential, but a wide and thorough study of facts is equally essential…a combination of the two sides of the work is *alone* economics *proper*. Economic theory is, in my opinion, as mischievous an impostor when it claims to be economics *proper* as is mere crude un-analysed history. (Marshall to Edgeworth in Marshall 1925, p. 437)

The Theory of Distribution

The treatment of distribution is principally debated in Book VI of the *Principles*, entitled "The Distribution of the National Income" (or national dividend). The national income is defined as follows:

> at once the aggregate net product of, and the sole source of payment for, all the agents of production within the country; it is divided up into earnings of labour, interest of capital, and lastly the producer's surplus, or rent, of land and of other differential advantages for production. (ibid., p. 445)

From the outset, Marshall stresses the complexity of the subject by saying that "the keynote of this Book is in the fact that free human beings are not brought up to their work on the same principles as a machine, a horse or a slave" (ibid., p. 418). In fact, "if they were, there would be very little difference between the distribution and the exchange side of value" (ibid.).

Adopting the same approach as in Book V, Marshall initially abstracts from this difference, so the price of factors is determined by the market forces, demand and supply. In this way, the theory of distribution appears as an application of the theory of value to the pricing of the factors of

production.[4] In Chap. 1, Marshall describes the theory of marginal productivity as theory of demand of production factors:

> Every agent of production…tends to be applied in production as far as it profitably can be. If employers, and other business men, think that they can get a better result by using a little more of any one agent they will do so. They estimate the net product…that will be got by a little more outlay in this direction, or a little more outlay in that; and if they can gain by shifting a little of their outlay from one direction to another, they will do so…. And equality is maintained between its values for each use by the constant tendency to shift it from uses, in which its services are of less value to others in which they are of greater value, in according with the principle of substitution…. We must watch the *marginal* uses, and the *marginal* efficiency of each agent. We must do so, simply because it is only at the margin that any of those shiftings can occur by which changed relations of supply and demand manifest themselves. (ibid., pp. 432–433)

Thus, as Whitaker (1988) noted, Marshall must be classified as a marginal-productivity theorist in his analysis of the demand for labor and other factors: the demand for a factor of production is a derived demand and depends on its marginal productivity.

In Chap. 2, Marshall supplements the study of the influence of demand on distribution with a study of the causes influencing the supply of the agents of production. The effective supply of any agent depends "firstly on the stock of it in existence, and secondly on the willingness of those, in whose charge is it, to apply it in production" (ibid., p. 437).

The next stage consists of a "more detailed analysis" of demand and supply in relation to the agents of production, in order to consider the "special qualities" of those agents which were left to one side in the earlier analysis. First, Marshall analyzes labor—nominal and real wages, cost of labor and its efficiency, and so on—in Chaps. 3, 4, and 5, offering, as Blaug (1985, p. 416) wrote, "what is perhaps the most penetrating contribution to labour economics since the *Wealth of Nations*". He then

[4] Marshall did not dwell on the issue of product exhaustion, but he accepted Flux's (1894) conclusion that in long-run competitive equilibrium the total product is exhausted when each factor receives the value of its marginal product.

examines interest and profits of capital in Chaps. 6, 7, and 8. Of particular interest are Chaps. 7 and 8, where the rich discussion of profits of capital and business power is connected with the last part of Book IV and is, at least in part, essentially a digression on industrial economics.

Marshall's Economics: The Historical and Institutional Analysis of *Industry and Trade*, 1919

Industry and Trade was published in 1919 when Marshall was seventy-seven years old, but it had a lengthy gestation (see Whitaker 1990; Groenewegen 2005) together with the *Principles*, of which it was originally conceived as the second volume. Though it is certainly a historical book, it is not merely historical: rather, it is a combination of theory and history. Schumpeter writes:

> Marshall was…an economic historian of the first rank…. And his mastery of historical fact and his analytic habit of mind did not dwell in separate compartments but formed so close a union that the live fact intrudes into the theorem and the theorem into purely historical observations. This shows, of course, very much more obviously in *Industry and Trade* that it does in the *Principles*. (Schumpeter 1941, p. 238)

But, as Whitaker (2003, p. 154) writes, "The very applied character of the book tends to mask its theoretical approach, which can be discerned only vaguely". In fact, *Industry and Trade* may be considered a historical-institutional analysis of capitalism (Kerstenetzky 2010, p. 572) and, in particular, of the theme of economic development, besides being a study of business organization.

Marshall worked on what he then considered the first of the companion volumes of *Principles* until 1903, at which point the debates on tariff reform prompted him to divert his efforts to writing a book on *National Industries and International Trade*. In 1907, in the preface to the fifth edition of the *Principles*, he writes that he was bringing out "as soon as possible an almost independent volume…on *National Industry and Trade*". In 1916, in the preface to the seventh edition, he states that he is engaged

in writing an independent work on *Industry and Trade*. It finally appeared in August 1919.

Industry and Trade is organized in three books. Book I is entitled "Some Origins of Present Problems of Industry and Trade" and is devoted to a historical account of the forms of industrial leadership in Great Britain, France, Germany, and the United States. Marshall used great masses of historical material to compare the development of leading nations and to identify the overruling forces of geographical relations, national character, and industrial technique. British industrial and business organization is the first industrial case considered. After a brief description of Great Britain's ascent to economic preeminence, Marshall identifies small businesses organized in districts as the main factor of its strength against a backdrop of slow technological change and open markets. In the last quarter of the nineteenth century, the emergence of increasingly science-based productive activities (such as chemicals, electricity, and pharmaceuticals) caused a relative loss of competitiveness on the part of English industry, and Germany emerged as new industrial leader, thanks to its investment in education and research and its organizational capabilities. Marshall also stresses that these 'qualities' are combined with restrictions on competition and promotion of cartels, and banks' participation to institutional arrangements: these elements define the German model which characterize the second Industrial Revolution. The United States is the third case examined. Here, Marshall singles out several characteristics of the American model: the great size of the country, the wealth of natural resources, the standardization and scale economies made possible by market size and a homogeneous lifestyle, the supply of immigrant labor, and the rail transportation network, which makes market integration possible. These factors boost development independent of international trade, extensive division of labor and standardization, and consequently mass production, all of which are conducive to economies of scale.

Book II, entitled "Dominant Tendencies of Business Organization", analyzes the central transformations in course in the capitalistic economies. It is devoted, in particular, to the analysis of the methods of mass production and the increasing size of representative businesses, the historical development of which was outlined in Book I. It analyzes the forces that determine the structure of businesses. After an introduction,

Chap. 2 deals with industrial technique and standardization. The effects of standardization are considered by drawing illustrations from different industries. The analysis suggests the conclusion that "the future advances of technique on broad lines are likely to need the aid of capital on an ever increasing scale" (Marshall 1919, p. 246), at the same time promoting "new openings through which a man of small means but large energy may work his way up to become a leader of industry" (ibid., p. 242). Chapter 3 deals with speculation and marketing. The benefits and evils of various forms of speculation and marketing are discussed. Lastly, five chapters of Book II discuss business organization under four principal heads: the growth and influence of joint-stock companies; the financial basis of business organization; its tasks; and applications of scientific method. The relations of banks to industry and trade in Germany and America, the education of business faculty, and scientific management are also discussed extensively.

Book II can be read as Marshall's explanation of the qualifications introduced in the fifth and sixth editions of the *Principles* concerning the life cycle of business. In the metaphor of the trees in the forest, the trees consisted of family businesses up to the fifth edition of the *Principles*, while from the sixth edition onward, Marshall referred to the adoption of the joint-stock method of organization that freed the business from the constraints of reliance upon a single family. Whitaker (2003, p. 145) points out that these qualifications were introduced when he was working on *Industry and Trade*.

Book III is entitled "Monopolistic Tendencies: Their Relations to Public Well-Being". It is devoted to the analysis of the growth of monopolies since the 1880s, particularly in the United States. It covers a wide range of topics. The first two chapters analyze the problem of value in relation to monopoly. It is pointed out that:

> though monopoly and free competition are ideally wide apart, yet in practice they shade into one another by imperceptible degrees: that there is an element of monopoly in nearly all competitive business: and that nearly all the monopolies…hold much of their power by an uncertain tenure; so that they would lose it ere long, if they ignored the possibilities of competition, direct and indirect. (Marshall 1919, p. 397)

In the last part of the book, some of the topics discussed by Marshall include monopolistic price policies, harmful uses of monopoly power, forms of monopolistic business organization, a detailed study of competition and monopoly in British transport, the American and German experience with trusts and cartels, and federation and cooperation in British industry and trade.

Marshall's Economics: A Note on Monetary and Cycle Theory and *Money, Credit and Commerce*, 1923

In the preface to *Industry and Trade*, Marshall announced the forthcoming publication of a companion volume, dealing with money, credit, and international trade. The volume was published in February 1923. It is divided into four books: called 'Money', 'Business Credit', 'International Trade', and 'Fluctuations of Industry, Trade, and Credit', plus nine appendices. It draws largely on earlier published or unpublished work. As Edgeworth wrote in his review of the book in the *Economic Journal* of June 1923, Marshall here brought together "the substance of his earliest writings and the results of his latest reflections". Keynes (1924) recalled that Marshall's monetary thinking had grown into a remarkable oral tradition at Cambridge, and by 1923 his main ideas had found expression in the work of others. According to Keynes, Marshall's work on monetary theory was virtually complete in 1875, but rather than publish his ideas, he preferred to circulate them through public documents and what Keynes called the oral tradition at Cambridge. In fact, it was only after 1920 that Marshall sorted out the notes he had accumulated on money, finance, and the economic cycle and finally published his text on money and credit drawing on his two old books, the *Economics of Industry* and *The Pure Theory of Foreign Trade*, as well as several published articles and contributions presented to government inquiries collected in his *Official Papers* (Keynes 1926). Substantially, his ideas dated back to the 1870s and 1880s, and when the work came out in 1923, its effect was to sum up ideas that were already part of the common heritage (Laidler 1990).

From the theoretical standpoint, Chap. 4 of Book I is of great importance, as it presents a draft of the Cambridge version of the quantity

theory of money called the cash-balance approach: like the classical theory, it expresses a relationship among the amount of goods produced, the price level, the amount of money, and how money moves. Unlike the classical version, however, it focuses on money demand, that is, it is a theory of demand for money (or liquidity preference), where money is recognized to act as a store of value and its movements depend on the desirability of holding cash. In its algebraic form it was presented some years before by Pigou (1917).

Book III on international trade is the longest section. It discusses many issues, partly historical and partly theoretical. The theory of international trade is discussed in terms of comparative advantage. Book IV addresses another topic of importance, the trade cycle. The treatment follows that developed in *Economics of Industry* in 1879. His thinking on the trade cycle was cast pretty much in terms of that of John Stuart Mill, who considered crisis as a commercial and financial phenomenon, associated with fluctuations in the state of confidence. Accidental disturbances, speculation, and, above all, reckless inflation of credit are regarded as the main causes of the trade cycle. Instability of credit is the main disturbing factor which accounts for the business community's shifting expectations.

Keynes summarized Marshall's original contributions to the theory of money as follows:

> (1) The exposition of the quantity theory of money as a part of the general theory of value…. (2) The distinction between the real rate of interest and the money rate of interest, and the relevance of this to the credit cycle…. The causal train by which, in modern credit systems, an additional supply of money influences prices and the part played by the rate of discount…. The enunciation of the purchasing power parity theory as determining the rate of exchange between countries with mutually inconvertible currencies…. The chain method of compiling index-numbers…. The proposal of paper currency for the circulation…based on gold-and-silver bymetallism as the standard. (Keynes 1924, p. 1024)

3.2 Marshall's School and Marshallian Economics

The Construction of a School: *The British Economic Association*, the *Economic Journal*, and the Economics Tripos

In 1890, when the first volume of the *Principles* was published, the British Economic Association (later, in 1902, Royal Economic Society) was founded with Alfred and Mary among the founding members. The Association was the brainchild of Marshall, together with Robert Harry Inglis Palgrave, the editor of the *Economist*, and Herbert S. Foxwell, who had succeeded Jevons as Professor of Economics at University College London in 1881, as well as Marshall's pupil John Neville Keynes (see Coats 1968). In a circular sent out before the inaugural meeting, Marshall spoke of the significant impact a new journal would have on British economic science:

> …the need of an economic journal has long been felt in England. Every other country in which economic studies are pursued with great activity, offers facilities for the publication of thorough scientific work…. Englishmen [however]…are sometimes compelled to give their views to the world in the columns of a foreign periodical, or as a publication of the American Economic Association; but more frequently they put it aside till an opportunity should offer for working it out more fully and publishing it as a book; and that opportunity too often does not come. (Edgeworth 1891, p. 2)

Due to the growing consensus on the need for a new publication, the Association launched a new quarterly journal of economics, the *Economic Journal*, in 1891. In 1903, the new Cambridge degree program in economic and political science, that is, a specific curriculum in economics at the undergraduate level (the *Economics Tripos*), was introduced (see Groenewegen 1988). The program's faculty members were all Marshall's pupils: A. C. Pigou gave general lectures on economic theory based on Marshall's *Principles*; W. E. Johnson, a logician, gave a course in

mathematical economics,[5] focusing on Marshall's curves. D. H. MacGregor, Ch. R. Fay, and others gave courses in applied economics. From 1908, Keynes gave a course on the theory of money, credit, finance, and stock market.

Edgeworth as Editor of the *Economic Journal*

After 1881, the year *Mathematical Psychics* was published, Edgeworth's interests changed. From 1883 onward, he made important contributions to probability theory and statistics. In September 1889, he was elected President of Section F of the British Association for the Advancement of Science (1912–1914). The topic of his presidential address was "On the Application of Mathematics to Political Economy", where he presented a sort of Marshallian perspective of this important issue (Edgeworth 1889). From 1912 to 1914, he served as president of the Royal Statistical Society. In 1890, on the strength of testimonials from friends and colleagues such as Jevons and Marshall, Edgeworth finally attained his first professional appointment to the Tooke Chair in Economic Sciences and Statistics at King's College, London. In fact, in the second half of the 1880s, Edgeworth and Marshall had become quite close (Creedy 1990). Thanks to Marshall's influence, he obtained the two positions that would occupy him for the rest of his life. In 1891, he was elected Drummond Professor and Fellow of All Soul's College in Oxford, a post he would hold until retirement. In the same year, he was also appointed (after J. N. Keynes had declined) the first editor of *The Economic Journal*, the main organ of the British Economic Association.

The first issue was published in March 1891. The journal's aim was to encourage scholarly debate. As Edgeworth wrote in his editorial in the first issue:

[5] William Ernest Johnson (1858–1931), a fellow of King's College, lectured on mathematical economics for many years. He developed Pareto's theory of value in his 'The Pure Theory of Utility Curves' (1913), but he never mentions the Italian economist, and there is no evidence that he had read Pareto's work. He combines Marshall's partial equilibrium approach to the household problem and Edgeworth's and Pareto's indifference curves. He demonstrates that the variations of quantity purchased with price and income are independent of the measurability of utility.

> The British Economic Association is open to all schools and parties; no person is excluded because of his opinions. The *Economic Journal*, issued under the authority of the Association, will be conducted in a similar spirit of toleration. It will be open to writers of different schools. The most opposite doctrines may meet here as on a fair field … Nor will it be attempted to prescribe the method, any more than the result, of scientific investigation.

From the first issue, in fact, there was a great openness to different economists, British and foreign. And Edgeworth established cooperative ties with the editors of several important foreign journals, from the French *Revue d'économie politique* to the Italian *Giornale degli Economisti*. Edgeworth worked as editor until 1911. He was the sole editor in the period 1891–1895, was assisted between 1896 and 1905 by Henry Higgs, a student of Foxwell in London, and then between 1919 and 1926 was flanked by John Maynard Keynes. In 1911 he resigned and became chairman of the editorial board. In 1919 he became active again as Joint Editor with Keynes until the day he died, February 13, 1926, at the age of 81.

As editor of the *Economic Journal*, Edgeworth produced a prodigious number of reviews and review articles, some of which have become classics on their own. Many of them are brought together in the three volumes of his *Papers Relating to Political Economy* (1925). As Peter Newman wrote, an appropriate simile for the reviewer Edgeworth is "that of a classic jazz musician who takes another's song as an occasion for his own improvisation around and above and beyond the melody" (Newman 2003, p. 511). His primary interest was in reviewing economic theory: all the major figures of neoclassical economics with the exception of Wicksell were scrutinized: Marshall, Walras, Pareto, Böhm-Bawerk, Fisher, Pigou, Cassel, J. B. Clark, F. W. Taussig. They occasionally gave rise to debates: as was the case with his critical review of Walras's second edition of the *Elements* from a Marshallian point of view (see Chap. 8).

Around 1891, Edgeworth had suggested to R. H. Inglis Palgrave that the latter produced a dictionary of political economy along the lines of Leslie Stephen's *Dictionary of National Biography* (Barbé 2010, p. 173). The first volume was published in 1894, the second in 1896, and the third in 1899. Edgeworth contributed with more than 100 entries in the first volume.

The Marshallians, or the Old Marshall School

An Overview

> [Alfred Marshall's] attitude to his pupils was one of affection. He took them seriously; he drew them out; he never preached to them; he trusted to their being decent human beings who would try to develop their intellectual capacities for the common good. (Sanger 1926, p. 84)

During his first period of teaching political economy in Cambridge, Marshall had a number of remarkable disciples. They included Henry H. Cunynghame (1848–1935), the author of *A Geometrical Political Economy* (1904), who, according to Edgeworth (1905), was able "to unite the powers of popular exposition and scientific exposition"; Herbert S. Foxwell (1849–1936), Marshall's close friend and ally until 1908, when Marshall's decision not to back Foxwell as his successor for the Cambridge chair in economics, due to his serious reservations about Foxwell's capabilities as a teacher, separated them; and J. N. Keynes (1852–1949), father of John Maynard and author of *The Scope and Method of Political Economy* (1891), a fundamental book in the methodological discussion of the 1890s (see Chap. 8). Educated at the Universities of London and Cambridge where he graduated in 1875, J. N. Keynes was a lecturer in moral science at the University of Cambridge from 1884 to 1911 and then served as registrar of the university (1910–1925). Yet another of Marshall's notable pupils was Mary Paley (1850–1944), who became his wife and, as the first woman lecturer in Cambridge, taught economics at Newnham College.

However, it was when Marshall returned to Cambridge in the mid-1880s that the Cambridge School of Economics was truly born.[6] Thanks to the national and international prestige garnered by his work, many brilliant graduates were attracted to economics. In particular, Marshall was able to attract several young mathematicians who wished to specialize in economics, including Arthur Berry (1862–1929),

[6] For a general look on the Marshallian old school of economics, required reading are Giacomo Becattini's writings (see Becattini 1990, 2006).

A. L. Bowley (1869–1957), A. W. Flux (1867–1942), and C. P. Sanger (1871–1930).

Berry, Senior Wrangler in the Mathematical Tripos in 1885, was briefly interested in economics: he is credited by Marshall, along with Flux, for assistance with the Mathematical Appendix of the first three editions of the *Principles*. As Stigler recalls (1941, pp. 321–323), Berry offered one of the earliest mathematical formulations of the marginal productivity theory in a paper, "The pure theory of distribution" read before Section F of the British Association in 1890—at a session attended by Marshall and Edgeworth. Flux, Senior Wrangler in the Mathematical Tripos in 1887, was considered by Marshall as his most important discovery for economics in the years up to 1890 (Whitaker 1965; Groenewegen 2012). Author of *Economic Principles* (1904), he offered an important theoretical contribution with his review of Philip Wicksteed's 1894 *Essay on the Coordination of the Laws of Distribution* which introduced Euler's theorem into the discussion: Marshall cited Flux's review in several editions of the *Principles*. Bowley, Tenth Wrangler in the Mathematical Tripos in 1891, was introduced by Marshall to economic statistics. He was then the author of *The Mathematical Groundwork of Economics* (1924), the first textbook of mathematical economics published in the United Kingdom. Sanger, Senior Wrangler in the Mathematical Tripos in 1893, came under Marshall's influence in the mid-1890s and became, as Keynes wrote, a leading authority on mathematical and statistical economics. He taught economics and statistics at the University of London and in the Economics Tripos at Cambridge. He was a frequent contributor to the *Economic Journal*—a major contribution was a long essay in 1895 on the subject of "recent works on mathematical economics" (Sanger 1895), which dealt, in particular, with contributions by Pareto, Barone, and Pantaleoni (a proof of the interest that Marshall and his followers had in the writings of the Lausanne and Italian economists). More generally, Sanger's contribution was of a type peculiar to the Cambridge cultural environment. Keynes presented it thus:

> Sanger's acute and critical mind, with its bird-like flashes, was not of the kind to deliver itself in treatises. It was in conversation, in discussion and

> in teaching that his gifts were to be admired and appreciated. (Keynes 1972 [1930], p. 324)

A new wave of pupils came to Marshall from 1900 onward: first of all, the two new young Cambridge leaders, Arthur Cecil Pigou, from the Moral Sciences Tripos, with a degree in history, who began teaching economics in 1901 and became Marshall's successor in the chair of Political Economy in 1908, and John Maynard Keynes, who later created a new Cambridge school. His work is discussed extensively in the second volume.

Pigou was born in 1877 at Ryde on the Isle of Wight, the son of Clarence George Scott Pigou, an army officer, and his wife Nora Biddel Frances Sophia Lees of aristocratic family. He attended Harrow, where he excelled both academically and in athletics. In 1896 he was admitted to King's College, Cambridge, as a history scholar. He came to economics through the study of philosophy and ethics in the Moral Sciences Tripos. Pigou began lecturing on economics in 1901 and started giving the course on advanced economics to second year students. In his early days he lectured on a variety of subjects outside economics. He became a Fellow of King's College in 1902 and was made Girdler's lecturer in the summer of 1904. He devoted himself to an extensive exploration of economic science and, as a result, published important works where the role of economic analysis was derived from Marshall and Edgeworth. In particular, his major publications in this period included the two books *Principles and Methods of Industrial Peace* (1905), reflecting the view that social problems are ethical in character, and *Protective and Preferential Import Duties* (1906), which questioned the logic of protectionism, as well as articles in ethics and philosophy. Marshall had the greatest confidence in Pigou, who in 1908 was elected Marshall's successor as professor of political economy—a controversial succession, as Pigou was only 30 years of age. The 'Prof', as he was generally known, held the post until 1943. In 1912, he published his first truly great work, *Wealth and Welfare*. It provided the scaffolding for his classic *The Economics of Welfare* (1920), which gained him such renown that the period immediately before the First World War has been described as Pigou's heyday. Other important books of the period were *Industrial Fluctuations* (1927) and *A Study in Public Finance* (1928). Starting in the early 1930s, however, Pigou began

to be marginalized in a Cambridge environment that was increasingly dominated by a new generation of economists in some ways critical of the old Marshallian school. His controversy with Keynes during the 1930s contributed to this marginalization, but it prompted the publication of further important work. In any case, Pigou continued to work after his retirement, producing books on income, money, and British economic history. He died in 1959.

A somewhat younger disciple, Dennis H. Robertson (1890–1963) was not taught by Marshall himself at Cambridge, but he was immersed in Marshallian economics at the hands of Pigou and his director of studies, the young J. M. Keynes. Robertson gained a Trinity Fellowship in 1914 on the basis of a thesis, which was to become, a year later, a book—*A Study of Industrial Fluctuation*.

Other 'minor Marshallians' worth mentioning include D. H. MacGregor (1877–1953), industrial economist, H. Clapham (1873–1946) and Charles Ryle Fay (1884–1961), both economic historians, and, last but not least, Walter T. Layton (1884–1966). Layton completed the Economic Tripos with first-class honors in 1906 and was then appointed lecturer in economics along with Keynes, teaching at Cambridge from 1908 to 1914. He published two very "Marshallian" books, *An Introduction to the Theory of Prices* (1912) and *The Relations of Capital and Labour* (1914). At the conclusion of the First World War, Layton decided to follow a career in economic journalism and became editor of *The Economist* in 1922.

Marshall continued to have a number of students after his retirement, among whom were Frederick Lavington (1881–1927), a monetary theorist, and Gerald F. Shove (1888–1947), "an enduring Marshallian loyalist" (Groenewegen 2012) who was to play an important part in the debates on the Marshallian theory of value in the 1920s.

Lastly, we should mention Ralph G. Hawtrey (1879–1975). Hawtrey went up to Trinity College, Cambridge, from Eton in 1898. He studied mathematics and graduated in 1901. He worked in the British Treasury from 1904 until his retirement in 1945. Marshall took no immediate part in Hawtrey's economic education, and he cannot properly be considered a Cambridge economist. As Schumpeter wrote, he was not Marshall's pupil in the same sense in which this term applies to the others, but

"most of the propositions that individuate his teaching—which…is mainly geared to the problems of business cycles—may be traced to Marshall". He continues: "The best way of putting it is perhaps to say that Hawtrey's analysis is an original development, in a certain direction, of Marshall's analysis" (Schumpeter 1954, p. 1084).

Theoretical Contributions

Pigou and the Welfare Economics of *Wealth and Welfare*, 1912

In his review of *Wealth and Welfare* in the *Economic Journal* of March 1913, Edgeworth emphasized that Pigou's book was the result of two main influences, those of Henry Sidgwick's utilitarianism and Marshall's methodology. In fact, Pigou's view of the role of ethics in the development of economics owed a great deal to Sidgwick. As regards Marshall, his great master, Pigou's review of the fifth edition of Marshall's *Principles* makes his debt clear (Pigou 1907). In particular, he emphasizes Marshall's conception, which he regards as fundamental, of "the role played in economics…by the National Dividend". He defines the National Dividend as "the kernel of economic theory" and considered it a measure of welfare.

Wealth and Welfare deals with the size, distribution, and variability of the national dividend. It is divided into four parts. In Part I, Pigou first defines the main concepts, identifies wealth with monetary wealth, and equates wealth and welfare, aggregating them as the national dividend. He then states that the purpose of the study is to examine what increases or diminishes the size of the national dividend and which factors determine its distribution. His starting point is the idea that increases or decreases in economic welfare can be considered with respect to changes in the national dividend. He shows that the transference from the richer to the poorer increases the aggregate sum of satisfaction because "it enables more intense wants to be satisfied at the expense of less intense wants" (Pigou 1912, p. 24). In general: (1) an increase in the size of the national dividend will probably increase economic welfare, (2) an increase in the share accruing to the poor will probably increase economic welfare, and (3) diminution in the variability of the national dividend will

probably increase economic welfare. Part II considers the factors which contribute to the size of the national dividend. The factors of production are divided into labor and non-labor factors. Discussing their technical efficiency, Pigou concludes: "In general,…the more nearly equal marginal net products in all uses are, the larger the dividend is likely to be" (ibid., p. 108). This would normally be achieved by selfish behavior under competitive conditions. Then he considers the cases in which competition might not lead to an optimum. He introduces the distinction between social and private net product, which he then discusses in terms relating to consumer surplus, public goods, and externalities. The section concludes by introducing the different forms of competition—simple competition, monopoly, and monopolistic competition—and their impact on the national dividend. Part III examines the role of transfers from the relatively rich to the relatively poor. Part IV discusses the variability of the national dividend: the main subject is the impact of fluctuations upon the level of economic welfare and the means of mitigating the variation over time of the worker's income.

Blaug maintained that *Wealth and Welfare* was a blueprint for the welfare state. Collard (2014) notes, correctly, that Blaug's is "a very selective reading" (Collard 2014, p. 954): certainly, it is "an interventionist structure, implying a policy agenda"—active economic interventions can improve economic welfare—but Pigou was "cautious…in matters of redistribution or welfare provision" (ibid.). The reason for this is that redistribution to the poor was acceptable on diminishing marginal utility grounds provided that it did not reduce the social dividend.

Monetary and Cycle Theories: Pigou, Hawtrey, and Robertson

Pigou and the 'Cambridge Equation', *1917*

Pigou formally introduced the 'Cambridge equation' for the demand for real cash balances, that is, the Cambridge version of the quantity theory of money, anticipated by Marshall, in an article published in 1917 in the *Quarterly Journal of Economics*. Like the classical theory, it expresses a relationship among the amount of goods produced, the price level, the

amount of money, and how money moves. Unlike the classical version, however, it focuses on money demand, that is, it is a theory of demand for money (or liquidity preference), where money is recognized to act as a store of value and its movements depend on the desirability of holding cash. In its algebraic form: $1/P = kR/M$, where: $1/P$, the inverse of price level, is the value or purchasing power of money; R denotes real resources; k, the reciprocal of velocity, is the proportion of those resources that people wish to hold in the form of money; and M is the money stock. Pigou was not the first to write such an equation. The cash balance equation had been presented by Walras in 1886. Humphreys (1984) showed that their contributions—as well as that of Fisher—had been anticipated by many writers over a time span of at least 140 years.[7] In 1911, the American economist Irving Fisher had reinstated the quantity theory (see Chap. 7). Though differing in detail, the two analyses are to be considered a development of the classical quantity theory.

The Cycle Theories: Hawtrey's and Robertson's Works

The Cambridge School presented largely opposing points of views on monetary and real factors in the business cycles in the years just before the First World War. Ralph Hawtrey and Dennis Robertson were the two economists who developed an analysis that had a large impact on the discussion. The starting point of the discussion was *Good and Bad Trade* (1913) by Hawtrey, followed two years later by *The Industrial Fluctuation* by Robertson, and then by *Currency and Credit* (1919) by Hawtrey.

Hawtrey (1913, 1919) advanced a monetary theory of fluctuations and supported the active monetary policy for counteracting booms and depressions (Deutscher 1990). Hawtrey's analysis in *Good and Bad Trade* (1913) makes business cycles a purely monetary phenomenon. Fluctuations in the flow of money income, themselves caused by exclusively monetary factors, are the only cause of general cyclical fluctuations in trade and employment. He traces the flow of money and

[7] Pigou's equation is virtually the same as the expression used by Keynes in his *Tract on Monetary Reform* (1923), that is, $n = pk$, where n corresponds to Pigou's M, p to Pigou's P, and k to Pigou's kR.

income to the inherent instability of the modern credit system. Banks are supposed to start abnormal activity by easy conditions for loans. The main link of this with general booming conditions is increase in the stocks held by the wholesale trade that also react to small changes in loan rates. Increased loans must be counterbalanced on the balance sheet by new deposits, which would expand the economy's "unspent margin" beyond desired levels. This, in turn, induces increased expenditures, which increases the demand for bank loans to further grow inventories. Expansion leads to further expansion, hence, to increased money incomes and to loss of hand-to-hand cash by the banks, whose inability to go on expanding loans indefinitely then leads to a rise in rates that reverses the process. Hawtrey did not believe that stabilization policies would be effective. He was a proponent of the so-called Treasury View which stated:

> The principle that the Government should add to the effective demand for labour at the time when effective demand for private tenders falls off…overlook[s] the fact that the Government by the very fact of borrowing for this expenditure is withdrawing from the investment market savings which would otherwise be applied to the creation of capital. (Hawtrey 1913, p. 260)

Robertson took a very different approach to Hawtrey's monetary theory of fluctuations (1913). His first book, *A Study of Industrial Fluctuation* (1915), an "inquiry into the character and causes of the so-called cyclical fluctuations of trade…based mainly on a study of the course of events in the leading industrial countries…from about 1870 till…the great war" (p. vii)—emphasized real rather than monetary forces, especially the interaction of invention and investment, in the trade cycle. According to Robertson, industrial fluctuations are a feature of a capitalistic society based on an investment process that exhibits the employment of large units of capital goods connected with technical innovations. In this framework, crises are caused by overinvestment, and the factors leading to this are not monetary in nature. Robertson did not think that price stabilization and monetary control could be an appropriate tool, but merely one ingredient in a more comprehensive program.

Goodhart and Presley (1994) argue that Robertson (1915), together with Schumpeter (1911, see Chap. 4) on bursts of entrepreneurial innovation, prefigured important aspects of contemporary real business cycle theory.

3.3 Non-Marshallian Marginalist Economics in England: Philip H. Wicksteed (1844–1927)

Wicksteed was the marginalist economist who, more than anyone else, took the subjective approach to its logical consequences, applying it to all fields of human activity: for this reason, Sraffa called him the 'purist' of marginal theory. At the same time, it is worth noting that Wicksteed supported a distinctive conception of economics as an ethical science of Aristotelian origin.

Biographical Note

Philip Henry Wicksteed was born on October 25, 1844, at Leeds, the child of Charles, a Unitarian minister, and his wife Jenny Lupton, who descended from the dissenting preacher Philip Henry. After studying classics and theology at University College, London, and Manchester New College (the principal training college for British Unitarianism), he followed his father as a Unitarian minister. In 1869, after he married Emily Solly, he became minister in the industrial parish of Dukinfield, near Manchester, where, impressed by the effects of the Industrial Revolution, he began to take in interest in economic matters and social problems. In 1874, he succeeded James Martineau as the minister of Little Portland Street Chapel, London, where he remained for two decades. His interests extended well beyond the religious sphere, to Biblical history, poetry, philosophy, ethics, and sociology. The latter led him to economics. In particular, Wicksteed's interest in economic problems was stimulated by reading the American social reformist Henry George's *Progress and Poverty* (1879), a famous book at that time that investigated the paradox of increasing inequality and poverty amid economic and technological progress. His inquiry led him in the early 1880s

to the study of Jevons's work. Wicksteed and Jevons, both Unitarians, had followed the same academic path at University College London and were influenced by the same teachers—the mathematician and logician Augustus de Morgan and the idealist philosopher James Martineau. Reading Jevons converted Wicksteed to the marginalist revolution. As Robbins (1935) writes, "from his first acquaintance with [Jevonian innovations], Wicksteed seems to have realised their immense force and revolutionary significance" (vii). To be in a position to understand them to the full, he supplemented his own mathematical training by taking lessons in the differential calculus.

His first contribution to economic theory, a few years later in 1884, was an application of Jevonian analysis to the criticism of the Marxian theory of value. In 1888, he published his *Alphabet of Economic Science*—an introductory book of mathematical economics that provided an exposition of Jevons's theory and an early extension of it. His famous *Essay on the Co-ordination of the Laws of Distribution* was published in 1894. In 1910, after a period devoted to non-economic studies—in particular, on Dante and Aquinas—he published his magnum opus, *The Common Sense of Political Economy*. In 1913, he presented his Presidential Address to Section F of the British Association for the Advancement of Science, published in 1914 as *The Scope and Method of the Marginal Theory of Value and Distribution*, an effective summary of *The Common Sense*. A last statement of his economic thought is the short article on "Final Utility" in the 1925 edition of the *Palgrave Dictionary* (Wicksteed 1925).

He died on March 18, 1927. "It is characteristic of his whole lifework—Robbins remarks—that until two days before his death he was engaged in the dictation of a translation of Aristotle" (Robbins 1935, p. vi), a philosopher who had wide influence on his approach to economics.

A Criticism of *Das Kapital*, Vol. I, 1884

The first volume of *Das Kapital* was published in 1867, few years before the beginning of the 'marginalist revolution'. Wicksteed (1884) was the first to critically examine Marx from a distinctly marginalist point of view in the socialist review *To-day*. In the following years, Böhm-Bawerk and

Pareto wrote critically on Marx. Generally, the central concern of their critiques was the theory of value, from a logical and methodological standpoint. And this was also true in Wicksteed's case.

Wicksteed's article examined the proposition that "the (exchange) value of wares is determined by the amount of labour necessary on the average to produce them" (Wicksteed 1884, p. 710). He claims that Marx had fallen into a formal and substantial error. On the one hand, Marx said that the common thing of which commodities were different manifestations was the fact of being products of labor, abstract, and indifferent human labor; on the other hand, however, he maintained that the labor "does not count unless it is useful" (ibid., p. 712). But, Wicksteed said, if only useful labor counts, then "when the wares are reduced to mere indifferent products of such labour in the abstract, they are still useful in the abstract" (ibid.). And, therefore, it was not true, as Marx said, that nothing remained to them but the one attribute of being products of labor, "for the attribute of being useful also remains to them" (ibid., p. 712). Wicksteed continued by saying that any two things which normally exchanged for each other, whether products of labor or not, must have that "common something" in virtue of which things could be equated with each other: "now the 'common something', which all exchangeable things contain, is neither more or less than abstract *utility*, i.e. power of satisfying human desires" (ibid. p. 713). The common something was therefore a subjective quality, the result of an individual's mental process, reducing different commodities to equality. Consequently, he writes:

> Marx is…wrong in saying that when we pass from that in which the exchangeable wares differ (value in use) to that in which they are identical (value in exchange), we must put their utility out of consideration, leaving only jellies of abstract labour. What we really have to do is to put out of consideration the concrete and specific qualitative utilities in which they differ, leaving only the abstract and general qualitative utility in which they are identical. This formula applies to all exchangeable commodities, whether producible in indefinite quantities…or strictly limited in quantity. (ibid., p. 714)

Wicksteed's critique provoked an immediate reply in defense of Marx by the famous Irish playwright and socialist propagandist George Bernard Shaw. Steedman (1989, p. 128) maintains that "Shaw's piece is entertaining but not a serious defence of Marx's value theory against Wicksteed's criticism". Wicksteed's counter-reply was considered decisive by Shaw, who abandoned Marxism and became a convinced Jevonian. In fact, Wicksteed's critique greatly contributed to creating the feeling among socialists that Marx's theory of value was irrelevant to the economic justification of socialism.[8]

Wicksteed's Economics: The *Essay on the Co-ordination of the Laws of Distribution*, 1894

Wicksteed set himself the Jevonian task of writing a complete theory of distribution in the *Essay on the Co-ordination of the Laws of Distribution*, a small book of fifty-three pages, published in 1894. Here, he discusses the prices of the factors of production in a more satisfying way than before, when each factor had been treated separately, giving rise to different theories of rent, interest, and wages. The solution Wicksteed offered was known as the marginal productivity theory of distribution applicable across the different factors, where the marginal efficiency of a productive factor will determine its value, just as the marginal utility of a commodity determines its value. It was expressed in mathematical form. If the product to be distributed is P, then "the ratio of participation in the product on which any factor K can insist…will be dp/dk per unit, and its total share will be $(dp/dk)\ K$" (Wicksteed 1894, p. 9). The product exhaustion proposition is the essence of the theory, that is, the main problem is to show that the sum of the payment to each factor exactly exhausts the total product. Wicksteed proved the exhaustiveness of distribution in several

[8] Hobsbawm (1964) recalls that much of *Fabian Essays*, published in 1889 by the Fabian Society and edited by George Bernard Shaw, was prepared in a Hampstead discussion group in which Wicksteed, Edgeworth, Shaw, Sidney Webb, and others exchanged views on *Das Kapital*, but ultimately Fabian Socialism was not influenced by Marxism. On Fabian socialism, see also De Vivo (1987).

pages of convoluted mathematics by reconciling the marginal productivity theory with the classical theory of rent.

By the time the *Essay* was published, the productivity theory of distribution was 'in the air', and different variants had been put forward by J. B. Clark in the United States and others. However, the main proposition of the *Essay*—that if each factor is rewarded according to the marginal productivity, the sum of the remuneration of the separate factors will exhaust the product—can be considered new. This means, as Robbins (1935, p. x) commented, "that the marginal productivity analysis is a *sufficient* explanation of distribution". Flux (1894) provided a more concise mathematical statement of Wicksteed's results and used Euler's theorem—Leonhard Euler was an eminent mathematician of the eighteenth century. In reviewing Wicksteed's *Essay* in the *Economic Journal*, he pointed out that Wicksteed's demonstration could be easier if he realized that he was just 'rediscovering' a standard mathematical result known as Euler's Theorem, that is, that any linear homogeneous function can be expressed as the summation of its arguments multiplied by their first derivatives.

Wicksteed's solution was criticized by Walras—who claimed that he first discovered the marginal productivity theory—and many others (Barone, Edgeworth, Pareto, Wicksell): in general, the criticism asserted that the production function was not homogeneous of the first degree, that is, that returns to scale are not constant in the real world. Edgeworth was particularly caustic in his comment on Wicksteed's solution, along the same lines as his criticism of Walras's free competition:

> There is a magnificence in this generalisation which recalls the youth of philosophy. Justice is a perfect cube, said the ancient sage; and rational conduct is a homogeneous function, adds the modern savant. A theory which points to conclusions so paradoxical ought surely to be enunciated with caution. (Edgeworth 1904, pp. 181–182)

Wicksteed's Economics: *The Common Sense of Political Economy* (1910) and "The Scope and Method of Political Economy" (1914)

Wicksteed's magnum opus, *The Common Sense of Political Economy*, is a 700-page book. The book is divided into three parts. The first part is devoted to a systematic exposition of the marginal analysis. The second part consists of a series of special studies of technical problems of analysis. In the third part, the general system of analysis is applied to the elucidation of certain practical problems (housing, unemployment, redistribution of wealth, taxation, socialism, etc.). Its value, from the point of view of the economist, was effectively grasped by J. M. Keynes in his review:

> The value of the work lies, first, in its containing a fresh and original investigation into what may be termed the philosophy of political economy, into its underlying assumptions, and into the human psychology which it presupposes; and secondly, in its somewhat novel presentation of the manner in which the leading conclusions of the marginal theory of economics can be arranged and expounded. (Keynes 1910, p. 510)

It would have been a splendid book, Keynes continues, "by the application of scissors and paste, and the reduction of its 700 pages to 200" (ibid., p. 509). Actually, the 1913 Presidential address entitled *The Scope and Method of the Marginal Theory of Value and Distribution* can be considered a summary of *The Common Sense* where the fundamental points of the book are brilliantly outlined.

The purpose of the book is, Wicksteed writes, "to evolve a consistent system of Political Economy from a careful study and analysis of the principles on which we actually conduct [our] current administration of resources". In the ordinary course of our lives, "we decide between alternative applications of our resources of every kind" and "endeavor to administer them to the best advantage in securing the accomplishment of our purposes" (Wicksteed 1910, p. 1). This choice, he writes, reflects everyday common-sense thinking. Jevons's work is his theoretical starting point. With reference to it, Wicksteed emphasizes his view of the universality of marginalist doctrine:

> The principle laid down by Jevons is not exclusively applicable to industrial or commercial affairs, but runs as a universal and vital force through the administration of all our resources. It follows that the general principles which regulate our conduct in business are identical with those which regulate our deliberations, our selections between alternatives, and our decisions, in all other branches of life. (ibid., p. 3)

Consequently, we must consider "what constitutes an economic relation rather than what constitutes an economic motive" (ibid., p. 4), as in the "unsatisfactory" traditional approaches. According to Wicksteed, political economy is concerned not with a simplified economic man under the influence of certain supposed economic motives, but with man and his relations, regardless of whether his motives for entering into them are selfish or not.

As indicated above, the 1913 address offers a summary exposition of the scope and method of political economy. Wicksteed begins by defining the characteristics of the economic field of investigation. The nature of economic relations is presented as follows:

> If I am making or doing anything…because someone else wants it, and that other person will either do what I want done or put me in command of it, then I am furthering his purposes as a means of furthering my own…. This is the nature of the economic relation. (Wicksteed 1914, pp. 772–773)

In the economic organism of an industrial society, every man "puts in what he has at one point of the circle of exchange and takes out what he wants at another" (ibid., p. 774):

> Our economic relations, therefore, are built up on a recognized scale of equivalences amongst the various commodities and services in the circle of exchange, or, in other words, upon market values. (ibid.)

The marginal theory of exchange, easily formulated in mathematical language, regards value in exchange as "the first derived or 'differential' function of value in use", or in ordinary language:

> what a man will give for anything sooner than go without it is determined by a comparison of the difference which he conceives its possession will make to him, compared with the difference that anything he gives for it or could have had instead of it will or would make. (ibid.)

Ultimately, Wicksteed writes, "what I am willing to give and what I am compelled to give will coincide" or, in other words, an equilibrium comes about:

> the difference that a little more or a little less of any commodity which I habitually consume makes to my estimated satisfaction will be identical with a similar estimated difference to any other habitual consumer. (ibid., p. 775)

In the distribution of his resources, a man equates increments and decrements of satisfaction: this is a general principle that Wicksteed connects to the law formulated by Aristotle with reference to virtue, which consists in combining factors "in the right proportion" (ibid., p. 776), "as fixed by that distribution of resources which establishes the equilibrium of their differential significances in securing the object contemplated, whether that object be tranquility of mind, the indulgence of an overmastering passion or affection, the command of things and services in the circle of exchange, or a combination of all these, or of any other conceivable factors of life" (ibid.). This principle tends, through the market, to secure an identity in the relative positions of increments of all exchangeable things between the members of society. However, Wicksteed maintains, exchangeable things are not "the ultimately significant things at all" (ibid., p. 777): they are means to obtain ends which are "subjective experiences of some kind". This differential theory of exchange values is the theoretical basis for the theory of distribution, "independent of the particular form of organisation of a business" (ibid., p. 779). At this point, Wicksteed can argue:

> the application of this differential method to economics must tend to enlarge and to harmonise our conception of the scope of the study, and to keep it in constant touch with the wider ethical, social, and sociological

> problems and aspirations from which it must always draw its inspiration and derive its interest;…Aristotle's system of ethics and our reconstructed system of economics are twin applications of one identical principle of law, and…our conduct in business is but a phase or part of our conduct in life. (ibid.)

As Comim (2004) emphasized, in the passage we have just quoted, Wicksteed addressed the comparison between the marginal principle and Aristotle's principle of mean, a normative principle associated with an economic virtue. In this sense, the marginal principle is in Wicksteed "a normative guide to exercise excellence in choice" (Comim 2004, p. 477).[9]

Wicksteed develops the theory of value, wages, rent, and interest on a uniform scheme: in each case, a type of exchange is involved, and the point to which they are carried depends on the identity of the relative marginal efficiencies. In this framework, the cost of production has a subsidiary place in the determination of value: "'cost of production'…is simply and solely 'the marginal significance of something else'" (Wicksteed 1910, p. 382). Thus, Wicksteed can maintain that the supply curve for any commodity is nothing else but a reverse demand curve—the demand curve for the set of all other commodities. He writes:

> What about the 'supply curve' that usually figures as a determinant of price, co-ordinate with the demand curve?…. There is no such thing…the supply curve is in reality the demand curve of those who possess the commodity; for it shows the exact place which every successive unit of the commodity holds in their relative scale of estimates. The so-called supply curve, therefore, is simply a part of the total demand curve. (ibid., pp. 784–785)

In fact, according to Wicksteed, the price of a commodity is determined, on the one hand, by the demand, and, on the other hand, by the amount of the commodity available: the latter has no functional relation with the price. Along these lines, Wicksteed explicitly criticizes the "real cost"

[9] The similarity between Aristotle and Wicksteed was first emphasized by Hutchison (1953, p. 99), who wrote that Wicksteed's analysis "amounted to a refinement of Aristotle's doctrine of virtue as a mean into the doctrine that virtue lies in a nicely adjusted margin, or that virtue requires a conscientious balancing, as precisely as possible, of one's duties at the margin".

approach proposed by Marshall and his school: "utility…is the sole and ultimate determinant of all exchange values" (ibid., p. 392).

Keynes, reviewing *The Common Sense*, wrote that "there is nothing novel in the theory which underlies Mr Wicksteed's exposition" (Keynes 1910, p. 512), but the emphasis he gives to the various elements is "somewhat different from that which they receive in such a book as Dr Marshall's":

> Dr Marshall has held the balance very evenly between the marginal school and earlier economic doctrine. Mr Wicksteed evidently believes that the time has come to break away from Ricardian traditions, and seeks to show that there is a far greater unity in economic theory and a far closer dependence upon the ultimate facts of human psychology when it is expounded with the emphasis he gives. The question is primarily one of exposition—more so, perhaps than Mr Wicksteed sometimes realises—but it is not for that reason the less important. (ibid., pp. 512–513)

3.4 An Economic Heretic in the Marshallian Era: John A. Hobson (1858–1940)

"Hobson…was never a 'professional economist'. He was a humanist whose chief interest and specialisation were in the economic field" (Cole 1940, 355). In effect, Hobson was a social thinker and a liberal philosopher with an interest in economic theories, seeking, as a social reformer, a solution to the problem of poverty and an improvement of the distribution of incomes, criticizing mainstream economic thought. In the economic field he was, as Keynes wrote, "a major in the brave army of heretics…who, following their intuitions, have preferred to see the truth obscurely and imperfectly rather than to maintain error" (Keynes 1936, p. 371).

However, this appreciative opinion was expressed nearly fifty years after his first important book was slated by Edgeworth—a negative opinion that contributed to ostracizing Hobson in the English academic community of the day, although he gained great popularity as a lecturer and writer, especially among the radicals and liberal socialist circles. Hobson

established his most interesting intellectual (and personal) connections and relationships with his contemporary Thorstein Veblen and the American Institutionalists with whom he agreed that "orthodox" economics were inadequate in analyzing an industrial society (see Edgell and Tilman 1994; Neale and Mayhew 1994).

Biographical Note

John Atkinson Hobson was born on July 6, 1858, "and bred in the middle stratum of the middle class of a middle-sized industrial town in the Midlands", Derby (Hobson 1938, p. 13), the son of William, a newspaper proprietor and liberal personality, and Josephine Atkinson. He was educated at Lincoln College, Oxford. From 1880 to 1887, he worked as a schoolmaster, teaching classics in Faversham and Exeter. In this period, he met his wife, the American Florence Edgar, writer and strenuous proponent of women's rights. From 1887 to 1897, he was lecturer at the Universities of Oxford and London. His education in economics was based on John Stuart Mill's *Principles*, but Mill's *Utilitarianism* as well as Spencer's sociology were also important in his formation as a social scientist. At the end of the 1880s, he read Marx's *Kapital* (the first volume) followed by Henry George's *Progress and Poverty* and became familiar with the Fabian Socialists. John Ruskin's ideas particularly attracted him, as witnessed by his book, *John Ruskin, Social Reformer* (1898). Richard Cobden's ideas in support of free trade also interested him, as Hobson later showed in *Richard Cobden: The International Man* (1919).

As Hobson wrote in his *Confession of an Economic Heretic* (1938), his economic heterodoxy "began to take shape" in the middle of the 1880s. It came from "an accidental contact": "While teaching at a school in Exeter I came into personal relations with a business man named Mummery", he wrote. A. F. Mummery was a businessman and mountaineer,[10] who entangled Hobson in a controversy about excessive saving, considered by Mummery as responsible for the underemployment

[10] Mummery is considered one of the great mountaineers of his times. Shortly after the publication of *The Physiology*, in 1895, he died in an attempt to climb the 8000-meter Himalayan mountain Nanga Parbat, the ninth highest mountain in the world.

of capital and labor in certain periods. The result was Hobson's first book, the *Physiology of Industry* (1889), written with Mummery, where the oversaving or underconsumption thesis was first presented: it was a doctrine to which Keynes paid tribute in his *General Theory*, saying that "the publication of this book marks, in a sense, an epoch in economic thought" (Keynes 1936, p. 365). This doctrine was re-presented in 1909 in *The Industrial System*, where he argued that maldistribution of income, through oversaving, led to unemployment. After the *Physiology*, Hobson had worked on a historical study of the economic system: the outcome was *Evolution of Modern Capitalism* (1894), then republished in 1906 with a revised version which incorporated some of Veblen's arguments from his *Theory of Business Enterprise*, where, in turn, the American social scientist cited Hobson.

From 1897 on, he devoted himself to political journalism, as well as to writing books and working for newspapers such as *The Nation* and *The Manchester Guardian*. In this period, he also came into contact with radical intellectual groups in London, where he had lived since 1887. One such group was the Rainbow Circle, a political group of Liberals, Fabians, and Socialists, whose members included Ramsay McDonald, who in 1929 was to be the first Labour Party politician to become Prime Minister. The outbreak of the South African War—he was the *Manchester Guardian*'s war correspondent—diverted his attention to the problems of imperialism. In 1902, he published *Imperialism: A Study*, where he linked his interpretation of the phases of capitalist growth and his theory of underconsumption: imperialism appeared to him as the capitalist way of escape from the limitations of a home market glutted with products which the underpaid home consumers could not afford to buy. It was an influential book: in particular, when Lenin published his *Imperialism, the Highest Stage of Capitalism* in 1917, he acknowledged that he had made use of the Hobson's book.

He opposed to Britain's involvement in the First World War. In his book *Towards International Government* (1914), he advocated the formation of a world body to prevent wars. However, after the war, he was critical of the League of Nations, constituted in 1919, as well as opposing the Versailles Treaty, as did Keynes.

Hobson continued to write extensively on international affairs. He attended meetings at Chatman House, an important Institute of International Affairs founded in London in 1920, and became a regular contributor to the American Magazine *Foreign Affairs*, founded in 1921 by the Council of Foreign Relations. Moreover, he was a regular participant in expert committees. Up to 1914, Hobson had been a Liberal, but after the war, in 1919, he was associated with the Labour Party.[11] He wrote increasingly on economic and humanist problems and on the post-war problem of unemployment—on this subject he wrote the *Economics of Un-employment* (1922)—and collaborated with socialist publications.

He died on April 1, 1940. In his last article for the *New Statesman* in December 1939, he had expressed the hope that the United States would join the war in order to shorten it.

Hobson's Economics: *The Physiology of Industry*, 1889

The *Physiology of Industry* was

> the first and most significant of many volumes in which for nearly fifty years Mr Hobson has flung himself with unflagging, but almost unavailing, ardour and courage against the ranks of orthodoxy. (Keynes 1936, pp. 364–365)

It was published one year before Marshall's *Principles*. The book is aimed at exposing "certain fallacies" of classical political economy (in Mill's version), particularly in relation to the doctrine of saving. Hobson's and Mummery's central proposition is that trade depression—the trade depression of the 1880s is the historical background of the book—is caused by a deficiency in consumption. In the preface, the authors attach the orthodox statement that "saving enriches and spending impoverishes the community along with the individual" (Hobson 1889, p. iii) and "not merely does it enrich the thrifty individual himself, but it raises wages, gives work to the unemployed, and scatters blessings on every

[11] About the relationship between liberalism and socialism in Britain in the late nineteenth and twentieth centuries, see Clarke (1978).

side" (ibid.). On the contrary—and demonstrating this thesis is the purpose of the book—

> an undue exercise of the habit of saving is possible, and that such undue exercise impoverishes the Community, throws labourers out of work, drives down wages, and spreads that gloom and prostration through the commercial world which is known as Depression in Trade. (ibid., p. iv)

Saving, the authors write, "while it increases the existing aggregate of Capital, simultaneously reduces the quantity of utilities and conveniences consumed" (ibid., p. v). They add: "Any undue exercise of this habit must, therefore, cause an accumulation of Capital in excess of that which is required for use, and this excess will exist in the form of general overproduction" (ibid.). The excess of production over consumption, or the lack of consumption, is translated into the formula: Production − Savin g = Consumption, that is, production being given, "every increase in saving diminishes…the aggregate consumed" (ibid., p. vii) and unemployment increases.

Orthodox political economy of that time denied the possibility of underconsumption on the basis of the so-called Say's law.[12] John Stuart Mill acknowledged the possibility that a deficiency of demand may occur, but he minimized its importance. And so did Marshall, according to Hobson and Mummery. They point out that Marshall in his *Economics of Industry* (1879) recognized that "though men have the power to purchase, they may choose not to use it", but he "fails to grasp the critical importance of this fact" (Hobson 1889, p. 102). On the contrary, Hobson's theory emphasizes that overproduction arises because capital is accumulating so fast that demand for consumption goods cannot go as fast as potential supply. Note that, as Backhouse (1994) writes, this is similar to the argument Malthus used in his theory of gluts.

The book was dismissed by the orthodox economists of that time until Keynes's *General Theory*. The oversaving theory was re-presented in Chapter III of *The Industrial System* (1909). The starting point of Hobson's

[12] Actually, there was a more or less underground non-mainstream tradition of overproduction/underconsumption doctrines in economic thought (see Hutchison 1953; Kadish 1994).

analysis is a stationary economy where the income is spent on consumption goods. In this economy, there can be no problem of depression. In a non-stationary system, that is, in the actual system, there is change and growth, and this involves net investment and net saving. As a consequence, the addition of new forms of capital leaves the productive apparatus of the system larger than before. Saving, Hobson writes, "implies demand for creation of more forms of fixed or circulating capital" (Hobson 1909, p. 53). In other words, saving is investment. But the "amount of saving that can take material shape in new railroads, harbours, and other great capitalist enterprises" is not capable of indefinite expansion. An industrial community cannot usefully save and invest

> more than a certain proportion of its income: that proportion is never accurately known, and it is always shifting with changes in the arts of production and consumption…It is only by taking the partial standpoint of an individual or a group of individuals, or some other part of the industrial whole, that it seems plausible to hold that there is no limit to efficacious saving. (ibid.)

Rephrasing, as Hansen (1951, p. 256) does in Keynesian language, "the propensity to consume is such that the amount which would be saved at full employment exceeds these growth requirements, then such a society would suffer from inadequate effective demand".

This doctrine of underconsumption is connected with Hobson's theory of imperialism presented in his 1902 book. Here, Hobson argues that the excess of capital in domestic markets led to the search for new markets abroad, giving origin to the new imperialism that arose in the 1870s and 1880s when the United Kingdom, together with other European countries, engaged in a struggle for control over colonies and annexed new territories. According to Hobson, this move comes when the financial sector seeks investment overseas.

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4

Economics in Lausanne: Vilfredo Pareto and the Lausanne School

4.1 Walras's Legacy at the Beginning of the 1890s and the Paretian Turn

Around the end of the 1880s, the isolation that had marked Walras's career in the decade after the publication of the *Eléments d'économie politique pure* came to an end, and the Academy of Lausanne—soon to receive the status of university in 1890—became the main center of development for mathematical economics. This period was the core of the "mature phase" (as Walker [1996] called it) of Walras's thought, which was fully expressed in the second edition of his *Eléments* (1889).

At that time, Walras was embroiled in two major controversies in the pages of leading European journals. The first pitted him against the Austrian economists Rudolf Auspitz and Richard Lieben, who between 1887 and 1889 had published *Untersuchungen über die Theorie des Preises* (*Investigations on the Theory of Prices*), where they used diagrams *à la* Marshall to present the theory of prices. Walras (1890) attacked their partial analysis of supply and demand, that is, the ceteris paribus hypothesis, but his real target was Alfred Marshall. And the English economist's theoretical approach was the real object of the important controversy

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between Walras, Edgeworth, and Bortkievicz in 1889–1890. Here, the debate was centered on the key issue of the application of mathematics to political economy and the nature of economics (see Chap. 8). These controversies illustrate the crucial moment when the different paths taken by mathematical economics came clearly to light—essentially the Walrasian and the Marshallian paths.

Walras had hoped that Vilfredo Pareto would support his position in the controversy with Edgeworth and Marshall. Actually, Pareto did support Walras's position in his pre-*Cours* writings and in the *Cours* on some specific points of the controversy. However, his attitude toward the method of economics differed from Walras's and was in some respects similar to Marshall's in emphasizing the limitation of deductive reasoning unsupported by specific experience and the caution to be exercised in using mathematics in economics. In fact, Pareto's epoch in Lausanne was marked by a substantial change in methodological perspective. Pareto regarded the concept of general equilibrium as Walras's greatest legacy, and he always recognized his debt to Walras. From the methodological standpoint, however, there can be no doubt that he moved away from Walras. As Pareto wrote in 1897:

> Professor Walras' great contribution to economic discussion was his discovery of a general system of equations to express the economic equilibrium. I cannot, for my part, sufficiently admire this portion of his work, but I must add that I entirely disagree with him on what he has to say in his work entitled *Etudes d'économie sociale*. Professor Walras thinks it possible to draw certain economic deductions from metaphysical principles of jurisprudence. This opinion is worthy of respect, but I am unable to accept it. I am a believer in the efficiency of experimental methods to the exclusion of all others. For me there exist no valuable demonstrations except those that are based on facts. (Pareto 1897a, p. 491)

Actually, Pareto's dissent on method from Walras was clear-cut from the beginning (see Marchionatti 1999). Walras's idea of the nature of pure economics had been expressed concisely in the third lesson, Sect. I, of *Elements*, where he wrote that pure economics is a physical-mathematical science like mechanics, and economists should therefore use the methods and language of mathematics: mathematical method, Walras maintained,

is not an experimental method; it is a rational method, and the task of experience is rather to provide the real types which science idealizes. On this conception, Pareto explicitly expressed his disagreement to Walras himself as early as 1892. In the early 1890s, the methodological difference between the two economists was clear from Pareto's critique of Walras's *Etudes d'économie sociale* (*Studies of Social Economics*, 1896), which seemed to him vitiated by metaphysics and was consequently a different concept of applied economics. In a letter to Walras dated April 28, 1896 (in Pareto 1975a [1917], b), Pareto emphasized his contrasting methodological approach: "I can but reason about facts", Pareto noted, and stressed the need to use 'successive approximations', the method of scientific inquiry, in order to grasp the differences between the real human being and *homo oeconomicus* and, consequently, to be able to take practical measures. Walras, for his part, became fully aware that there was a fundamental methodological disagreement with Pareto only in the early 1890s. Pareto himself expressed his disagreement with Walras strongly, especially when published works (such as those of Gide and Rist [1909]) spoke of a "mathematical school of economics" and linked Walras and Pareto together as members of it. But he always did so privately, with friends and pupils, and his published writings were respectfully mild in their criticism. Certainly, the two authors' correspondence, and occasionally their writings, point to a growing methodological and theoretical gap between them. In fact, Pareto was not simply a theorist who continued Walras's work; rather, he offered a new and original contribution on both the methodological and analytical fronts.

4.2 Vilfredo Pareto (1848–1924)

Biographical Note[1]

Vilfredo Pareto was born in Paris on July 15, 1848, to an aristocratic Italian family. His father, Raffaele, a Genoese nobleman and civil engineer, had gone into voluntary exile in France because of his political

[1] For the intellectual biography of Pareto, see Mornati (2018a, b). A third volume is forthcoming.

ideas (he was a follower of Giuseppe Mazzini). The Pareto family returned to Italy in the 1850s. Vilfredo first studied at the Technical Institute of Casale Monferrato, near Torino, and was privately tutored in Latin and Greek, subsequently attending the University of Torino. In 1867, he obtained a degree in mathematics from that university, followed in 1870 by an advanced degree in civil engineering from the Scuola d'Applicazione per gli Ingegneri, later to become the Polytechnic of Torino, in the 1860s and 1870s a vital European center of studies in rational mechanics. The importance of these studies to Pareto's formation is emphasized by Ingrao and Israel (1990, p. 115) who write: "Pareto's contribution to general equilibrium theory is to be regarded as the most explicit and consistent attempt to construct a rational mechanics of economic behavior on the model of nineteenth-century physics and mathematics". In that period, another important influence on Pareto was the British philosopher/sociologist Herbert Spencer, who applied evolutionary theory to the study of society: Pareto's idea—an expression of his interest in the mid-1870s in the construction of a science of society—that the study of facts shows that all organisms develop by bringing together all their parts in a mutual dependency, at the same time giving rise to an increasing differentiation of their functions, is derived from Spencer and then developed in a Lamarckian framework.

After his university years, Pareto took his first job at the *Società delle strade ferrate romane* in Florence. In 1873, he was appointed to a management position at the *Società per l'industria del ferro*, an iron and steel company in San Giovanni Valdarno, and in 1875 became its managing director. In the 1880s, the company reorganized as the *Società delle Ferriere Italiane*, and Pareto was appointed general manager. In December 1889, Pareto married the countess Alessandrina Bakunin, of Russian origin—the marriage lasted twelve years. Pareto resigned from his post at the *Ferriere* in the spring of 1890. He thus had considerable time at his disposal, most of which he used in his free trade campaign against the Italian government's protectionism. In fact, his increasing interest in economic policy led him to become a supporter of free trade positions. This increased his interest in (classical) political economy, which dated from the 1870s. In the 1880s, he wrote his first articles on economic policy and shared in the creation of the *Società Adamo Smith* founded in Florence

to promote the doctrine of free trade. He continued to write against protectionism during the tariff war between Italy and France from 1887 to 1891. Influenced by the French free trade economist Gustave de Molinari, the director of the *Journal des économistes*, he contributed to the free trade campaign with articles (some of them in that journal), international press articles, and writings in the popularizing style of England's mid-century Cobden League.

Only in 1891, thanks to his recent acquaintance with the Italian economist Maffeo Pantaleoni (with whom he embarked on a long-standing correspondence after reading Pantaleoni's *Principi d'economia pura*, 1889), he began to immerse himself in the works of Léon Walras and the other main members of the marginalist school.[2] In 1892–1893, as a result of his study of Walras's work, he published several articles on economic theory in the *Giornale degli economisti*, which marked his entry into the community of economists. At that time, Walras developed the intention to give up teaching and was looking for someone to take over his chair in political economy at the University of Lausanne in Switzerland. Pantaleoni recommended Pareto to him, and Walras, after testing the waters for a while, decided that Pareto ought to succeed him. Pareto was appointed Professor of Political Economy in April 1893, as Walras's successor at Lausanne, and gave his inaugural lecture on May 12. In 1896–1897, he published his first book, the *Cours d'économie politique* (*Course of Political Economy*), in two volumes, which essentially contained his university lectures, but it was more than merely a restatement of Walras's doctrines, or "a brilliant Walrasian treatise", as Schumpeter (1954, p. 860) wrote. In particular, in the part devoted to applied economics, we find many applications of statistics to such socio-economic phenomena as demographic trends, income distribution, real wage trends, and crises.

Immediately after the *Cours*, Pareto began a period of revision, starting from his dissatisfaction with the problem of measurability of utility. The culmination of this process of revision was the *Manuale di economia*

[2] In 1891, Pareto also agreed to write a French preface to a selection of extracts from Marx's *Das Kapital* chosen by Paul Lafargue and published in 1893. In this preface, Pareto proposed a strong marginalist critique of Marx's theory of value, often referred to together with Böhm-Bawerk's critique.

politica (*Manual of Political Economy*), published in 1906—and then in an extended version in French in 1909. The *Manuale* concentrates on presenting pure economics in an explicitly mathematical form: the focus was on formulating equilibrium in terms of solutions to individual problems of 'objectives and constraints'. He illustrated this equilibrium by employing the indifference curve introduced by Edgeworth (1881)—both in the theory of the consumer and in the theory of the producer.

During the years Pareto was working on the *Manuale*, he made many studies of statistical methods, interpolation methods in particular. These studies, as Chipman (1976) wrote, anticipated some of the modern developments of econometric methodology, which stress errors of aggregation and specification.

In the same period, moreover, Pareto published another work which deserves mention, although it was not 'economic': the *Systèmes Socialistes* (*Socialist Systems*, 1902–1903), where he dealt with socialist doctrines and real socialist systems and developed an early version of his theory of social elites. In it, he also re-examined Marx's economic theory and criticized it from the methodological standpoint, though he took a favorable view of Marx's sociological theory, whose central idea was class struggle, because, he wrote, it is often in agreement with the facts. Some of the ideas found in the *Systèmes* were later pursued in the *Trattato di sociologia*, his last great work to which he devoted himself exclusively after his retirement from teaching in 1909, when he passed his teaching responsibilities on to Pasquale Boninsegni. The *Trattato di sociologia generale* (*Treatise of General Sociology*) was published in 1916 (and published in an extended French version in 1917, while the English translation, under the title *The Mind and Society*, was published only in 1934).

Named a Senator of the Kingdom of Italy by Italy's fascist government on March 1, 1923, he declined the appointment. Shortly after, on August 19, he died in Céligny, over Lake Leman, near Geneva, in a villa where he had lived since 1898.

Premise to Pareto's Economics: The *Considerazioni sui Principi Fondamentali dell'Economia Pura*, 1892–1893

The set of articles making up the *Considerazioni*—five articles published in the *Giornale degli Economisti* between May 1892 and October 1893[3]—provide a fundamental critical assessment of the state of the 'new economic theories' expounded in mathematical form. In general, they are a methodological and theoretical reflection on the concept of utility and marginal utility considered as the basic theoretical category of the new marginalist economics.

Pareto's reflection on the issue discussed in the *Considerazioni* started in 1891, partially in response to his reading of Pantaleoni's *Principles*, when he had some knowledge of the works of Cournot, Walras, and Jevons (read in a recent Italian translation). These readings aroused some misgivings in Pareto about the use of mathematical method in economics—in particular, about Cournot's attempts to demonstrate the advantages of the economic protection—and the hedonistic theory at the basis of the new economic theories. Initially, he expressed his doubts in several letters to Maffeo Pantaleoni. "I am not an opponent of the new school"—he wrote to Pantaleoni in December 1891—but "I am an opponent of all reasoning based on false assumptions": "according to me, the true enemy of science is the reasoning that seems rigorous but, as a matter of fact, is based on false premises" (Pareto 1984, I, p. 118). In other words, Pareto felt that the important thing was to pose the problem correctly; only then could the mathematician find the correct solution. His knowledge of new economic theories was enlarged, thanks to the books and journals that Pantaleoni gave him: Pareto was particularly struck by Edgeworth's *Mathematical Psychics* and by the dispute between Walras and Auspitz and Lieben. He then read Fisher's *Mathematical Investigations*, judging it positively but maintaining that it added little to the existing knowledge.

Meanwhile, Pareto began to write a series of papers on the principles of the new science. The first article was ready in March 1892, the second

[3] These articles were translated (with editors' notes) into English in 2007 under the title *Considerations on the Fundamental Principles of Pure Political Economy*, edited by Roberto Marchionatti and Fiorenzo Mornati.

in April, and the third in July. After the publication of the third article, in the summer of 1892, he received complimentary letters from Edgeworth and Walras: he had been admitted to the club of the new mathematical economics. The last two articles were published in 1893.

The articles examined a wide range of topics including the nature and limits of the hypotheses on which the new theories of marginalist economics were based; the use of mathematics in economics; the problem of methodology; the hedonistic hypothesis and the concept of *homo oeconomicus*; the concept of final degree of utility; the analytical determination of the marginal utility of money and the assumption of its constancy; the determination of demand and supply in relation to price, assuming that the final degrees of utility are known; the determination of the final degree of utility when the laws of demand and supply are known; the condition of maximization of collective utility; Gossen's law of diminishing marginal utility; the existence of total utility function; and the case of general non-additive utility functions.[4] In general, Pareto offered an important new analytical discussion in the field of pure economics.

The first article starts with some preliminary considerations on method and on the use of mathematics in economics. Pareto maintains that the correct method is the experimental method, which brings together the empirical quantitative method and the deductive method. This was the method universally accepted by the scientific community, Pareto emphasizes, but not among the new economists (the main reference is of course Walras), where there was a tendency to lead science on a metaphysical path, where reasoning dominates experience. The second issue discussed in the first article is the use of mathematics in political economy. Mathematics, Pareto writes, allows for a higher degree of rigor in demonstration. However, he also emphasizes the great caution economists must have in using mathematics in economics, and the fact that the greater rigor which mathematics allows could turn out to be simply a case of apparent rigor. In fact, Pareto maintains, the usefulness of mathematics in economics depends on using the correct method of analysis, that is, the experimental method, which starts from hypotheses obtained by

[4] These points are considered in Chipman (1976), Weber (2001), and Marchionatti and Mornati (2003).

induction and develops them with mathematical logic in order to arrive at statistically verifiable propositions. After these general remarks, Pareto discusses the basic hypothesis of the new theories: the concept of *homo oeconomicus* as a perfect hedonist. This hypothetical *homo* is very similar to the concept of material point in theoretical mechanics. He is, in Edgeworth's words, a "pleasure machine". Pareto maintains that Edgeworth had succeeded in expounding the new theory in the most general ways and with the rigor of mathematics, and he adds that:

> This concept is wonderfully simple and grand at the same time…. There is much truth in it, but it is necessary to proceed very carefully [following the concrete deductive method] in order not to draw conclusions which, should they be found to be contrary to experience, could spoil and be cause for the rejection of both the good and the bad that the new theories contain. (Pareto 2007 [1892–1893], p. 14)

Pareto criticizes the adoption of some assumed qualities of the *homo oeconomicus*—who is supposed to be a perfect hedonist endowed to a certain extent with foresight and reasonableness. He maintains that assuming perfect rationality and farsightedness for this perfect hedonist seems to be too abstract, running the risk of producing 'fairy tales'.

At the beginning of the 1890s, Pareto accepted the hedonistic hypothesis as a first approximation. But soon he posed the problem: is such an abstraction permissible? The starting point of such an investigation is the Edgeworthian hedonistic theory, which by means of the utilitarian calculation examines the equilibrium of a system in which each force works for the maximum utility of everyone, but Pareto writes, we should proceed with caution in order to avoid conclusions which, when found contrary to experience, could cause the rejection of both the good and the bad contained in the new theories. It is with this intention that Pareto considers the concepts of total utility and final degree of utility. He asks if utility has a real existence or is it simply an abstraction invented by economists. Examining the question of total utility from its mathematical aspect, that is, considering its integral, Pareto notes that normally this integral is considered as starting from zero. This generates a problem: considering the elements of the integral corresponding to zero quantity of an economic

good makes the integral increasingly more abstract. In fact, how many men in a town are really aware of the suffering caused by the absolute lack of nourishment? Yet when the integral is thought of as starting from zero, we are considering the utility generated by the removal of those sufferings. He goes on: the fundamental principle of the hedonistic calculation can be formulated in two ways, referring to total utility or to marginal utility, and though the two are analytically the same, the second is to be preferred:

> If we look at the real facts, the difference between the two formulations is this, that with the first one [total utility] one could assume that an individual is aware of the total utility of an economic good. In our opinion, this seems to happen very seldom. None of us has a clear idea of the utility of eating, drinking, dressing, having a house where one can shelter, but we only understand its advantages for small variations, positive or negative, in other words, our mind only comprehends the concept of final degree of utility. (Pareto 2007 [1892–1893], pp. 17–18)

Pareto's Economics: The *Cours d'économie politique*, 1896–1897

The *Cours* was published in 1893–1894 in two volumes. It was assembled from course notes. The first volume contains "The Principles of Pure Political Economy"—a section that occupies only 75 of the 800 pages of the book and provides a first-approximation treatment of the economic phenomena, whereby the general conditions of economic equilibrium can be set forth—and Book I of "Applied Political Economy", devoted to a discussion of the different types of capital. The second volume contains Book II of "Applied Political Economy", entitled "The Economic Organism", divided into four chapters on social evolution, production, commerce, and economic crises. The parts devoted to applied political economy contain a wealth of statistics, empirical observations, and examples, using much of the statistical material Pareto gathered when he was a businessman. It contains the formulation of Pareto's famous law of income distribution. The book had a major influence on the economic

debate, as several reviews in international journals testify (Flux 1896, Merritt 1898, Bortkiewicz 1898, Wicksell 1897–1899).

Methodological Issues: Rational Method Versus Experimental Method

One of the fundamental features of Pareto's new work is its treatment of methodological issues, which confirms and systematizes the profound difference between him and Walras (see Marchionatti and Gambino 1997 and Marchionatti 1999).

Pareto adopts the experimental method of natural science, which combines the rational and empirical methods in economics: its criterion of truth was the agreement between theory and facts. He uses the mechanical analogy to clarify concepts in economics rather than to provide a precise correspondence between mechanics and economics (as, on the contrary, Fisher did). He identifies several levels of abstraction and considers the criterion of successive approximations to be central in building a scientific theory. This is a fundamental difference with Walras.

According to Pareto, economics is "a natural science based exclusively on facts" (*Cours*, vol. I, preface and §1). The only criterion of a theory's truth is its agreement with real facts. The aim of political economy is to inquire into the regularities of phenomena, that is, their 'laws', guided by observation according to the requirements of the scientific method of the time. These 'laws' at the basis of theories are simple hypotheses, or in other words abstractions deduced from facts, which are good as far as they agree with the facts. This is the methodological approach of natural sciences which Pareto defined as logical-experimental and likened to the method that John Stuart Mill called "concrete-deductive". It is a combination of the rational method—the deduction of consequences from certain hypotheses—and the empirical method—the comparison of those consequences with the facts.

The logical-experimental approach consists of several phases. The first step is the formulation of hypotheses on the basis of an inductive process of observing facts: the experimental approach, Pareto said, goes back from concrete cases to 'general principles' or 'general propositions'. From

the principles—this is the second step—consequences are logically deduced, which constitute theories. The third step is to compare theoretical deductions with concrete facts in order to find out analogies and differences and to confirm, or not confirm, the theory. Observation and experience offer new inductions that make it possible to modify and complete theories: this process of induction-deduction is endless.

Marginalist economists at the end of the nineteenth century make frequent use of analogies derived from mechanics, and indeed, most economists employ the vocabulary of mechanics: equilibrium, stability, elasticity, level, friction, and so forth. Fisher, for example, attempted to offer a systematic representation in terms of mechanical interaction of equilibrium in Chap. 3 of the second part of his *Mathematical Investigations* (Fisher 1892) entitled "Mechanical Analogies", where he presented a table of comparison between mechanical and economic equilibria (see Chap. 7.3). Pareto's *Cours* also uses a table (see Table 4.1) to set out the analogies between mechanical and social phenomena, but with a significant difference: while Fisher's table is designed to provide a precise correspondence between mechanics and economics, Pareto uses mechanical analogy to clarify concepts in economics, emphasizing that the analogies are worthless "as demonstrations of a theory": they only "better explain some statements which must be verified by experience".

Pure economics defines the general conditions of economic equilibrium. Pareto, like Walras before him, considers mathematics necessary in order to examine these conditions, because "it makes it possible to have an exact and complete representation of the relations among economic phenomena", as he said in the *Cours*, §584. In this case, the advantage mathematics offers is not that of making demonstration more rigorous, but that it permits us to treat problems far more complicated than those generally solved by ordinary logic. But, according to Pareto, mathematics in economics should be used with caution, as he had emphasized in his 1892 article.

Pareto considers several levels of abstraction in a process of successive approximations, as expressed in Table 4.1. The most abstract level is that of *pure economics* (*économie pure*) or *first approximation*. This stage considers the most fundamental facts, defined from the last years of the 1890s as "les manifestations de l'ophelimité" (expressions of ophelimity) in

Table 4.1 Comparison between mechanics and economics (*Cours*, §592)

Mechanical phenomenon	Social phenomenon
Given a certain number of solids, we study their relations of equilibrium and movement abstracted from the other properties. We obtain thus a study of mechanics.	Given a society, we study the relations of production and wealth between men, abstracted from other circumstances. We obtain thus a study of political economy.
The science of mechanics is divided into two others. If we consider inextensibly connected material points we obtain a pure science, rational mechanics, which studies in an abstract way the forces of equilibrium and movement. The easiest part is the science of equilibrium. D'Alambert's principle, considering the forces of inertia, enables the reduction of the dynamic problem to a static one.	The science of political economy is divided into two others. If we consider *homo oeconomicus* who acts only as a result of economic forces we obtain the political economy, which studies in abstract terms ophelimity. The only part of this which is well known is static equilibrium. There may be a principle for economic systems analogous to D'Alambert's, but at present our knowledge is very poor. The theory of economic crisis offers an example of dynamic study.
From rational mechanics comes applied mechanics, which is a little closer to reality, considering elasticity, friction, etc.	From pure political economy comes applied political economy, which does not consider solely *homo oeconomicus*, but also other models of man, closer to reality.
Real solids not only have mechanical properties. Physics studies the properties of the phenomenon caused by light, electricity and heat. Chemistry studies other properties. Thermodynamics, like other sciences, studies some of these properties in detail. All these sciences constitute the physical-chemical sciences.[a]	Men have other characteristics which are studied by other particular sciences, such as law, religion, aesthetics, the organization of society and so on. Some of these have reached quite a high level of development; others, on the contrary, have not. As a whole, they constitute the social sciences.[a]
In reality, solids with only mechanical properties do not exist. It is a mistake to assume the existence of a concrete phenomenon subject only to mechanical forces, abstracted from chemical ones, just as it is to assume that a concrete phenomenon may be subtracted from the laws of rational mechanics.	In reality, men who are subject only to pure economic stimuli do not exist. It is a mistake to assume the existence of a concrete phenomenon subject only to economic motivations, abstracted from other considerations, just as it is to assume that a concrete phenomenon may be subtracted from the laws of purer economics.

(*continued*)

Table 4.1 (continued)

Mechanical phenomenon	Social phenomenon
The practice differs from the theory precisely because practice must take into account a quantity of secondary characters which are not studied in the theory. The relative importance of primary and secondary characters is not the same from the general point of view of science and from the particular point of view of practical operation. Syntheses have sometimes been attempted. An attempt has been made to find the cause of all phenomena in:	
The attractions of atoms. An attempt has been made to reduce all physical and chemical forces to a fundamental unity.	Utility, of which ophelimity is simply a type. An attempt has been made to explain all phenomena in terms of biological evolution.
These are all interesting studies. But we must resist these hypotheses and not go far from the solid basis of experience.	
It may be useful to define a table of analogies between mechanical and social phenomena. These analogies have no value as demonstrations of a theory. They only better explain some statements which must be verified by experience.	
[a]If we wish to consider a concrete fact, all these sciences must be taken into account because they have been separated through a process of abstraction.	

their abstract form, as tastes and the obstacles to satisfying them. The next approximation is *applied economics* (*économie appliquée*). It considers not only the *homo oeconomicus* but also other beings nearer to the real man.

Pure Political Economy: A Restatement of Walras's Theory

The section of the *Cours* devoted to pure economics is basically a re-explanation of Walras's theory from the *Eléments*. However, it does contain many original points, essentially introduced in order to fulfill Pareto's methodological aim of connecting theory and empirical verification.

First of all, as noted earlier, Pareto expresses his dissatisfaction with the concept of utility presented in the *Considerazioni* and introduces a new term to take its place, that is, 'ophelimity' (*ophélimité*) (from the Greek

term *ophelos*, which means economic satisfaction), in order to avoid, he maintains, the misunderstanding deriving from the different meanings of the term utility in ordinary language. The *ophélimité élémentaire* is the unit of pleasure that an individual draws from the consumption of a small increase of a good. It is a function of the quantities of all goods consumed, mathematically expressed as $\phi_a(x_a, x_b, \ldots)dx_a$.

Two other original points are the variability of production coefficients and the maximum ophelimity for the community. The introduction of variable coefficients of production in the system of general equilibrium is a partial innovation. In fact, as Schumpeter points out, Walras had already introduced variable coefficients on the suggestion of Enrico Barone "though without altering the argument of the fundamental section on production" (Schumpeter 1949, pp. 165–166). Pareto certainly added a more elegant formulation, but what is distinctive about his discussion is the reasoning behind the introduction of this point. He began by assuming that the coefficients of production are constant, but, he adds, they are variable, and therefore "we must take this fact into account" (*Cours*, 1896–1897, §714). According to him, constant coefficients of production are not a general but simply a particular case, insufficiently realistic, useful from the analytical point of view as a first approximation. The great innovation was undeniably that of the maximum ophelimity for a community.[5] This innovation was the result of the attempt to prove the optimality of free trade. Competition, says Pareto, forces entrepreneurs to change the coefficients of production "so that the amount of the ophelimities of individual traders be the maximum" (§719). In the note,

[5] Walras had considered only the maximum ophelimity of each individual. Nevertheless, without demonstration, he believed that free competition was a maximum for the community. In the *Trattato di sociologia* (§2129, note 1), Pareto wrote: "Failure to distinguish between the maximum of ophelimity for the community and the maximum of ophelimity of each individual in the community had led certain writers to regard my demonstrations of my theories concerning the maximum of ophelimity for the community as reasoning in a circle. As a matter of fact, in the case of free competition, the equations of economic equilibrium are obtained by positing the condition that each individual attains the maximum of ophelimity; so that if one were to infer from those equations that every individual achieves the maximum of ophelimity, one would obviously be reasoning in a circle. But if, instead, one asserts that the equilibrium determined by the equations has the peculiarity of corresponding to a point of equilibrium for the community…one is stating a theorem that has to demonstrated. This demonstration I gave first in my *Cours* and then in my *Manuale*".

Pareto refers to the proof presented in a previous article (Pareto 1894).[6] First Pareto defines the conditions of free competition, in accordance with which the entrepreneur determines the production coefficients in order to minimize costs. Then he defines the conditions of maximum ophelimity for a community and demonstrates that the two types of condition correspond. He formulates the problem of determining the maximum ophelimity as one faced by the minister of production of a socialist state who has to determine the coefficients of production in order to obtain the maximum ophelimity for a community after assuming a surplus distribution rule. In the end, the production coefficients determined by the minister to maximize the welfare of the community have exactly the same values as those obtained by determining them under free competition. It follows that the Paretian notion of optimality is independent of all institutional conditions. Looking at monopoly situations, different market regimes are considered in order to determine maximum ophelimity, and it is demonstrated that monopoly is not a maximum ophelimity for a community.

Topics in Applied Economics: Pareto's Law of Income Distribution and Dynamic Issues

Applied political economy introduces the study of a great mass of historical facts and statistical data. Here, political economy enriches itself with contributions from other social sciences: politics, anthropology, and psychology. Instead of individuals, classes make their appearance together with capitalists, entrepreneurs, speculators, monetary phenomena, and so on. The field of applied economics is where we find the typical features of Pareto's inquiry which made such an impression on his contemporaries: an outstanding mix of theory and empirical research.

[6] In "Il massimo di utilità dato dalla libera concorrenza" (The Maximum of Utility given by Free Competition, 1894), Pareto considers the effects of variations in production techniques on the collective economic welfare. First, they are determined under conditions of free competition. Second, Pareto proves the theorem that the coefficients of production determined by free competition have the identical value to those obtained by determining the coefficients with the conditions to produce the maximum of utility with the minimum of sacrifice.

Two central points discussed in the applied part of the *Cours* are the so-called Pareto law and the considerations on dynamics.

As regards the first point, in the penultimate chapter of the book, entitled "The Income Curve", Pareto deals with the distribution of wealth. His contemporaries considered this chapter the most original and insightful of the whole work. As Kirman (1987) maintains, it was a pioneering piece of applied econometrics. On the basis of a statistical study of the distribution of wealth in different epochs and countries, Pareto showed that the distribution of income followed a similar pattern for a wide range of countries in the latter part of the nineteenth century. He argued that in all countries and times, the distribution of income and wealth follows a regular logarithmic pattern that can be captured by the formula: $\log N = \log A + m \log x$, where N is the number of income earners who receive incomes higher than x, and A and m are constants. He thus concluded that the laws of distribution of wealth depend on the nature of man and on the economic organization of society. Pareto did not emphasize the fact that theoretically a different optimum is associated with every possible income distribution because he was doubtful whether or not rigorous interpersonal comparisons of ophelimity were possible. Moreover, being confident that the distribution looked quite similar in most societies, he thought that there was little need to discuss alternative efficient points (see Persky 1992).

Pareto addressed the issue of dynamics in Chap. 4 of the second volume. Economic phenomena, Pareto notes, are not static but dynamic: "in the real world the economy is incessantly agitated by fluctuations" (§592). In mechanics, he writes, D'Alembert's principle enables us to study the dynamic state of a system, but in political economy "we can only perceive of an analogous principle" (§586) with the consequence that, instead of considering the dynamic equilibrium, we must substitute a consideration of a series of static equilibria. This method of successive equilibria as a first approximation to dynamic analysis corresponds to Walras's method of variable equilibria. Pareto continues by maintaining that the theory of economic crises can offer an example of dynamic study. In Chaps. 2 and 4 of the second volume of the *Cours*, Pareto analyzes what he defines as the rhythmic movements of economic aggregate. In Chap. 2, he considers the movement in selling prices around production

costs. He imagines a continuous line representing the state in which entrepreneurs make neither profits nor losses. Entrepreneurs are forced to reduce their costs of production in order to obtain profits, which are only temporary because competition removes profits. In Chap. 4, Pareto considers crises. Crisis, he writes, is the consequence of economic vibrations. These vibrations oppose each other and crisis occurs when they become synchronous. These movements depend on objective circumstances—inventions that modify the value of coefficients of production, changes in consumers' tastes or fashion and, above all, the psychological fluctuations of optimism and pessimism which characterize human nature. Pareto's representation of the business cycle makes use of the monetary-statistical studies of the French doctor and statistician Clément Juglar (1819–1905) and others: in the phase of expansion, an increase in consumption induces entrepreneurs to increase production. There follows an increase in saving, which is transformed into capital and credit. Concentrated in growing sectors, this determines a cumulative increase in production and investment throughout the entire economic system. Production growth becomes excessive at a certain point, giving rise to losses and then a fall in production. Waves of optimism and pessimism intensify these fluctuations. Pareto concludes the chapter by asking whether it would be beneficial to abolish fluctuations, if it were possible: his conclusion is that such a movement is a sign of vitality of the economic organism, so we should mitigate the excesses of acute crisis rather than abolishing the movement completely.

Pareto's Economics: The *Manuale di Economia Politica*, 1906

Conceptual Issues: From the Cardinal to Ordinal Utility

Immediately after the *Cours*, Pareto began a period of revision of his theory, starting from his dissatisfaction with the measurability of utility. Pareto had initially accepted Walras's argument that utility was measurable hypothetically but not in practice, but he then understood that from his methodological point of view this argument was theoretically

unsatisfactory. In the period 1898–1900, he found a more satisfactory alternative. As he wrote in his *Sunto di alcuni capitoli di un nuovo trattato di economia pura* (Summary of Several Chapters of a New Treatise on Pure Economics), published in the *Giornale degli Economisti* (1900):

> Until now, in order to establish economic doctrines, we went back to choice. Choices have been explained as man's aim to achieve maximum pleasure…. The point of equilibrium is obtaining by expressing mathematically the conditions which enable the individual to enjoy the maximum pleasure compatible with the obstacles he meets…. The use of this point of view forces us to consider pleasure as a quantity. And this is what the economists who have established pure economic theories have done, and what we ourselves have done in the *Cours*, but we must admit that this is not a thoroughly rigorous method. (Pareto 1900, p. 221)

However, Pareto finds, the measurability of utility is not necessary to explain consumer behavior. He writes:

> In reality and in most general way, pure economic equations simply express the fact of a choice, and can be obtained independently of the notion of pleasure and pain. This is the most general point of view and also the most rigorous…. For us, it is sufficient to note the fact of individual choice, without investigating the psychological or metaphysical implication of such a choice…. We do not inquire into the causes of men's actions: the observation of the fact itself is sufficient…. Pure economics equations and their consequences exist unchanged whether we start from the consideration of pleasure as a quantity, or we limit our investigation…exclusively to the fact of choice. (ibid., pp. 221–224)

To develop his theory of utility, Pareto makes use of Edgeworth's indifference curve concept. Edgeworth (1881) had assumed that the utility function was measurable and derived the indifference curves from it. Conversely, Pareto begins with indifference curves that are provided directly by experience. By interpolating among various points in the series of consumption of goods contained in the same indifference set, he writes the equation $f(x,y) = 0$, which represents the indifference curve on the Cartesian plane. A parameter is associated with this curve. An

arbitrary index is assigned to each of *n* indifference curves on the plane. Pareto next obtains an index surface—a surface in three-dimensional space—whose height represents an index of preference in the choice. The individual is not free to proceed in the complete satisfaction of his tastes but he is restricted by obstacles. The tangent point between the 'path' of obstacles and a curve of indifference represents the consumer's point of equilibrium.[7]

This process of revision culminated in the *Manuale di economia politica* published in 1906, and in 1909 in its enlarged French edition, the *Manuel d'économie politique*. It carried pure economics to the highest stage of development yet reached. As Schumpeter (1954, p. 861) wrote, it was based on Walras's work but "deserves to be considered a new creation" where equilibrium was seen as a sort of balancing between tastes and obstacles rather than the "demand-and-supply" functions of Walras's system. As Koopmans (1957) was to write many years later:

> It is worth pointing out that in this particular study our authors have abandoned demand and supply functions as tools of analysis, even as applied to individuals. The emphasis is entirely on the existence of some set of compatible optimizing choices…. The problem is no longer conceived as that of proving that a certain set of equations has a solution. It has been reformulated as one of proving that a number of maximizations of individual goals under interdependent restraints can be simultaneously carried out. (Koopmans 1957, p. 60)

The *Manuale* is organized as follows. The first two chapters give a view of the scientific status of the social sciences. Chapter III, "General Concept of Economic Equilibrium", is an introduction to the idea of equilibrium seen as a sort of balancing between tastes and obstacles. In Chaps. IV (tastes) and V (obstacles), the problem of the individual is reduced to one of constrained optimization in consumption and production. Consumers follow paths of ascending utility until they are brought to a halt by the resistance of the obstacles. Producers seek profit but face

[7] The analogy with Fisher's formulation in *Mathematical Investigations* is evident. As a matter of fact, Pareto's position is analogous to that affirmed by Poincaré (1901, in Jaffé 1965), as Edgeworth (1915) recognized.

technological constraints. Chapter VI, "Economic Equilibrium", discusses the efficiency properties of the system's general equilibrium. It contains the first theorem of welfare economics. The following chapters (VII–IX) deal, sometimes summarily, with different economic problems: population in relation to the labor market, land and capital, saving, rate of interest, and money. The last chapter is devoted to concrete economic phenomena discussed in the two preceding chapters. The appendix contains Pareto's basic contribution to the theory of general equilibrium. It was rewritten for the French edition of 1909 as a result of the eminent Italian mathematician Vito Volterra's (1906) comments on the Italian edition.

A New Formulation of General Economic Equilibrium

The Mathematical Appendix to the *Manuale di economia politica*, enlarged in the 1909 French edition, together with the entry "Economie mathématique" (Mathematical Economics) in the *Encyclopédie des Sciences Mathématiques* (1911), is Pareto's original contribution to the theory of general economic equilibrium and to the 'maximum of society's ophelimity' (now called Pareto optimality).

The great innovation is the idea of the economic equilibrium as the result of the opposition between people's tastes and the obstacles they face in satisfying them. Every individual attempting to satisfy his tastes encounters various kinds of obstacles—the tastes of people he makes contracts with, the quantitative limitations, the unavailability of a good in space and time, the social organization, and so on. Pareto's theory of tastes starts from Edgeworth's indifference curves and frees them of all their hedonistic features following the lines developed in the *Sunto* (1900). Within this framework, the study of equilibrium is pushed to the highest abstractness and generality. The material Pareto covers in Chaps. III–VI is supplemented in the 'Mathematical Appendix'. In turn, the entry "Economie mathématique" (*Mathematical Economics*) complements the 'Mathematical Appendix', covering the same ground more precisely.

"Economie mathématique" is the definitive summary and ultimate refinement of the Paretian mathematical analysis. Pareto's point of

departure is this: an infinite number of psychologically equivalent sets can be made to correspond to each set x, y, z…of quantities consumed. This is the origin of the concept of the index function, $\varphi = \varphi(x, y, z\ldots)$, defining an indifference surface. Pareto first discusses the notion of index function, or ordinal utility, and then goes on to discuss cardinal utility.

Here and in the Appendix to the *Manuel*, two other important theoretical points are discussed: the general theory of supply and demand and the theory of maximum efficiency. Concerning the general theory of supply and demand, Pareto extends the field of mathematical economics. He examines how to determine the equilibrium of exchange under various conditions: in free competition, with fixed and with variable prices, as well as in monopolistic competition and monopoly. He considers the equilibrium of production in different regimes—in free competition, in a monopoly, and in a collectivist regime. Concerning the theory of maximum efficiency, Pareto puts it in its definite form. He defines maximum efficiency as a situation where the index function of one individual cannot be increased unless the index function of another is decreased. Pareto demonstrates—albeit incompletely—that the state of maximum efficiency and the state of equilibrium under perfect competition are one and the same thing. Consequently, a collectivist economy and an economy based on private property would both have to solve the same problems in the same way in order to achieve a situation of maximum efficiency. However, according to Pareto, this equivalence is ideal and not workable in practice.

Political Economy and Sociology: Pareto's *Trattato di sociologia generale*, 1916–1917

In 1916, Pareto published his *Trattato di sociologia generale* (in 1917 in a French edition), the result of lengthy work. The starting point of its analytical construction can be dated to 1897, when Pareto accepted a teaching position in sociology at the University of Lausanne. In the inaugural address for his new course (Pareto 1897b), Pareto identified the aim of sociology among social sciences. After defining sociology as the science that "considers social phenomena as a whole and in their reciprocal

interactions", he declared that the aim of sociology is to inquire into "the various concepts of social phenomena which individuals develop", without omitting the causes of the errors, for example, those very common ones "which consist of *a priori* conceptions of phenomena" (ibid., p. 138).

Political Economy and the Other Social Sciences: A New Line of Inquiry

The fundamental point of Pareto's sociological analysis is the recognition that man is a complex being and that "reason is not of help in human action: only emotions, passions, interests move it" (Pareto, letter to Maffeo Pantaleoni, 5 February 1898). Following this new line of inquiry, Pareto quite rapidly arrived at the conclusion that "it is difficult to separate economics from the other social sciences" (Pareto 1907, p. 295). This statement is the crucial turning point of Pareto's thought around 1907. He became increasingly aware of the complexity of the economic issue and the difficulty of dealing with it: the following statement in Pareto's *Discours du Jubilé* (*Jubilee Address,* 1975a [1917]) probably stems from his thinking in that period:

> At a certain point of my researches in political economy I arrived at a dead end. I saw the experimental truth but I could not reach it. Several obstacles stopped me: among the others, the mutual dependency of social phenomena, which does not allow complete isolation of studies on the different types of these phenomena, and opposes the indefinite progress of one of them if this is deprived of the help of others. (Pareto 1975a [1917], p. 67)

Pareto's economic research until then had been grounded in the idea that economic theory is a first approximation in the construction of the science of society, following the method of successive approximations, but the evolution of Pareto's research, which followed the experimental method, brought him into collision with the impossibility of reaching the experimental truth. This persuaded him that he had arrived at "a dead end" because, as he writes in the 1917 passage quoted above, different types of social phenomena cannot be studied in isolation, separating

homo oeconomicus from *homo politicus*, from *homo religiosus*, and so on: in other words, it is not possible to make a clear-cut separation among disciplines in the field of social sciences. The mutual dependency of social phenomena, Pareto emphasizes, cannot be grasped and examined in this way.

In particular, Pareto writes, "there is no doubt that very often the conclusions of economic theories are not verified…. How to overcome this difficulty?" Pareto suggests three possible ways out:

> We can fully repudiate economic science…. We can resign ourselves to this lack of correspondence and say that we are looking for not what is but what should be…. Lastly…we can investigate whether the lack of correspondence results from the fact that some effects, studied in a separate way, could be modified by other effects that we have ignored. (Pareto 1975a [1917], pp. 67–68)

In his *Trattato di Sociologia* Pareto chose to follow the third path.

A New Methodological Turning Point: The Adoption of a Holistic Approach

The *Trattato di Sociologia* is a methodological turning point in Pareto's research. He became aware of the inadequacy of the method of successive approximations beyond a certain level of complexity. He passed from the method of successive approximations—legitimate and effective if used within specific disciplinary fields where the level of complexity is limited—to a holistic approach dealing with the entire social phenomenon in its full complexity. In other words, the main issue is no longer that of continuously refining and extending a theory within a single discipline but of constructing a new paradigm appropriate for the level of complexity to be addressed. In this sense Pareto, in his *Trattato*, brought about a further scientific revolution in economics after that of the late 1890s. Hence, we can say that the *Trattato* arises from an economics problem, viz. the failure of the program of economic theory founded on the hypothesis of *homo oeconomicus* and on the associated method of inquiry,

that is, successive approximations. Observation and history demonstrated to Pareto the scant relevance of an economic theory based on the assumption of perfect rationality and the limits of the method of successive approximations. In §2022 of the *Trattato*, Pareto explicitly recognizes the limits of economic science and explains the reasons why, to establish the science of society, it is necessary to create a *new* sociology, of which economic science would be only a part with a lower level of social complexity. Pareto writes:

> A number of economists today are aware that the results of their science are more or less at variance with concrete fact, and are alive to the necessity of perfecting it. They go wrong, rather, in their choice of means to that end. They try obstinately to get from their science alone the materials they know are needed for a closer approximation to fact; whereas they should resort to other sciences and go into them thoroughly—not just incidentally—for their bearing on a given economic problem…'economic principles' are less important to the economists than the reciprocal bearings of the results of economics and the results of the other social sciences…paying no attention to such interrelations…is one of the main obstacles to the experimental progress of social sciences. (§2022)

A General Theory of Human Action: Logical and Non-logical Actions

The aim of the *Trattato* is, indeed, to provide the definitive basis of a general theory of human action. Pareto's starting point is to recognize that individuals do not act in a wholly rational way. He therefore tackles the problem of how to analyze such behavior. The method of inquiry is still the method adopted at the beginning of his theoretical reflection: the logical-experimental method. An important difference in the application of the experimental method in the *Trattato* compared to Pareto's earlier economic works consists in the fact that here the inductive analysis component is strengthened. In Chap. II of the *Trattato* Pareto writes:

> We are following the inductive method. We have no preconceptions, no *a priori* notions. We find certain facts before us. We describe them, classify

> them…ever on the watch for some uniformity (law) in the relationships between them…. We begin to interest ourselves in human actions. (§145)

On examining the social phenomena that "appear in complex form in the concrete" (§842), Pareto introduces the concepts of logical action and non-logical action—logical actions logically connect the means to the end, while in non-logical actions this connection does not exist. Many economists, Pareto writes, saw—or at least glimpsed—non-logical action in their analyses, but they did not construct a theory of them, preferring to assume the theoretical centrality of logical action. An obvious reason for this attitude was, Pareto suggests, that it is easier to develop a theory of logical action:

> We all have handy in our minds the tool for producing logical inferences, and nothing else is needed. Whereas in order to organize a theory of non-logical conduct, we have to consider hosts and hosts of facts, ever extending the scope of our researches in space and time…. In short, for the person who would frame such a theory, it is a long and difficult task to find outside himself materials that his mind supplied directly with the aid of mere logic when he was dealing with logical conduct. (§262)

This can explain the importance assumed by economics among the social sciences. However, its heuristic inadequacy makes it necessary, according to Pareto, to move the economic conception of human behavior forward, to investigate non-logical action, and to 'construct a theory' of it.

Pareto writes: "Many human actions…are performed instinctively, mechanically, in pursuance of habit" (§157). In fact "non-logical actions originate chiefly in definite psychic states, sentiments, subconscious feelings, and the like" (§161): this fact is the logical starting point of the inquiry. Non-logical action is equivalent to the a-logical instinct in animals, which, alongside reason, still exists in mankind, Pareto stresses.[8]

[8] In his elaboration of the logical/non-logical taxonomy, Pareto was inspired by the classification of the French entomologist Jean-Henri Fabre (an "inimitable observer", as Charles Darwin called him) and by the works of the French zoologist Edmond Perrier.

Pareto writes that individuals seek to clothe their actions in a 'logical garb': that is, they tend to transform non-logical conduct into logical conduct by expressing it through moral, religious, or other theories. This process of rationalization can be considered to consist of two components: a constant component (a non-logical nucleus which is the expression of human emotions attributing a symbolic value to the facts) and a variable component (the interpretations given by individuals to justify their actions). In fact, Pareto writes, those who carry out non-logical actions consider them from the logical point of view. Pareto emphasizes the historical significance of these interpretations:

> The study just completed clearly shows the presence of the following characteristics…: 1) There is a non-logical nucleus containing, in simple compound, certain acts, certain words, that have specified effects, such as hurricanes or the destruction of crops. 2) From this nucleus a number of branches, a number of logical interpretations, radiate…. 3) Logical interpretations assume the forms that are most generally prevalent in the ages in which they are evolved. They are comparable to the styles of costume worn by people in the periods corresponding. (§217)

The constant component is called 'residue' and the variable component 'derivation'. Therefore, according to Pareto, at the origin of human action, there are primary impulses and their expression, that is, the residues. They are behaviors which are the result of the joint action of genetic and cultural factors, which Pareto divides into classes and types. The derivations, that is, the false rationalizations of actions, give a logical guise to passions and sentiments. They are what have been called 'ideologies'. Residues and derivations mediate the relationship between primary impulses and actions. This set of forces shapes society.

4.3 The Paretian School of Lausanne

An Overview

Walras formed no personal school. As Schumpeter notes, his professional contemporaries were mostly indifferent or hostile. In France he found a few followers, including Albert Aupetit (1876–1943) and Etienne Antonelli (1879–1971). Aupetit, whom Walras considered his first disciple, received a degree in law in 1901 and then entered the research department at the Banque de France, where he served as secretary-general from 1920 to 1926. He taught economics at the École des Hautes Etudes and the École Libre des Sciences Politiques. Antonelli, after receiving a law degree in 1905, was appointed *chargé de cours* at the University of Montpellier Faculty of Law in 1906 and then at the University of Paris in 1910. In 1919, he became professor of history of economic theories at the University of Lyon, and in the 1930s, after a period of engagement in political activity, he returned to teaching at the University of Montpellier. In Italy, as noted earlier, Barone can be considered an early follower, as well as Bortkiewicz in the German-Russian area. In the United States, two first-rank followers were Irving Fisher and Henry Ludwell Moore.

However, we can speak of a Lausanne school in the fullest sense only with Pareto. It was essentially confined to Italy. In fact, the reaction to Pareto's work was relatively limited in France: his students Pierre Boven and Antonio Osorio published two essentially didactic books, *Les applications mathématiques à l'économie politique* (*Mathematical Applications to Political Economy*, 1912) and *Théorie mathématique de échange* (*Mathematical Theory of Exchange*, 1913), respectively. In Italy, a few highly talented economists with mathematical aptitude joined him, promoting their ideas and, in limited cases, also developing them. An important area of development, but mainly in the post-war years, was the area of fiscal thought (see McLure 2007). However, in general, as Pantaleoni wrote in Pareto's obituary published for the *Economic Journal*, Pareto indeed had some eminent scholars, such as Barone, but "he had also the bad luck of creating *Epigoni* who only repeat his words, oppose every criticism, would stop the progress of science where he stopped, strain his

theories and use him as a spring-board for themselves" (Pantaleoni 1923, p. 590). These followers included Guido Sensini (1879–1958) and Alfonso de Pietri Tonelli (1883–1952), minor representatives of Pareto's school, as well as Luigi Amoroso (1886–1965), a relatively more original mathematical economist, well known in the international environment. In 1912, the Italian economist Pasquale Jannaccone (see Chap. 6.3) published a harshly critical article, "Il 'paretaio'", stigmatizing the prevailing tendency among Italian economists to parrot the methodological canons of the Lausanne School: criticism is leveled at many, but the main target of his attack is Sensini.

The fact is that at that point the mathematical system of pure static economics seemed practically complete. This was the stance taken by authors of the Paretian school like Pasquale Boninsegni—Pareto's pupil and successor to the chair in Lausanne (Mornati 1999)—Eugen Slutsky and Enrico Barone, whose theoretical contributions were the most relevant.

Theoretical Contributions from the Paretian School

Enrico Barone (1859–1924)

According to Dooley (1998), Enrico Barone completed the triumvirate of the school of Lausanne. He was born in Naples on December 22, 1859, and educated at the *Accademia militare*. He pursued a career as an army officer, rising to the rank of colonel on the general staff. He became an authority on military history and strategy, on which he wrote extensively. He taught at the *Scuola superiore di guerra* in Turin. His first papers on economics appeared while he was still an active officer. Between 1894 and 1896, he wrote several important articles on consumer demand, consumer surplus, and production and distribution in the *Giornale degli Economisti*. His review article on Irving Fisher's *Mathematical Investigations in the Theory of Value and Prices* (Barone 1894) was important in the dissemination of Fisher's early work in Italy. His 1896 article "Studi sulla distribuzione" (Studies on Distribution) contributed to the marginal theory of productivity, as recognized by Wicksell. Since 1906, he devoted

himself mainly to political economy. In 1908, he was appointed to a chair in political economy at the *Istituto superiore di studi commerciali e amministrativi* in Rome. In the same year, he published a treatise, the *Principi di economia politica* (*Principles of Political Economy*). In his works Barone provided many contributions to the notion of perfect competition (see Mosca and Bradley 2013) as well as in the field of public finance. He was a nationalist, strongly critical of democracy and socialism, in favor of Mussolini's rise but against dictatorship. He died in Rome on May 14, 1924.

His most famous contribution was "Il Ministro della Produzione in uno stato collettivista" published in *Giornale degli Economisti* in 1908: it owes its late fame to Friedrich Hayek who published it in English in his *Collectivist Economic Planning* (1935) under the title "The Ministry of Production in the Collectivistic State". Barone refers to Pareto's work, but he diverges from it in that he dismisses the concept of utility and indifference curves and bases his analysis entirely on observable data—prices and quantities. Barone begins by demonstrating the conditions of general equilibrium under free competition. Then he deals with a collectivist regime where a minister of production seeks the maximum economic welfare for society. The data in a collectivist economy are the same as the data in a competitive economy, that is, resources, production techniques, and consumer tastes. What is different, however, is the ownership. The minister must decide what should be produced, where capital should be invested, how enterprises should be managed and to whom the income should be distributed. The system of equations under a collectivist state can be represented by a system under free competition with only a few modifications. The minister cannot know what prices to establish a priori. He must resort to trial and error like the Walrasian auctioneer. In his analysis Barone shows, substantially in the Paretian way, that the conditions required for a collective maximum under socialism are the same as the conditions required for general equilibrium under free competition.

Barone's contribution was at the basis of the 'Socialist calculation debate' in the 1920s and 1930s. Barone's position, later taken up by Oskar Lange, was that it was, indeed, possible in a collectivist state for a planning agency to calculate prices in order to achieve maximum efficiency.

Pasquale Boninsegni (1869–1939)

Pasquale Boninsegni was born in Rimini on October 10, 1869. He studied mathematics at the universities of Bologna and Torino but did not graduate, probably due to his increasing political commitment to the Socialist Party. In 1900, sentenced to prison because of his political activities, he chose exile in Switzerland, in Lausanne. Here, he came into contact with Pareto and started working on the theory of general economic equilibrium under his guidance. He became Pareto's assistant and then, in 1907, his successor to the chair of political economy. He was very active in the university, where he taught not only political economy but also sociology, statistics and public finance. After the First World War, he joined the Italian Fascist Party. He died on October 16, 1939, in Lausanne.

His main publications were *Précis d'économie politique* (*Handbook of Political Economy*, 1910) and *Manuel élémentaire d'économie politique* (*Basic Handbook of Political Economy*, 1930), written with the aim of simplifying Pareto's theory. Theoretically his contribution was modest, with the exception of the article "I fondamenti dell'economia pura" (Basic Principles of Pure Economics) from the *Giornale degli economisti* (1902). It was a review of the Walrasian economist Albert Aupetit's *Essai sur la théorie générale de la monnaie* (1901). Boninsegni focuses mainly on Aupetit's theory of general economic equilibrium. He criticizes Aupetit for insisting on emphasizing the problem of measuring utility. Boninsegni interprets his insistence as proof that economists and mathematicians were indifferent to Pareto's new ideas. He restates Pareto's theory of choice in an innovative way in order to show that it is scientifically superior to the theory of the "quantity of pleasure". Relying on Pareto's "Sunto", Boninsegni first defines the 'choice curves'—analogous to the indifference curves. He then writes that the preference criterion between two pairs of quantities of goods consists of the positive difference of these quantities. Pareto's concept of obstacle is represented by the budget line. The equilibrium of exchange is simply expressed as the equality between dx/dy, the first derivative of the choice function, and p, the first derivative of the budget line. Boninsegni emphasizes that this type of analysis of

exchange is applicable to any phenomenon of transformation. Lastly, he contrasts the theory of utility to the theory of choice. The contrast can be expressed in geometrical terms: the theory of utility assumes that the pleasure surface is known and derives the indifference curves as the point of departure for the analysis. In analytical terms, in the theory of choice a differential equation represents the indifference curve, and this equation does not contain the quantity of pleasure.

Eugen Slutsky (1880–1948)

Eugen Slutsky was born on April 7, 1880, in a Russian village not far from Moscow. He studied in the Department of Physics and Mathematics at the University of Kiev. In 1901, he was expelled from the university and drafted into the army because of participation in student revolts. From 1902 to 1905, he studied in the engineering department at the Institute of Technology in Munich, Germany. He graduated from the University of Kiev in 1911. He became a member of the faculty at the Kiev Institute of Commerce in 1913, becoming full professor in 1920. He received a degree in political economy from the University of Moscow in 1917. From 1926 on, he was a staff member of the Central Statistical Board in Moscow. He died in Moscow in 1948.

In 1915, Slutsky published a paper—"Sulla teoria del bilancio del consumatore" (On the Theory of Consumer Choice) in the Italian journal *Il Giornale degli Economisti*—that George Stigler called a "magnificent essay" which ended the classical period of mathematical economics on a high note. Slutsky had become interested in the marginalist theory some years before, around 1902–1905 (see Barnett 2011), and the article was written as a development of Pareto's work. First, Slutsky maintains that economics should be put on a firm basis. To do so, "we must make it completely independent of psychological assumptions and philosophical hypotheses". Slutsky states the basis of his own general theory by giving a definition of the utility of a combination of goods as a quantity possessing the property of assuming greater or lesser value according to the degree of preference expressed by the individual, and by setting out the assumptions concerning the utility function so defined. Slutsky assumes

that the increment of utility obtained by moving from one combination to another is independent of the path of movements. He then offers an empirical test of the validity of this assumption. He shows that a full knowledge of demand and expenditure functions in general is not sufficient to determine whether the marginal utility diminishes. Furthermore, he splits the total effect of a price change into two parts, the income effect and the substitution effect.

Unfortunately, this essay, published in wartime, did not circulate beyond its Italian-language readership until it was rediscovered internationally in the 1930s (Allen 1936).

Mathematical Economics in the Paretian Era

In the first fifteen years of the new century, mathematical economics steadily established itself as an important aspect in the different schools of economics. This is borne out by the publication of many textbooks of mathematical economics (mostly in French), which are popularizations or abridgments of Walras's and Pareto's works. These texts include W. Zawadski's *Les mathématiques appliquées à l'économie politique* (*Mathematics Applied to Economics*) (1914), E. Antonelli's *Principes d'économie pure* (*Principles of Pure Economics*) (1914), J. Moret's *L'emploi des mathématiques en économie politique* (*The Use of Mathematics in Economics*) (1915), and A. Osorio's *Théorie mathématique de l'échange* (*Mathematical Theory of Exchange*) (1913). Mathematical economics was included in important histories of economic thought where its theories were illustrated, including Gide and Rist's *Histoire des Doctrines économiques* (History of Economic Theories) in France (1909) and Schumpeter's *Epochen der Dogmen- und Methodengeschichte* (*Economic Doctrine and Method: An Historical Sketch*) in the German-speaking world (1914). The inclusion of mathematical economics in Palgrave's prestigious Dictionary dates from the 1890s. Bowley's *Mathematical Groundwork of Economics*, which presented 'in a coherent form' the mathematical treatment of the economic theory developed up to that point, was to appear a few years later in 1924.

On the threshold of the First World War, mathematical economics could be considered as an accepted, although small, school in economics (see Marchionatti 2004). In the fifteen years before the war, under Pareto's leadership, mathematical economics went through a dramatic theoretical change. It rid itself of one of the pillars of the early pioneers' construction, the hedonistic hypothesis. The other pillar, the mathematical instrument, continued to be an issue in an endless controversy over the correct extent of its use. However, it is important to note that the earlier skepticism about applying mathematics to economics was largely reduced, though not eliminated. This favorable attitude contributed significantly to mathematical economics' acceptance by the economic and scientific communities. By then, however, the great expectations of the 1870s had dimmed. It was generally recognized that the field of mathematical economics is confined to static equilibrium. In this limited field, it was maintained, mathematics' tools of expression and reasoning offer an excellent but unique and general way to shed light on economic interdependence in a stationary state, which would be able to represent the more general trends of the actual phenomena in their entirety. Mathematical economics is able to specify the conditions and limits of the theorems and prove them rigorously. The discoveries of mathematical economics must not, however, blind economists to the fact that their theories are but static equilibrium theories. They do not take dynamic changes into account. This serious failure was partly counterbalanced by the belief that mathematical economics should still be considered in its infancy. However, it was increasingly recognized that mathematical instruments did not permit us to realize Walras's dream of a social astronomy. The main defect of mathematical economics, it was said, was its extreme abstractness, particularly its treatment of general equilibrium. In his *Les mathématiques appliquées à l'économie politique* the Polish statistician and economist Wladyslaw Zawadzki (1885–1939) summarized this issue. He wrote that pure mathematical economics is a highly abstract discipline and consequently its theorems are true in conditions that are very far from reality (perhaps much too far). He also stated that it would be incorrect to conclude that pure mathematical economics was without usefulness for applied economics. In fact, it performed two fundamental services. First, it cleared the theoretical ground of false or imprecise

theories and enabled people to effectively criticize non-mathematical theories. Second, it was able to specify the conditions of validity of theorems. On the other hand, Zawadzki recognized that its abstractness made it extremely difficult to apply its conclusions to explaining real facts. Actually, mathematical economics was in a situation that was more unfavorable than that of rational mechanics, and the problem of defining the properties of mathematical functions was considered particularly serious. Zawadzki marked the great difference between how mathematics is applied to economics and to mechanics: he writes that in mechanics, it is always possible to pass from general formulae to actual phenomena, gradually specifying the characteristics of the functions in these formulae, but this is different in economics. Pareto was well aware of these problems: as we have seen, in his *Jubilee Address*, he expressed his dissatisfaction with economic theory's limited ability to explain real economic phenomena. Actually, the main issues under discussion in the early years of the new century were theory's excessive abstraction and the unreality of its assumptions and models rather than its formal aspects. In fact, these economists generally seemed not to share the preoccupation with the formal establishment of equilibrium that was to dominate mathematical economics later. They are chiefly interested in the problems connected with the relationship between mathematical expression and experimental reality.

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5

Economics in Berlin and Vienna: A Mosaic of Theories and Research Programs

5.1 Prologue

Fin de siècle Berlin and Vienna were the main cultural centers of Central Europe. Modernization and urban growth started later in this part of Europe but then advanced more quickly than in Western Europe. The two cities were the emblem of this change: they had been rapidly modernizing, industrializing, and expanding in population (both cities increasing from around 400,000 inhabitants in the mid-1800s to more than 2 million in 1910). In both, the social conflicts that accompany such rapid change were played out against the backdrop of a flourishing cultural scene and vibrant intellectual life.

After the unification of Germany in 1871, Berlin was the capital of the German empire, whose population reached 56 million at the turn of the century, passing from a predominantly rural to an urban demographic base. Vienna was the center of the Habsburg Empire (an empire of 50 million inhabitants), a cosmopolitan, multicultural, and multilingual city. It was a mixture of classes and nationalities, faiths, and ideologies facilitated by the liberal constitution of 1867 that enshrined the freedoms of movement, religion, press, and equal rights for all the people of the

R. Marchionatti, *Economic Theory in the Twentieth Century, An Intellectual History - Volume I*, https://doi.org/10.1007/978-3-030-40297-6_5

empire. The two cities saw a creative outburst in both the arts and the sciences. In fact, scholars have emphasized the remarkable concentration of innovative figures, the originality and significance of their work, and the fertility of the cultural environment (see Johnston 1972; Janik and Toulmin 1973; Schorske 1980; Beller 2012).

Both countries, with Vienna and Berlin as the main points of aggregation, also made many original contributions in economics, giving rise to a confrontation between a variety of alternative approaches. In an article published in the *Journal of Political Economy* in 1893 after completing his studies during two semesters at the universities of Berlin and Vienna, the American economist Henry R. Seager (1870–1930), then professor of political economy at Columbia University, wrote: "Berlin and Vienna are, at the present time, magnets, attracting to themselves economic students from all countries" (Seager 1893, p. 239). In Berlin, the Historical School had a well-established presence with its leader Gustav Schmoller as well as Adolph Wagner. Vienna had Menger and his followers Böhm-Bawerk and Wieser, who established the so-called Austrian School. According to Seager, the main, or, rather, the vital, question discussed in Berlin and Vienna was that of the proper method to be employed in economic investigations, an intellectual battle fought with great vigor and animosity, as mentioned earlier, in the famous *Methodenstreit* that began in the early 1880s with the polemical confrontation between the Viennese Menger and the Berliner Schmoller. However, though the methodological approach was the key question, these scholars made extensive contributions to theory and analysis. Later, the new generations, represented by scholars like Sombart, Weber, and Spiethoff in historical economics, and Ludwig Mises and the preeminent figure of Joseph Alois Schumpeter of the Austrian School, revived and enriched the debate.

However, the scene was not occupied only by these two actors and their controversies: in both places, the intellectual richness of the environment was increased by the emergence, after the publication of the second and third volume of *Das Kapital*, of a lively controversy on Marx's work, involving economists and philosophers. It was accompanied by important theoretical contributions, which represented a 'return to classics': in Vienna the Austro-Marxist group, where Rudolf Hilferding was

the most important economist, and in Berlin the mathematical school of Ladislaus von Bortkiewicz.

5.2 Gustav Schmoller and the Historical School in Berlin and the German-Speaking Area

The New Historical School: Introduction

At the turn of the century and until the outbreak of the war, German economic thought was dominated by the Historical School.

Gustav Schmoller and Adolph Wagner in Berlin—two leading figures, but methodologically quite different (see Backhaus et al. 2018)[1]—Lujo Brentano (1844–1931) in Munich, Karl Bücher (1847–1930) in Leipzig, and Georg Friedrich Knapp (1842–1926) in Strasbourg were its most important representatives. The younger German Historical School, as the second generation was called, was led by Gustav von Schmoller, who was German academia's most influential economist in the latter part of the nineteenth century and the beginning of the new century. As Schumpeter writes, the younger Historical School did not merely elaborate on the ideas of the older school:

> The 'historical point of view' of which Roscher and Knies talk is something quite different from that of Schmoller and his pupils. The former above all involves ideas in the field of the philosophy of history which are lacking in the latter…. The point of view of the members of the younger historical school can be characterized by their desire to eliminate these non-historical conceptions in the interest of unbiased and detailed historical study. (1954[1912], pp. 156–157)

[1] Adolph Wagner (1835–1917) cannot be considered a member of the Historical School *strictu sensu*. He was in agreement with Schmoller about the importance of institutions in the economy and the role of the state, but he did not assign as much to historical investigations. Considered one of the founders of public finance in Germany, he is well known for the so-called Wagner's law, or law of increasing state spending as income growth expands.

The economists of the younger school, hostile toward the classical tradition and marginalist economics—as shown in the *Methodenstreit* between Schmoller and Menger—strongly emphasized historical relativism against extreme abstractions like *homo oeconomicus* and pure theoretical work. Nevertheless, they were not, at any rate, in principle, anti-theoretical, but political economy had to be, in their perspective, a historical political economy based on an organic notion of economy, and an essentially empirical-based science. In his 1926 essay on Schmoller, Schumpeter interpreted the *Schmollerprogram* (the Schmollerian research program) as an approach to a joint research between theory and history which he called economic sociology, and considered the Schmollerian economist essentially a historically minded sociologist.

In the last decade of the nineteenth century, a new generation emerged that founded its theories to a large extent on the ideas of the Historical School represented by Werner Sombart (1863–1941), Max Weber (1864–1920), and Arthur Spiethoff (1873–1957). Following Schumpeter (1954, p. 815; see also Krabbe 1996), we may call them the representatives of the Youngest Historical school, although their ideas were quite different in some crucial methodological respects from those maintained by Schmoller and his followers.

Gustav Schmoller

Schmoller was the undisputed leader of the German Historical School and, in his time, one of the most respected economists in the world. His ambition "was to make economics interesting and relevant, useful for practical purposes in politics and business" (Backhaus, 1993–1994, p. 3). For this reason, he has been compared with Marshall (Schumpeter 1926; Backhaus 1993–1994), although the theoretical-analytical dimension is unquestionably more important for the English economist. Schumpeter (1926, p. 387) writes:

> The comparison with Marshall is obvious. Though because of their surroundings and training they turned to different tasks, they belong to the same world. Marshall's procedure also may be summarized as 'facts and

> inferences'. He, too, though a man of science and a teacher of positive achievement, derived his impulse subjectively from his social sympathies, and saw the significance of his work in its service to society. (ibid.)

As regards the last point, "his work in its service to society", we must stress that Schmoller was considered a father of the welfare state (see Balabkins 1993–1994). And like Marshall, he considered individuals' action to be determined by a series of motives, involving both egoistic and non-egoistic elements; moreover, individuals were considered to be forged by the cultural context. Schmoller's approach was historical and culturalist. He considered historical-empirical research necessary in order to avoid what he regarded as undue abstraction, and economy as incorporated in human culture. Schmoller placed the religious and moral system at its basis, seeing ethical norms as the institutional framework of a society. To implement his approach, he and his colleagues collected a mass of empirical data, which he attempted to synthesize provisionally in his *Grundriss*, the acme of his work. Unlike Marshall, however, he was substantially unable to offer an adequate analytical framework.

Biographical Note

Gustav Schmoller was born on June 24, 1838, in Heilbronn in Northern Baden-Württemberg. His father was a civil servant; his mother came from a family of scientists—and his grandfather influenced Gustav's early education. He attended the University of Tübingen—where he studied economics, law, and history—and graduated in 1860. After a period of work in the public administration, he obtained an appointment as a professor of political economy at the University of Halle in 1864, followed in 1872 by a professorship at Strasbourg. In the same year he organized the Eisenach conference on the 'Social Question', bringing together most of the academic economists in Germany, as well as representatives of trade unions, political parties, and businesses. It led to the foundation of the *Verein für Socialpolitik*, the association of professional economists in Germany, of which he was chairman for many years.

In 1877 he assumed the editorship of *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reiche*, a journal founded some years before by the jurist Franz von Holtzendorff, which, in 1913, changed its name to *Schmollers Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft*. From 1878 until 1903, he edited a series of monographs entitled *Staats- und sozialwissenschaftliche Forschungen*. In 1879 he published one of his most important historical studies on the history of the weavers' guild of Strasbourg. In 1882, he became professor in Berlin, occupying the principal chair in economics in that university until his retirement in 1913, when he was succeeded by his pupil Heinrich Herkner (1863–1932). His influence was immense, both as a teacher and in social legislation, essentially through the *Verein für Socialpolitik*.

The 1880s were marked by his controversy with Carl Menger on method. In 1883 he wrote his unfavorable review (Schmoller 1883) of Menger's book *Untersuchungen über die Methode der Socialwissenschaften und der politischen Oekonomie insbesondere (Investigations into the Method of the Social Sciences with Special Reference to Economics)*, which attacked the methods of the Historical School, and this led to the *Methodenstreit* controversy. Between 1900 and 1904, he published his magnum opus, *Grundrisse der Allgemeine Volkswirtschaftslehre* (*Outline of General Economic Theory*), which he revised in the last years of his life (this revised version was published in 1918).

He died in Bad Harzburg, in Lower Saxony, on June 27, 1917, during the war, on the threshold of his eightieth year.

Schmoller's Historical Economics: *The Grundriss der allgemeinen Volkswirtschaftslehre* (*Outline of General National (Political) Economy*), 1900–1904

Writing in the pages of the *Quarterly Journal of Economics* in 1901, Thorstein Veblen welcomed the first volume of Schmoller's *Grundriss* as "an event of the first importance in economic literature" (Veblen 1901, p. 69). It deals with a mass of subjects and problems treated with reference to many social sciences, from economics to sociology, archeology, and ethnology, adopting a multidisciplinary approach, in the awareness

of the complexity of social problems. This outline of economics had little in common with what is usually termed economic science in the marginalist world, with the partial exceptions, among his contemporaries, of Marshall, as noted earlier, and Pareto, whose *Trattato di sociologia* stressed the need for an interdisciplinary approach (see also Backhaus 1993–1994). From the methodological standpoint, Schmoller's program starts by observing and describing economic phenomena, classifies them according to a coordinated system, and then attempts to find causal explanations for their interrelations. Schmoller emphasizes the importance of accumulating historical studies because economics must deal with a variety of complicated phenomena, and it is not sufficiently advanced to allow the use of abstract-deductive methods and the formulation of laws. Schmoller does not deny theory in general, but he maintains that there is a need for many empirical studies before theories about complicated phenomena can be productively formulated from a historical perspective.

The *Grundriss* is divided into two volumes, published in 1900 and 1904 respectively. The first volume consists of an introduction and two books. The introduction, which offers Schmoller's view of the system of science, is in three chapters which deal with the conception of economic life; the psychical, ethical, and legal basis of social life; and the historical development of economics and its method. The second chapter analyzes the goals of the social community and the means of community life, such as custom, convention, morality, religion, and law; the significance of language and writing; human wants and human instincts; economic virtues, self-interest and greed, the ethical components of social life. The third chapter deals with the historical development of economic thought and its method, and it contains a critique of the classical doctrine: Schmoller charges that classical economists did not pay enough attention to the historical causes and sources of wealth; that, by stressing only the profit motive, they ignored the prevailing social institutions and the relationship between economic phenomena and culture, law, religion, and institutions. He emphasizes that economic analysis must analyze the institutional dimension and use psychology and many social sciences simultaneously, and that both inductive and deductive methods are necessary in political economy, although "the simpler sciences, like mathematics, mechanics, and astronomy, have already become almost

completely deductive, whereas the simplest phenomena of economics do not lend themselves successfully to purely deductive treatment" (Schmoller 1900–1904, p. 111). So he writes:

> A single method of economic observation can, of course, not exist due to the complexity of the subject matter. Every aspect requires those methods that lead us farthest in producing the most precise, the truest and most complete conception of reality i.e. of economic facts. (ibid., p. 104)

To grasp the interdependence and multiple causes of social phenomena, Schmoller emphasizes, economists must acquire knowledge in many fields of social science, as well as statistics and, of course, history. As noted, Schmoller's historical economics is an attempt to contribute to a non-mechanical economics "that is geared to the dynamics of biocultural rather than mechanical laws" (Dopfer 1993, p. 145).

Book I proceeds to take up the general questions of the foundation of economic life. It consists of four chapters dealing with natural resources, people and population, and technology. The first chapter examines the impact of natural conditions on different economies, where Schmoller brings out the complex interactions among nature, culture, and technology. The following chapters deal with races and nationalities, population, and the stages of society, offering a brilliant summary of the findings of the ethnographical research of his times (here, as well as in the following book, the American anthropologist Lewis H. Morgan's work—in particular, *Ancient Society* (1877)—is at the basis of the discussion).

Book II deals with the social institutions of economic life, starting with the household economy. It surveys the evolution of the family up to the rise of matriarchy; the development of patriarchy; the influence of the horde, the clan, and the tribe; and the *oikos*, or traditional household economy; the rise of towns and cities from antiquity to 1800; the evolution of the public sector; and the role of government. He emphasizes that the state guarantees everyone a free field of economic activity but also represents the collective economic interest of a given society. Moreover, he stresses that public and private sectors should be in equilibrium. In conclusion, he considers the social and economic division of labor and the form of business management.

The second volume is devoted to an analysis of the functions of those bodies (family, state, and the others) whose nature and conditions were sketched in the first volume. It is divided into two books. The first, "The social process of the distribution of goods and income", deals, we could say, with the anatomy and physiology of economic organisms and discusses markets and exchange, competition, money, value, and price; wealth, capital, credit, interest and banking, labor conditions, contracts and wages, social insurance, trade unions, and the distribution of income. The second book, "The development of economic life as a whole", covers what Schmoller considers the diseases of the economic system: the ups and downs of economic life as manifested by economic crises; the problem of class conflicts and the economic relations between states and the struggles of nationalism as manifested by commercial policy. Here, Schmoller discusses the development of commercial policies from the oldest times to his own day.

Schmoller's *Grundriss* was an ambitious attempt to develop a theoretical system of economics on the basis of historical knowledge, but its result is controversial: in particular, scholars emphasize the absence of an adequate analytical framework.

Schmoller's School and the Youngest Historical School

Schmoller's Followers

Schmoller led the school "by example as well as by word", Schumpeter (1954, p. 809) writes, and he emphasizes that Schmoller called it a historico-ethical school. In fact, the members of the school had an ethical-political idea of economic progress, centering on social justice. Schmoller's influence is also due to his role as a teacher. In Schmoller's obituary, Epstein wrote:

> Not a State functionary in Germany to-day, between the ages of thirty and sixty, but received his training either directly or indirectly from Schmoller…. Through Schmoller's influence, almost every chair of Economics in the Empire was filled by one of his pupils. (1917, p. 437)

Followers, pupils, or simply fellow travelers made Schmoller's school "the historical school *par excellence*", as Schumpeter wrote. From the methodological and analytical point of view, their contribution consisted essentially of historical monographs and data collection. From the political standpoint, the pursuit of socio-economic reform was the main practical connection between the many members of the school. Their institutional tool of influence was the *Verein für Socialpolitik*, the German association of professional economists founded by economists of the old and young Historical Schools with the main aim of creating a policy-oriented economics in which the state had a major interventionist role. The association was rooted in a series of studies examining the impact of industrial capitalism and free trade policies on the social order. These studies—which called for state intervention to mitigate the pernicious effects of competition on the working class and on the weaker members of society—faced strong hostility from the German parties and press, who denounced their proposals as nothing short of socialism: during the controversy which followed, the German historicists were dubbed *Kathedersozialisten* (lectern socialists), a sarcastic reference to their academic status. The *Verein* was founded in order to organize the criticism of the dominant economic policy and to sway public opinion. The school's main outlet was the *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reiche*: as already mentioned, Schmoller became its editor in 1877, serving for many years until he was succeeded by his former students Hermann Schumacher (1868–1952) and Arthur Spiethoff (1873–1957). In his honor, the journal changed its name to *Schmollers Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft* in 1913.

The Historical School of the second generation consisted primarily of Schmoller's followers, just a few years older than the leader: Johannes Ernst Conrad (1839–1915), Gustav Cohn (1840–1919), Georg Friedrich Knapp (1842–1926), Karl Theodor von Inama-Sternegg (1843–1908), Adolf Held (1844–1880), and Lujo Brentano (1844–1931).

Conrad, after a period as adjunct professor at the University of Jena, was appointed to succeed Schmoller as professor of political economy at the University of Halle in 1874. In 1911, he became the director of Halle's newly established Institute for Co-operative Studies. In his

Grundriss zum Studium der Politischen Oekonomie (Conrad 1896), Conrad presented his contribution to political economy as a practical science, which formulates the social objectives that the state should pursue to solve the social question. Cohn, educated at the universities of Berlin and Jena, became professor of economics at ETH Zurich in 1875, holding the chair until 1884, when he received a professorship at the University of Göttingen. His main contributions were mainly in the field of public finance. Knapp, who studied in Munich, Berlin, and Göttingen, was made director of the Statistical Bureau of Leipzig in 1867. He was appointed assistant professor of economics and statistics at the University of Leipzig in 1869, and in 1874 he became professor of political economy at the University of Strasbourg, where he remained until 1918. He is chiefly remembered for *Staatliche Theorie des Geldes* (*The State Theory of Money*), a book which sets about to build a theory that could encompass indifferently monetary systems based on precious metals or paper money. Inama-Sternegg was a professor of political economy at the universities of Innsbruck, Prague, and Vienna; director of the Bureau of Statistics in Vienna; and president of the Austrian Central Statistical Commission. Held, after receiving his doctorate in 1866, obtained a position at the Prussian Statistical Bureau in Berlin, working under the statistician and economist Ernst Engel (1821–1896). He was later a professor at the University of Bonn. Held served as secretary of the *Verein* from its foundation in 1873 and was one of its most active figures. In 1879, he became professor at the University of Berlin, but he died a year later in a drowning accident in Switzerland, at the age of thirty-six, and his chair was inherited by Schmoller. He wrote an important book on the history of economic policy in England, edited posthumously by G. F. Knapp. Brentano is probably the most famous scholar of this group. He obtained a doctorate in economics, with a thesis on von Thunen's theory, at the University of Göttingen, and qualified for a professorship in economics in 1871 at the University of Berlin. He held teaching positions in many universities—Breslau, Strasbourg, Vienna, and Leipzig—and, most importantly, Munich, from 1891 to 1914. A founding member of the *Verein für Socialpolitik*, he conducted historical research about the trade unions, at times in collaboration with Ernst Engel. Brentano was perhaps

the most liberal of the members of German Historical School and influenced the theoreticians of the social market economy in the interwar period.

The Youngest Generation: Sombart, Weber, and Spiethoff

A Biographical Overview

In the last decade of the nineteenth century, a new generation emerged that built its theories to a large extent on the ideas of the Historical School but also considered other research programs. Its most eminent members were Werner Sombart (1863–1941), Max Weber (1864–1920), and Arthur Spiethoff (1873–1957). They were quite critical of Schmoller's program—in particular, Weber: the differences were expressed in a methodological controversy, the so-called *Werturteilsstreit* (value judgment dispute) between Schmoller and Weber. Although they could be considered a different school in some respects, as suggested by Schumpeter (1954, p. 815; see also Krabbe 1996), who maintained that they "remained faithful to the fundamental principles he [Schmoller] had been foremost in assessing", we can call them the representatives of the Youngest Historical School.

Werner Sombart was born in Ermsleben. He studied law and economics at the universities of Pisa, Berlin, and Rome. In 1888, he received his Ph.D. from Berlin under the supervision of Schmoller—who together with Marx had a major influence on him—and Wagner. His socialist leanings made his academic career difficult: he was given a position at the University of Breslau, but it was impossible for him to obtain a chair in Heidelberg and Freiburg due to the vetoes of the respective governments. Sombart, at that time, was considered a Marxist, to the point that Friedrich Engels said he was the only German professor who understood *Das Kapital*. Sombart also joined the *Verein für Socialpolitik*, together with his friend and colleague Max Weber. In 1902, his magnum opus, *Der moderne Kapitalismus. Historisch-systematische Darstellung des gesamteuropäischen Wirtschaftslebens von seinen Anfängen bis zur Gegenwart* (*Modern Capitalism*) (Sombart 1902), was published in two volumes (he expanded the work in 1916 and added a third volume in 1927): it is a

systematic history of economic development through the centuries. In 1903 he became associate editor of the *Archiv für Sozialwissenschaft und Sozialpolitik* (*Archives for Social Science and Social Welfare*). where he worked with his colleagues Edgar Jaffé and Max Weber. In 1913 he published *Der Bourgeois* (translated as *The Quintessence of Capitalism*) (Sombart 1913), to explain the origins of the capitalist spirit. At last, in 1917, Sombart became professor at the University of Berlin as Wagner's successor. He remained in the chair until 1931 but continued teaching until 1940. In fact, after 1914, Sombart had moved toward nationalism. He died in Berlin on May 18, 1941.

Maximilian Carl Emil 'Max' Weber, as Schumpeter wrote, "was one of the most powerful personalities that ever entered the scene of academic science" (Schumpeter 1914, p. 817).[2] A man of encyclopedic knowledge, he worked in a number of social sciences—law, history, political science—as well as economics. He was born on April 21, 1864, in Erfurt (Prussia), in a highly cultured bourgeois family. His younger brother, Alfred (1868–1858), professor of economics at the University of Heidelberg, was influential in the development of the theory of location. His future wife, Marianne Schnitger (1870–1954), was a sociologist and a women's rights activist. He entered the University of Heidelberg in 1882, and trained in law, but he also took courses in philosophy, history, and economics—his teacher in economics was Karl Knies—just when the *Methodenstreit* started. Weber also took courses at the universities of Berlin, Strasbourg, and Göttingen. In 1886, he passed his law examination and decided to pursue doctoral studies in Berlin. He defended his dissertation on medieval trading companies in 1889. For his *Habilitationsschrift*, he chose the relationship between law and agriculture in Rome as his topic. While a doctoral student, Weber became a member of the *Verein für Socialpolitik*. He was involved in a research project on agricultural workers and, in 1892, produced a study which was recognized as a major achievement. Thanks to the success of his second doctoral dissertation and the *Verein* study, he was qualified to teach Roman and commercial law at the university. He began to teach law at

[2] A very good biography of Weber was provided by Radkau 2005. A moving biographical memoir was written by his wife Marianne (Weber 1926).

the University of Berlin, and then, in 1894, he was appointed professor of economics and finance at the University of Freiburg. In 1896 Weber was offered a position as successor to Karl Knies at the University of Heidelberg, where he taught economics and finance. In Heidelberg he and his wife constituted the so-called Weber Circle, which attracted intellectuals such as Ernst Troeltsch, Werner Sombart, Robert Michels, György Lukacs, and Marc Bloch. In 1897 he had a nervous breakdown, and from then until 1919 he lived and worked as a private scholar. In this period he published several writings on economics. In 1898 he had two texts privately printed that were reissued in 1990 as *Grundriss zu den Vorlesungen über Allgemeine* (*Outline of Lectures in General Economics*), which give "a very clear picture of how Weber looked upon economics" (Swedberg 1999, pp. 564–565). Also in 1898, he joined Sombart and Edgar Jaffé in editing the *Archiv für Sozialwissenschaft und Sozialpolitik*, where Weber published his famous essay *Die Protestantische Ethik und der Geist des Kapitalismus* (*The Protestant Ethic and the Spirit of Capitalism*) (Weber 1904–1905). Here, Weber argued for a broad kind of economics that he called *Sozialökonomik*. In 1909, disappointed with the *Verein*, he co-founded the *Deutsche Gesellschaft für Soziologie* (German Sociological Association), but he resigned from it in 1912. In 1908, he had assumed the editorship of an important handbook of economics, *Grundriss der Sozialökonomik*, to which many famous German and Austrian economists contributed, including Friedrich von Wieser, Werner Sombart, Karl Bücher, and Joseph Schumpeter. The first volumes began to appear by mid-1914. The work was stopped by the outbreak of the First World War. Weber volunteered for service and was appointed as a reserve officer and put in charge of organizing the army hospitals in Heidelberg, a role he fulfilled until the end of 1915. Weber's views on the war and the expansion of the German empire changed during the course of the conflict. Early on, he supported, with some hesitation, the nationalist rhetoric and the war effort. Then, however, Weber became a strong critic of German expansionism and the country's war policies. He joined the worker and soldier council of Heidelberg in 1918. He then served in the German delegation to the Paris Peace Conference and as advisor to the Confidential Committee for Constitutional Reform, which drafted the Weimar Constitution. Weber also ran, unsuccessfully, for a parliamentary

seat, as a member of the liberal German Democratic Party, which he had co-founded. He opposed both the leftist German Revolution of 1918–1919 and the ratification of the Treaty of Versailles. Frustrated with politics, Weber resumed teaching during this time, first, at the University of Vienna, then, after 1919, at the University of Munich, accepting a prestigious position in economics, the former chair of Lujo Brentano. He contracted the Spanish flu and died of pneumonia in Munich on June 14, 1920. At the time of his death, Weber had not finished writing his magnum opus, *Wirtschaft und Gesellschaft. Grundriß der verstehenden Soziologie* (*Economy and Society*). His widow Marianne helped prepare it for its posthumous publication (Weber 1921–1922).

The youngest of the trio, and pupil of Schmoller, was Arthur August Caspar Spiethoff (1873–1957). He was born in Düsseldorf on May 13, 1873. He enrolled at the University of Berlin in 1893 and studied economics under Wagner and Schmoller. After graduation in 1899, he became Schmoller's assistant in editing the *Jahrbuch*—becoming editor after Schmoller's death and remaining in that position until 1938. While assisting Schmoller, he wrote his doctoral dissertation on business cycle theory and qualified for a professorship in 1907. In these years he published a number of articles—the most important being *Die Krisentheorien von M. Tugan Baranowsky und L. Pohle* (in *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft*, Spiethoff 1903)—and his 1905 dissertation, *Beiträge zur Analyse und Theorie der allgemeinen Wirtschaftskrisen*. He then summarized his work on business cycles in an article entitled "Krisen" published in the volume *Handwörterbuch der Staatswissenschaften* (Spiethoff 1925). In 1908, he was appointed to Alfred Weber's former chair in Political Economy at the German Karls-University in Prague when Weber moved on to Heidelberg and taught there for ten years. In 1918 he accepted an offer from the University of Bonn. In Bonn he was joined by Schumpeter in 1925, and they worked alongside each other. Spiethoff remained at Bonn after the rise of the Nazis in 1933, and he retired in 1939. His magnus opus was published in 1955, in two volumes: *Die wirtschaftlichen Wechsellagen. Aufschwung, Krise, Stockung* (*Economic Cycles. Upswing, Crisis and Stagnation*) (Spiethoff 1955). He died in Tübingen on April 4, 1957.

Theoretical Contributions

Weber's Sozialökonomik (Social Economics)

Weber is usually considered a sociologist, but his work in sociology was closely connected to his thinking on economics. He saw economics as a broad discipline whose subject must be studied with reference to several different social sciences: theoretical economics, economic history, and economic sociology, the latter considered to be Weber's invention. He referred to this kind of economics as *sozialökonomik* (social economics).

A disciple of the Historical School, Weber criticized Schmoller and his followers for their hostility to abstract theory, and their mixture of facts and value judgments; at the same time, he appreciated the Austrian version of theoretical economics. He explicitly criticized Schmoller, first in 1909 at a meeting of the *Verein* which gave rise to the so-called *Werturteilsstreit* (Battle of Value Judgments) which involved Sombart, Weber, and Schumpeter on the same side. Then in 1914, in another *Verein* meeting, Weber again criticized Schmoller for not separating facts and values in his analysis. Weber's reflection on the relationship between politics and science had begun in the 1890s and his inaugural address of 1895 was the first statement of his thought. Swedberg (1999) stresses the importance of Weber's *Grundriss zu den Vorlesungen über Allgemeine (Theoretische) Nationalökonomie* (*Outline of Lectures in National (General) Economics*) (1898)—a compilation of his lecture materials for students in his course on economics in the years 1894–1898—in offering the first picture of Weber's thought as an economist. In the section entitled "The Economy and Its Elementary Phenomena", the Austrian version of abstract economic theory is the point of departure, and the concept of *homo oeconomicus* and the marginal utility principle have the central role in the analysis. However, in the section "The National Economy and Its Elementary Phenomena", where by national economy he means the existing, historical economy, Weber considers a series of other factors and "came close to a sociological approach to the economy or…to the kind of

approach that the German Historical School favoured" (Swedberg 1999, p. 569). However, we must emphasize, as Hodgson (2001, p. 118) correctly notes, that Weber "acknowledged that earlier members of the Historical School had failed to develop an adequate theoretical and methodological approach". Weber followed Menger in adopting a relatively individualistic methodological approach—as Shionoya (2005, p. 35) maintains, Weber's method "assumes methodological individualism without denying the possible influences of social institutions on individual behavior and allows for the plurality of human motives"—in contrast with the members of Schmoller's Historical School. In a number of essentially methodological papers, he created a historical methodology for the social sciences: his methodological position is presented in his 1904 article "Objektivität sozialwissenschaftlicher und sozialpolitischer erkenntnis" (Objectivity in Social Science and Social Policy). Here, he introduced the famous concept of 'ideal type' in order to clarify the logical status of historical concepts.

Spiethoff's Theory of Cycles

Spiethoff's international reputation rests on his work in the field of business theory. Spiethoff was strongly influenced by Tugan-Baranovsky's 1894 book *Promyšlennye krizisy v sovremennoj Anglii, ih pričiny i vliânie na narodnuû žizn' (Industrial crises in contemporary England, their cause and influence on national life)*. Spiethoff refers to it as the first scientific monograph on crises. Mikhail Tugan-Baranovsky (1865–1919), Russian economist and professor of political economy at the University of St. Petersburg, began, as Hansen (1964) notes, a new way of thinking about business cycle theories. According to Tugan-Baranovsky, the cycle has its roots in the characteristics of the capitalist economy, and monetary factors aggravate it. He argued that cycles were driven by an independent investment function and that, ultimately, overinvestment was the cause of crisis and recessions. His breakthrough work gave rise to a whole line of European business cycle theory, stemming from Spiethoff through Cassel and Robertson.

Spiethoff engaged in careful collections of data, historical studies, and descriptions of the business cycle—this painstaking attention to the facts must be considered Schmoller's fundamental legacy[3]—but in terms of the theoretical tools he used in explaining the phenomenon at hand, his analysis did not go much beyond the works of the authors he consulted, especially Tugan-Baranovsky.

Spiethoff's 1905 work is organized in three major sections. The first is devoted to a description of the phenomenon of the business cycle, with an approach similar to that of the National Bureau of Economic Research in the United States. An effort is made to construct typical patterns of behavior over business cycles, constructing models of reality purged of historical accidents on the basis of statistical data from France, the United Kingdom, the United States, and Germany. The second section is an impressive historical account of cycles over the period 1822–1913. The final section constitutes Spiethoff's explanation of the cycle. He maintains that the dominant factor is the fluctuation in investment activity, carrying along with it production, consumption, and employment. Fluctuations of investment are explained in psychological terms and as a result of waves of innovation, in a manner similar to Schumpeter's. Spiethoff, in line with a tradition beginning with Marx and which includes Schumpeter, clearly recognized that "cycles are the essential form of capitalist life", as Schumpeter wrote.

[3] "While Spiethoff held Schmoller in high esteem, he did not follow him in each and every respect. He was certainly first and foremost an inductivist. However, confronted with swiftly changing conditions in the discipline, he tried to strike a compromise between historicism and modern developments in economics outside Germany. He also felt that abstract theory had an important role to play: it helped one to understand certain phenomena and economic principles in their pure, unadulterated form, and via elaborating analytical concepts and frameworks it directed one's empirical work and the search for essential facts" (Kurz 2010, p. 3).

5.3 The Austrian School in Vienna: Friedrich von Wieser (1851–1926), Eugen von Böhm-Bawerk (1851–1914), Joseph Schumpeter (1883–1950), and Ludwig von Mises (1881–1973)

Menger's Legacy and the Formation of a School

The term 'Austrian School' of economics was introduced, in a derogatory reference to its alleged cultural backwardness, by Gustav Schmoller in his dispute with Menger. In fact, the emergence of a group of economists who formed a school around Menger can be dated to the mid-1880s. The members of this group were at that time in different universities of the Empire: Karl Menger was in Vienna, Friedrich von Wieser in Prague, and Eugen von Böhm-Bawerk in Innsbruck. In the 1880s, these scholars became aware that they took a common approach stemming from Menger's theory of subjective value. The awareness of their mutual affinity and their singularity in the German-speaking world was also helped by the discovery of the forgotten work of the German forerunner of the marginalist revolution Hermann Heinrich Gossen (1810–1858) and by their acquaintance with the works of Jevons and Walras. In 1886, in Conrad's *Jahrbücher für Nationalökonomie und Statistik*, Böhm-Bawerk wrote an article that clearly described their new value theory (Böhm-Bawerk 1886). But the new school and its achievements began to gain recognition only in 1889, when two landmark books were published: Böhm-Bawerk's *Positive Theorie des Kapitales* and Wieser's *Der Natürliche Wert*.

Böhm-Bawerk and Wieser assumed the leadership of the new group: they were lifelong friends, who attended the same gymnasium, studied in the same universities, and served in various political functions—Böhm as Minister of Finance and Wieser as Minister of Commerce. They were also related to each other: in fact, Böhm-Bawerk married Wieser's sister. To these leading authors, we may add some other minor economists, including Emil Sax (1845–1927), a few years younger than Menger, professor of economics at the University of Prague in the period 1879–1893, who developed an independent position but was a supporter of Menger in the

Methodenstreit; his successor at the university of Prague Robert Zuckerkandl (1856–1926); and Eugen von Philippovich (1858–1917), professor at the universities of Freiburg and Vienna, a socialist and not inimical to the Historical School. In Vienna, Philippovich occupied one of the three economics chairs, the others being occupied by Carl Grünberg (an Austro-Marxist scholar who taught economic history) and Wieser. Two other economists in Vienna who stood apart should also be mentioned: Richard Lieben (1842–1919) and Rudolf Auspitz (1837–1906). They were two Viennese businessmen, cousins, and brothers-in-law as well as partners in the family bank. Their interest in economics led to the publication of the *Untersuchungen über die Theorie des Preises* (*Investigations on the price theory*) (Auspitz and Lieben 1889). The book, which was the result of ten years' work, was harshly criticized by Walras: in fact, Auspitz and Lieben used a Marshall-type system of curves—similar to those used by Marshall in his 1879 essays, which were not known to the two authors when they were writing their book—in a theoretical context of partial equilibrium.

At the end of the First World War, Wieser was the only one of the founding fathers of the Austrian School who was still active in academia; in fact, he had reentered the university in 1919 after two years spent in the final imperial cabinets as Minister of Trade; Böhm-Bawerk had died in 1914, and Menger lived in retirement until his death in 1920. In the next generation, the most prominent members were Hans Mayer, Joseph Schumpeter, and Ludwig von Mises.[4] Hans Mayer (1879–1955) was the favorite pupil of Wieser, who strongly supported his career. Although in 1912 his habilitation thesis had not yet been finished, Mayer—also with the help of Philippovich—had been appointed as extraordinary professor at the University of Fribourg, and then, shortly before the war, at the German Technical University of Prague. After the war, he moved to the University of Graz in 1921 and then, in 1923, to the University of Vienna, where he succeeded Wieser. In the post-war years, he was active in maintaining the Austrian school's tradition but published nothing of importance. By contrast, Schumpeter and Mises can be considered the

[4] Schumpeter's and Mises's life and works extend well beyond the period covered in this first volume. Their contributions of the period between the two world wars will be examined in volume II of this book.

most important economists trained by the older Austrian School leaders. The two attended Böhm-Bawerk's seminar during their university years, then, while Schumpeter was appointed very early to a chair of economics, Mises worked at the Vienna Chamber of Commerce. In the years before the war, they were able to publish some contributions to economic theory of great originality, which influenced the new paths of development of Austrian thought and, in the case of Schumpeter, of economic thought in a broader sense.

Friedrich von Wieser

Wieser produced a new formulation of Menger's theory of value and carried his thinking further. But he was also an author who sought "to develop a general theory of social evolution based on power conflicts between various categories of economic agent" (Gloria-Palermo 1999, p. 52). More generally, from a cultural standpoint, he can be considered, as Morgenstern wrote—idealizing him somewhat—the representative scholar of the old Empire:

> The completeness of his culture, the universal character of his interests, the position he occupied in science, politics and social life, the admirable urbanity of the aristocrat, which he was par excellence, made him seem an ideal representative of the old Austro-Hungarian Empire. (Morgenstern 1927, p. 674)

Biographical Note

Friedrich von Wieser was born in Vienna on July 10, 1851, in a family of high-ranking civil servants. He attended the Viennese Schottengymnasium. At the age of seventeen, he entered the University of Vienna to study law. Graduating in 1872, he was briefly employed in government service and then devoted himself to the study of economics, after an early interest in history and sociology under the influence of Herbert Spencer and Lev Tolstoy (the Tolstoy of *War and Peace*). Together with Böhm-Bawerk (who was his classmate at the gymnasium), he studied economics in

Germany at the universities of Heidelberg, Jena, and Leipzig, under, respectively, Knies, Roscher, and Hildenbrand, three key representatives of the Older Historical School, from 1875 to 1877. In 1874, he had discovered Menger's *Grundsätze*—but, like Böhm-Bawerk, he did not have the opportunity to attend Menger's lectures at the University of Vienna. In Knies's seminar at Heidelberg (which attracted many scholars from outside Germany), where he presented a paper, he began to study the problems that were to occupy him later, in particular, the relation between cost and value from the point of view of the subjective theory of value. On returning to Vienna from his German studies, Wieser received an appointment in the Tax Administration. In 1883, he became *Privatdozent* at the University. In 1884, he was appointed associate professor of economics at the German University in Prague where he stayed until 1903, from 1889 as a full professor. In his first year in Prague, he also published his first book on general economics, *Über den Ursprung und die Hauptgesetze des wirtschaftlichen Werthes* (*On the Origin and Main Laws of Economic Value*) in which he developed the Mengerian argument on value: he coined the term *Grenznutzen,* marginality, and formulated the so-called Wieser's law, or Wieser theory of imputation (*Zurechnung*, another of his coinages). In 1889, he published his great theoretical work, *Der Natürliche Werth* (1889; English trans., *Natural Value*, 1893), where he worked out the Austrian theories of cost and distribution: as Schumpeter writes, since Menger had not more than sketched these theories, this work must "rank high as an original achievement" (Schumpeter 1954, p. 848).

In 1903, Wieser inherited Menger's position at the University of Vienna, at that time the most prestigious chair of political economy in the Empire, serving until 1922. In this period he published the *Theorie der gesellschaftlichen Wirtschaft* (written as the theoretical volume in the *Grundriss der Sozialökonomik,* I, 1914, edited by Max Weber; English trans. *Social Economics,* 1927), a book which, according to Schumpeter, added nothing essentially new, but which provided an impressive summary of his economic thought. He also served as Minister of Commerce in the last two cabinets of the Austro-Hungarian Empire in the final years of the war. After the war and the collapse of Austria, he returned to his studies and his interests turned to sociology. The substance of his lectures

on sociology was incorporated in his last book, *Das Gesetz der Macht* (*The Law of Power*, 1926). In fact, as Morgenstern wrote, he "never was a mere economist; even while working on economic problems he never lost his interest in history and sociology" (Morgenstern 1927, p. 673).

Wieser died on July 23, 1926, in Salzburg, while he was recovering from pneumonia in his summer home.

Wieser's Economics: *Der Natürliche Werth (Natural Value)*, 1899

"That the theory of value needs reforming from the very foundation no one will, I think, deny" (Wieser 1889, p. xxxi), Wieser writes in the preface and outlines the starting point of his investigation:

> The new theory starts from the old proposition, that the value of goods comes from the Utility of goods, or—what is the same thing—from the satisfactions of want which goods assure. To find the laws of value, then, one must first know the laws of want. Now, in this pursuit, we come upon the fact that the want for the same things…is of quite different strengths, varying according to the degree in which the want has already been satisfied through the employment of goods. But since the employment of goods depends upon the amount of goods which one possesses, the quantity of goods obtains a decisive influence on the valuation of wants and so on the source of value itself. This observation is the starting point of the wider investigation. (ibid., p. xxxi–xxxii)

Wieser mentions four authors who had worked out the same theory independently of each other: his German precursor Hermann Heinrich Gossen and then Jevons, Menger, and Walras. According to Wieser, their approach, Walras's in particular, suffered from the preponderance of the mathematical element, even if he recognizes that the laws which govern value undoubtedly allow of a mathematical expression: he says: "the more complicated of these [laws] can be expressed exactly only by means of mathematics; and here certainly mathematics has a great task to fulfil" (ibid., p. xxxiv). Stigler considers Wieser's theory "much more closely allied to the earlier writings of Walras than to those of Menger and

Böhm-Bawerk" (Stigler 1949, p. 158). Actually, in a letter to Walras written on June 18, 1890, Wieser writes:

> I have the impression that both of our theories of value coincide more than any others do. I believe that the tremendous contradiction between our theories comes from their form of expression. The contradiction is between your mathematical expression and my, if I may say so, philosophical expression. Further, if each seeks to be justified for a certain aspect of the given task, our theories complement each other favorably. (Jaffé 1965, vol. 2, p. 413)

In the book's preface, Wieser emphasizes that "in the value theory we have to do with something more than the expression of the laws of amounts" (Wieser 1889, p. xxxiv):

> The obscure conception of value is to be made clear; all its manifold forms are to be described; the service of value in economic life is to be analysed; the connection of value with so many other economic phenomena is to be shown; in short, we have to give a philosophy of value which needs words, not numbers. (ibid.)

As regards Jevons, Wieser considers his statement second to that of Menger. Menger, he writes, "goes more deeply into the subject, inasmuch as he starts from a more general conception of value" (ibid.). "The groundplan of the new theory is drawn—Wieser recognizes—, but much remains to be done; not only to widen its reach generally, but to complete it in itself" (ibid., p. xxxv). His book is an attempt to supplement what has already been done: "I have attempted to exhaust the entire sphere of the phenomena of value without any exception" (ibid.)

Wieser first developed these views in a paper presented in Knies's seminar and then discussed them in his book *Über den Ursprung und die Hauptgesetze des wirtschaftlichen Werthes* (Wieser 1884). It contains a first exposition of his theories of the *Grenznutzen*, or marginal utility, and of cost of production explained by 'indirect utility' (the theorem which has been called 'Wieser's law' by Maffeo Pantaleoni), and of 'imputation' (*Zurechnung*). The idea that costs are the values which are foregone in

devoting resources to this kind of production rather than to any other is the same thought which underlies the opportunity cost concept.[5]

In *Der Natürliche Werth*, after a general statement of the theory of value according to the Austrian School in the first book, the second book introduces the central concept of 'natural value'. Wieser calls natural value the value which arises from the relation between amount of goods and utility and would prevail in a communist society—or rather, a natural category existing in any rationally ordered society, whatever the institutions of property, where "all the troubles which are a consequence of human imperfection" (ibid., p. 60) do not exist, assuming complete absence of exchange and a central authority directing the entire economic process. The distorting effect of differences in ability to pay is thus removed, as well as the disturbances of "error, fraud, force and chance" (ibid.). In this society, every means for the satisfaction of human want would be valued according to the degree of want which would be dependent for its utility upon the particular commodity in question, that is, it would have its natural value: it is estimated according to its marginal utility. This is the foundation for exchange value in all societies. Production goods have no direct utility, so in Book III Wieser takes up the subject of 'imputation' and works out the idea of imputed value as the basis for establishing value for producers' goods. The question is: when several factors cooperate in the satisfaction of a single want, how is the value of a service to be imputed to the various contributing elements? In other words, we have to explain the relation between value and cost of production. Cost of production is determined by the value of the products, that is, inputs or factors of production receive their value from final goods through a process of imputation. Thus, values of goods are determined by utilities, not by costs: value causation runs from the marginal utility of the final consumer good back through to the various inputs that produced that good. In order to arrive at the amount which each element contributes to the value of the product, Wieser proposes an

[5] Robbins (1998) writes that this concept was formulated "with or without Austrian influence" (p. 278) by the American economist D. I. Green in an article in the *Quarterly Journal of Economics* entitled "Pain and Opportunity Costs" (Green 1894). Green was also the reviewer of Wieser's book in the *Annals of the American Academy of Political and Social Sciences* (Green 1895). The British formulation of the same concept is in Wicksteed's *Common Sense*.

algebraic method of solution by equations. Suppose that there are three industry equations with three unknown input values:

$$x + y = 100$$
$$2x + 3z = 290$$
$$4y + 5z = 590$$

where x, y, and z are productive inputs (second-order goods in Menger's terminology), and the right-hand side of the equality is the value of first-order goods produced by the combined inputs. Solving simultaneously gives the values of the inputs: $x = 40$, $y = 60$, and $z = 70$. Each input is thus ascribed a definite share in producing total value. Wieser calls the return to each share the "productive contribution" (*Beitrag*). The productive contribution of any element of production is "that portion of the return in which is contained the work of the individual productive element in the total return of production" (ibid., p. 88), and the sum of all the contributions "exactly exhausts the value of the total return" (ibid.).[6]

As has been noted, although Wieser develops Menger's insights, in developing his model, he makes an assumption—that the economy is in equilibrium, thus implying that the values of inputs could be calculated simultaneously—that moves them in a direction that abandons Menger's causal-genetic explanations and brings them closer to Walras's marginalism.

[6] As Ekelund and Hebert note, Wieser's simultaneous solution may be viewed in a slightly different manner, one that illustrates the Austrian view of the whole valuation process:

"The issue might be put in the form of a question: Assuming that resources are properly allocated and that the system is in equilibrium (as we did in the equations above), what is the value of each input, and how are resources allocated? Given that an input is used in the production of a number of final or consumer goods, its value will be determined by the least valuable good that it produces. This value is determined at the margin, by the marginal utility of the last unit of the least valuable good the input is producing. Input value is imputed, and the value of the input, thus derived, establishes the opportunity cost of utilizing it in all other industry productions requiring it. Given fixed-proportions production functions in all industries and the rational (profit-maximizing) allocation of resources, the supplies of all other goods utilizing the input will be determined. Given the marginal utilities for these other goods, values are determined" (Ekelund and Hébert 1975, pp. 288–289).

Wieser's Economics: *Theorie der gesellschaftlichen Wirtschaft* (*Social Economics*), 1914

Introducing the English version of the book (1927), the American institutionalist Wesley Mitchell writes that *Social Economics* is a systematic treatise upon economic theory, the first produced by the Austrian School:

> Friedrich von Wieser's *Social Economics* holds a place in the literature of the Austrian School such as John Stuart Mill's *Political Economy* holds in the literature of classical theory. It sums up, systematises, and extends the doctrines developed by the founder of the school, the author, and his fellow workers. Like Mill's great book, it is distinguished by admirable exposition—elegant in proportions, mature in expression, authoritative in source. And it promises to become like Mill's book the point of departure from which a generation of younger men set out in their efforts to increase knowledge. (Mitchell 1927, p. ix)

Several years in the writing, the book was the result of Max Weber's invitation to contribute the volume of economic theory to the *Grundriss der Sozialökonomik*. It was published in 1914 shortly before the outbreak of the First World War.

The first part of the book, where Wieser describes the theory of a simple economy, does not differ significantly from the approach taken in the earlier *Natural Value*. The basic problem is the determination of value in a kind of Robinson Crusoe economy where Crusoe maximizes his utility in a context where the influences of socio-economic factors are eliminated. However, Wieser emphasizes that this is not "the meagre economy of an isolated Crusoe". Instead, "the imagined conditions of production have a breadth that is only realized in the activity of an entire nation" and "millions of persons are regarded as a massed unit" (Wieser 1927 [1914], p. 9).

Book II is devoted to the theory of the social economy. Here, the assumption of individuals who are identical as regards income, tastes, and needs is dropped, with the implication that exchange value differs from natural value because the estimation of exchange value is not based only on marginal utility. Individuals in social economy have different

endowments and different abilities, belong to social classes, and are constrained by institutions: "In his economic conduct…the individual is determined by social forces…. He is a creature of his period and his environment—of his nation, his class and his profession" (ibid., p. 159). Individuals are subject to the "forces of compulsion" related to the existence of social power "as command over the human mind" (ibid., p. 3). In his late *Das Gesetz der Macht* (1926), Wieser referred to two types of social power: external power (that some persons or groups exert on people) and internal power (ideas and beliefs). Individuals interact in a complex environment, and this determines different behaviors—one being innovative and another imitative. There is a stratification of economic, political, and social relationship, as well as a fragmentation of utilities. Wieser considers the market, fundamentally monetary, to be a social institution. As Arena (2010) noted, Wieser's conception of market is different from Walras's: "While Walras starts from a basic scheme of market economy based on barter between two commodities and then generalizes it progressively…Wieser considers that there is no market without money" (Arena 2010, p. 125).

In Book II, the assumption of a single subject gives way to the assumption of many different subjects, each following his economic interests in a world where social classes exist, and competition and monopoly coexist. It is still assumed, however, that government does not interfere with the pursuit of self-interest. In Book III, this last assumption is dropped; it is now assumed that the individual citizens are subordinated to a state, which follows an economic policy for the promotion of the common wealth. Lastly, in Book IV, the single state discussed in the previous book is assumed to be surrounded by similar states, and the economic problems arising from their interrelations are faced.

Eugen von Böhm-Bawerk

According to Schumpeter, Eugen Böhm-Bawerk was "the most eminent champion of Menger's teaching" (Schumpeter 1954, p. 845), and he calls him "the bourgeois Marx" (ibid., p. 846) because he took up the challenge of constructing an alternative theory of capital and interest. Kuenne

writes that Böhm "followed Marx in rejecting capital as a third factor, seeking instead to ground the existence of interest in…utility" (Kuenne 1971, p. 6). He, Carl Menger, and Friedrich von Wieser were the triumvirate of the Austrian School, and he was internationally considered *the* representative of the School in the world. In fact, perhaps only Marshall had greater international fame in his day. As Hutchison writes:

> On the subject of value and distribution he added little that was of essential importance to the doctrines of Menger and Wieser…. Nevertheless, he formulated the Viennese doctrines with a lucidity and persuasiveness not previously achieved, and the translation of his writings [in English] made 'the Austrian leader' as Edgeworth called him, the best known representative of his school in England and the United States. In addition, in his great work on capital and interest, he developed…a theme he made peculiarly his own. (Hutchison 1953, p. 165)

Böhm-Bawerk was not only a great scientist but also "an example of that rarest of statesmen, a great minister of finance" (Schumpeter 1951, p. 145), pursuing "the most difficult and thankless task of politics, the task of defending sound financial principles" (ibid.).

Biographical Note

Eugen Böhm-Bawerk was born on February 12, 1851, in Brünn, Moravia, in the Czech part of the Empire. His father was a high-ranking civil servant in the Austrian bureaucracy who died when Böhm was three years old. After his death the family moved to Vienna. Here Böhm-Bawerk attended the Schottengymnasium, a school attended, above all, by the upper middle class, where he formed a lifelong friendship with Friedrich von Wieser. After leaving the school in 1868, he studied law at the University of Vienna and graduated in 1875. Together with Wieser, he then studied political economy at Heidelberg, Leipzig, and Jena, under Karl Knies, Wilhelm Roscher, and Bruno Hildebrand. In Heidelberg, he presented a seminar paper in which he addressed the main subject of his life as a scholar: the relationship in economics between the present and the future. On returning to Vienna in 1877, he, as well as Wieser, entered the civil service,

working in the finance department. In 1880, he obtained his Habilitation at the University of Vienna faculty of law and became *Privatdozent* or non-tenured lecturer in political economy. In the same year, he married Paula von Wieser, the sister of his friend and colleague. In 1882, he obtained a teaching post at the small University of Innsbruck, first as assistant, then as Professor extraordinarius, and finally as full professor in 1884. In that year, he published the first volume of his *Kapital und Kapitalzins—Geschichte und Kritik der Kapitalzinstheorien* (*History and Critique of Interest Theory*)—the second or theoretical volume (*Positive Theorie des Kapitals* or *Positive Theory of Capital)* being published in 1889. The two books, which established his reputation as one of the leading economists of his time, were translated into English in 1890–1891 by William Smart (1853–1915), the Scottish economist who popularized the Austrian theories in the English-speaking world, together with the important monograph *An Introduction to the Theory of Value, on the lines of Menger, Wieser, and Böhm Bawerk* (Smart 1891; see also Böhm-Bawerk 1891, an expository paper explaining the doctrines of the Austrian School published in the US journal *Annals of the American Academy of Political and Social Science*).

After ten years of lecturing, he re-joined the civil service in the Finance Department of the Imperial Government in 1890 and served as Minister of Finance three times between 1895 and 1900. However, he did not give up his activity as an economist. During the 1890s, while serving in various capacities in the Ministry of Finance, Böhm-Bawerk also ran a highly acclaimed seminar at the University of Vienna.[7] It was discontinued from 1900 to 1904, when he was Minister of Finance, but when he returned to a full-time professorship at the University of Vienna in 1905, it became an advanced seminar entitled "Topics on Themes in Economic Theory", which attracted some of the keenest minds among the younger Austrian economists, including Ludwig Mises, Joseph Schumpeter and Richard von Strigl, as well as Austrian Marxists like Rudolph Hilferding and Otto Bauer, Emil Lederer, and the Russian Bolshevik economist Nikolai Bukharin. In 1896, he published his famous criticism of Marx, *Zum Abschluss des Marxschen Systems*, a contribution to the academic jubilee of Karl Knies. In 1892, he was one of the founders (together with other economists of the University of Vienna) and editors of the international journal of political

[7] For a brief description of the seminar, see Seager (1893).

economy *Zeitschrift für Volkswirtschaft, Socialpolitik und Verwaltung* (later *Zeitschrift für Nationalökonomie*). He resigned from the Ministry in 1904—in protest against increases in military expenditure—and returned to academic life as professor of economics at the University of Vienna, where he remained until his sudden death on August 28, 1914.

Böhm-Bawerk's Economics: *Kapital und Kapitalzins (Capital and Interest)*, 1884–1889

Böhm's aim was to extend Austrian theory of subjective value to the theory of capital and interest. His first draft of a new theory was presented very early, in 1876, at Karl Knies's seminar in Heidelberg, as he himself writes in a footnote in the third edition of his *Positive Theorie*:

> The basic features of my own theory of capital had already been established by 1876…. Those ideas were not to be laid before the public until I was able to present them as a complete whole, and harmoniously incorporated in a system of adequately developed fundamental principles of economics. (Böhm-Bawerk 1889, vol. 2, p. 439)

Kapital und Kapitalzins consists of two parts, a historical-critical volume, *Geschichte und Kritik* (*History and Critique*), and a theoretical volume, *Positive Theorie*, whose first editions were published in Innsbruck in 1884 and 1889, respectively. Böhm-Bawerk revised the critical part in the second and third editions (1900 and 1914) and the theoretical part in the third edition (1909–1912), but it was without substantially changing the structure of the book (see Yagi 2011).[8]

The first volume (Böhm-Bawerk 1884) is an exhaustive survey and critique of many theories of interest from antiquity to modern times, classified in productivity theories, use theories, abstinence theory, labor theories, and exploitation theory. A particularly strong critique was leveled against the socialist labor theories of value by Johann Karl Rodbertus and Karl Marx. The second volume elaborates on the economy's time-consuming

[8] A new posthumous German edition in three volumes, edited by Friedrich von Wieser, was published in 1921. It was translated into English in 1959.

production processes and the interest payments they entail. The *Positive Theory* begins with a long analysis of "the nature and conception of capital", in which Böhm-Bawerk criticizes the different definitions of this term and introduces his own definition: according to him, capital consists of "the complex of intermediate products which appear on the several stages of the roundabout journey" (Böhm-Bawerk 1959[1889], p. 22), that is, produced means of production. These indirect methods entail a sacrifice of time, Böhm writes, but they are more productive:

> a greater result is obtained by producing goods in roundabout ways than by producing them directly. Where a good can be produced in either way, we have the faet that, by the indirect way, a greater product can be got with equal labour, or the same product with less labour. (ibid., pp. 19–20)

Böhm maintains that "that roundabout methods lead to greater results than direct methods is one of the most important and fundamental propositions in the whole theory of production" (ibid., p. 20). And the kind of production which works in these circuitous methods is, he writes, "nothing else than what economists call Capitalist Production" (ibid., p. 22).

However, the capitalist method of production has a disadvantage, Böhm-Bawerk continues: its sacrifice of time: "The roundabout ways of capital are fruitful but long; they procure us more or better consumption goods, but only at a later period of time" (ibid., p. 82). Discussing longer and shorter methods of production and how to measure this time, he introduces a physical measure of roundaboutness, "the average period of production": an average of the lengths of time between the application of the different inputs going to produce a good and the final completion of the good:

> Production is more or less capitalistic according to the average remoteness of the period at which the original productive powers exerted during the process are paid. Say, for example, that the production of a commodity costs in all a hundred days of labour—for for the sake of simplification we shall leave out the co-operating uses of land—and that, of these hundred, one day was expended ten years before the completion of the work, another

nine years, others respectively eight, seven, six, five, four, three, two, and one year, while the remaining ninety days were expended immediately before the completion. Then the first day of labour is paid ten years later, the second nine years later, the third eight years later, and so on, while the last ninety days are paid immediately. The calculation is as follows:

$$\frac{10+9+8+7+6+5+4+3+2+1}{100} = \frac{55}{100}$$

That is to say, on the average the hundred days of labour are paid in about half a year. (ibid., p. 89)[9]

Böhm-Bawerk summarizes the issue as follows:

All consumption goods which man produces come into existence through a co-operation of human power with natural powers, which latter are partly economic, partly free. By means of these primary productive powers man may make the consumption goods he desires, either immediately, or through the medium of intermediate products called Capital. The latter method demands a sacrifice of time, but it has an advantage in the quantity of product, and this advantage, although perhaps in decreasing ratio, is associated with every prolongation of the roundabout way of production. (ibid., p. 91)

Book III is devoted to a complete exposition of the Austrian theory of value and price, based on the works of Menger and Wieser, which since then has been considered its standard account. After that, Böhm-Bawerk deals with the problem of interest. Interest is considered to arise out of a process of lending present income against the promise of future income, and it is founded on the thesis that present goods are valued more than those which become available in the future. Interest is the expression of the difference in value between present and future goods. As Schumpeter (1951, p. 174) wrote, Böhm-Bawerk in this way introduced a new fact,

[9] Considered a move away from Menger's subjectivism, the average period of production concept was criticized by Menger himself, who called Böhm-Bawerk's use of the average period of production, as Schumpeter writes, one of the greatest errors ever committed. It was abandoned by later Austrian capital theorists.

"a widening of the factual basis of economics", a fact not outside the principle of value, but "rather the discovery of a particular property of our valuations", sometimes anticipated before Böhm-Bawerk, in particular by Jevons. With it, the theory of interest, Schumpeter emphasizes, follows from the principle of marginal utility.

The positivity of the rate of interest is explained on the basis of three grounds or reasons why individuals prefer present to future goods. The first reason refers to "the different circumstances of want and provision in present and future" (Böhm-Bawerk 1889, p. 249):

> Present goods, as we know, receive their value from the circumstances of want and provision in the present: future goods from the same circumstances in those future periods of time when they will come into our disposal. If a person is badly in want of certain goods, or of goods in general, while he has reason to hope that, at a future period, he will be better off, he will always value a given quantity of immediately available goods at a higher figure than the same quantity of future goods. In economic life this occurs very frequently, and may be considered as typical in the two following cases. First, in all cases of immediate distress and necessity. … Second, in the case of persons who have reason to look forward to economical circumstances of increasing comfort. (ibid.)

The second reason refers to the underestimation of the future, what later was termed "time preference" by Irving Fisher:

> It is one of the most pregnant facts of experience that we attach a less importance to future pleasures and pains simply because they are future, and in the measure that they are future. Thus it is that, to goods which are destined to meet the wants of the future, we ascribe a value which is really less than the true intensity of their future marginal utility. We systematically underestimate future wants, and the goods which are to satisfy them. (ibid., p. 253)

In other words, this reason asserts that in the present the marginal utility of a good available now is smaller than the marginal utility of the same good available in the future.

The third reason refers to "the technical superiority of present goods" (ibid., p. 260), in the sense that, given that every investment of goods in productive processes increases the resulting product (i.e., allows a greater roundaboutness and thus a greater productivity of labor), "present goods are, on technical grounds, preferable instruments for the satisfaction of human want, and assure us, therefore, a higher marginal utility than future goods" (ibid.).

As Hennings (1997, p. 124) wrote, Böhm's interpretation of the rate of interest as the market rate of exchange, expressing the social evaluation of the present against the future at the margin, "should have led [him] naturally to an analysis of intertemporal allocation problems". Actually, it was Fisher (1907) who made this extension.

The New Generation: Joseph Schumpeter

Schumpeter is usually regarded as a member of the Austrian school, but, as Haberler wrote, "as a man and as a scholar he was from the beginning a citizen of the world" (Haberler 1950, 342–343), characterized by a strong intellectual independence.[10] He attained his full scientific stature very early, before the age of thirty: an example of rare intellectual precociousness.

Biographical Note[11]

Joseph Alois Schumpeter was born on February 8, 1883, in Triesch, Moravia, the only child of Josef, an industrialist, and Johanna, who came from a family of physicians. Brought up in a highly cultured atmosphere at home, from 1893 to 1901, he attended the Collegium Theresianum in Vienna (a school for pupils from the nobility and high-ranking bourgeoisie of the empire) and received a classical education. Then, in 1901, he

[10] The negative reviews of his books by Wieser and Böhm-Bawerk testify to this distance, as well as to Schumpeter's conviction that the battle of method had been resolved, as he maintained in his *Epochen* (1914).

[11] There are three important intellectual biographies of Schumpeter: (Allen 1991; Swedberg 1992; McCraw 2010).

entered the faculty of law at the University of Vienna and graduated in 1906. There he studied economics under Wieser, Philippovich, and Böhm-Bawerk, who had just returned to academic life in 1905: Schumpeter was one of the participants in his famous seminar, together with Ludwig Mises, Otto Bauer, Rudolph Hilferding, and Emil Lederer. He also studied in Germany, at the University of Berlin (in 1906), and England, specifically in London at the newly created London School of Economics and at University College (1906–1907), thus complementing his Austrian education. After the publication in 1908 of *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie* (*The Nature and Essence of Economic Theory*), he obtained Habilitation in 1909 and, in the same year, at the age of 26, he took on a non-tenured professorship in the University of Czernowitz, at that time the capital of Bukovina, the easternmost province of Austria. In 1911, Schumpeter was called to the University of Graz, where he was appointed professor of political economy (the youngest professor of the empire). He taught at Graz until 1918 (but spent the academic year 1913–1914 in New York at Columbia University as an exchange professor, returning to Europe just before the war began).

In 1911, he published his *Theorie der wirtschaftlichen Entwicklung*[12] (translated into English in 1934 under the title *Theory of Economic Development*)—this first edition provoked some sharp criticism; it was followed by a second German edition in 1926—and in 1914 by *Epochen der Dogmen- und Methodengeschichte* (*Economic Doctrine and Method*), as well as several important articles.

After the First World War—during which he championed the cause of pacifism—and until 1924, he was actively engaged in political life and, then, in business. A member of the socialization commission set up by the German socialist government and headed by Karl Kautsky, he became Minister of Finance in 1919 under the new Austrian Catholic-Social Democratic coalition government in the chaotic post-war situation: after

[12] The economic literature variously dates the publication year of the first edition of *Theorie* as 1911 or 1912. Schumpeter himself, as Swedberg points out, in a 1934 letter to David T. Pottinger, his contact at the Harvard University Press, says that *Theorie* appeared in 1911. See Becker and Knudsen (2002).

seven months he was forced to resign, having had no opportunity to pursue his policy proposal, which centered mainly on the introduction of a capital levy and a balanced budget.[13] He then became president of the Viennese Biedermann Bank until its bankruptcy in 1924, in which Schumpeter himself lost his entire personal fortune. In 1925, he returned to academic life, at the University of Bonn in Germany, as a chair had become vacant after the retirement of Heinrich Dietzel, a member of the Youngest German Historical School.

In 1932, Schumpeter left Germany and went to Harvard University, Massachusetts (where he had already lectured in 1927–1928 and 1930), remaining there until his death. This was his second period of great intellectual productivity. He published two great books: *Business Cycles. A Theoretical, Historical, and Statistical Analysis of the Capitalist Process* (1939)—essentially an effort to fill the 1911 book with historical and statistical facts—and *Capitalism, Socialism and Democracy* (1942), considered one the greatest works of social theory written in the twentieth century (see volume II of this book). During his last years, he worked on his *History of Economic Analysis*, published, unfinished, after his death by his wife, Elizabeth Boody Schumpeter, whom he married in 1937. It was a task "that probably he alone, of all living economists, could perform" (Smithies 1950, p. 683). At Harvard, Schumpeter taught courses in advanced theory, history of economic thought, and other fields. From 1937 to 1941, he was president of the Econometric Society, and in 1948, he was elected president of the American Economic Association, the first foreigner to hold the position. He died on January 8, 1950, in his summer house in Taconic, Connecticut.

[13] Smithies (1950, p. 631) writes: "In 1919, the incredible happened. He agreed to become finance minister, under socialist sponsorship, in the coalition government of the Austrian Republic. From the beginning the cards were stacked against him. Whatever their motives in appointing him, the socialists distrusted him because he was not a socialist; the right wing distrusted him because he had been the socialists' candidate; and the bureaucrats distrusted him because, from their point of view, he was an amateur…But more important he differed basically from the socialists on Austria's external policy. Led by Otto Bauer, they supported union with Germany, while Schumpeter believed that Austria must rely on support from the West".

Schumpeter's Economics: *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie* (*The Nature and Essence of Economic Theory*), 1908

The book is the first formulation of Schumpeter's economic theory, written when he was twenty-five, in the belief, as he writes in the preface, that he was anticipating "a new scientific day, which is about to dawn" (Schumpeter 2010 [1908], p. xix). It offers a comprehensive survey and methodological restatement of theoretical economics, aiming first of all at reconciling different formulations of the basic concepts of economic theory—essentially Walrasian and Austrian: Walras and Wieser are mentioned in the preface to his book, as the economists to whom Schumpeter felt closest, and Marshall too has a role; in any case, as Schneider (1951, p. 104) writes, the book "breathes the spirit of Lausanne rather than Vienna". Second, the book considers the importance of historical criticism of marginal theory. As Leontief (1950, p. 105) writes, this book "contains the statement of his fundamental views which constitute the basis of Schumpeter's whole scientific *weltanschauung*". Schumpeter's scientific worldview is dominated by the dichotomy between equilibrium economics and evolutionary economics. He claimed that they constitute the two fundamental branches of economics. In the preface, Schumpeter emphasizes that his "exposition depends on the fundamental separation between economic 'Statics' and 'Dynamics'":

> For the time being, the methods of pure economics are only sufficient for the former area, and our results hold only for this area. 'Dynamics' is something that in any respect is completely different from 'Statics', methodologically as well as regarding contents…. We shall see…that it [the separation] holds the key to the solution of many controversies and many apparent contradictions. (Schumpeter 2010 [1908], p. xix)

Later, he writes:

> Statics [equilibrium economics] and Dynamics [evolutionary economics] are completely different fields; they concern not only different problems but also different methods and different materials. They are not two

> chapters of one and the same theoretical building but two completely independent buildings. Only Statics has hitherto been somewhat satisfactorily worked up and we essentially only deal with it in this book. Dynamics [evolutionary economics] is still in its beginnings, is a 'land of the future'. (ibid., p. 182–183)

The book is divided into five parts. Part I is essentially devoted to Schumpeter's views on methodology. He calls for methodological and theoretical tolerance, even if he takes a position in favor of *methodische Individualismus* (methodological individualism, in the Weberian sense), a phrase Schumpeter himself coined. Parts II and III are devoted to an exposition of Schumpeter's static economic model. In fact, the book is mostly concerned with this static theory, which serves as the foundation for Schumpeter's later work on dynamic economic change.

Part II deals with "The Problem of Static Equilibrium", the essence of pure economic theory. Here, the proposition that the relationship between the marginal utilities of any two goods must be equal to the reverse relationship between their prices is considered to be the "alpha and omega" of pure economics. Walrasian equilibrium economics is then presented, noting that the hypothesis of perfect competition is an approximation to reality, which is good enough for many purposes.

In Part III, Schumpeter attempts to demonstrate that static equilibrium analysis can handle wage and rent but not profit and interest. He maintains that wages and rents can be determined by including the services of labor and land as elements of the Walrasian system of economic equations, whereas entrepreneurial profits cannot be treated in this system because they are expressions of disequilibrium.

Part IV presents the method of variation, or what is then called comparative statics. Schumpeter points out the great advantages and limitations of this method. Comparisons between equilibria, in particular, if they are separated by long time periods, are problematic since they draw attention away from the major changes of the functional relationships that are likely to occur during such periods. Therefore, the method of variation is, in general, only applicable in the immediate neighborhood of an equilibrium of the given economic system, measured in time and in the state space of the system. More generally, the most important

limitation of comparative statics for Schumpeter is its inability to represent dynamic economic processes. Nevertheless, Schumpeter argues that static analysis is still of fundamental importance for economists.

Part V presents Schumpeter's "Summary of Conclusions on the Essence, Cognitive Value, and Development Possibilities of Theoretical Economics". Here, Schumpeter returns to issues of methodology and the place of economics relative to other sciences. He recognizes the importance of sociology and psychology, as well as mechanics, biology, and ethnology, but carefully distinguishes all these branches of science from (pure) economics. Most importantly, however, Schumpeter emphasizes the difference between economic theory on the one hand, and ethics and policy prescriptions on the other. He concludes with a plea for the use of mathematical methods in economics, and he argues that it is through these methods that economic theory will advance. He maintains that the demarcation of the domain of equilibrium economics should be defined by the set of problems for which its basic model can be applied. He suggests that equilibrium economics, essentially in its Walrasian form, is an "autonomous province within the realm of knowledge". The essence of the book is that theoretical economics should consist of two fields: pure economic theory (or economic statics) and economic dynamics (evolutionary economics). The role played by Walras in this plan is crucial. As Schumpeter later said, Walras created the "Magna Carta" of this province, and this made him "the greatest of all economists": according to Schumpeter, Walras had demonstrated, better than any other economist, that the subject matter of economic theory "is a cosmos and not a chaos" and he had determined the borderlines of equilibrium economics.

In a letter to Walras of October 9, 1908, Schumpeter wrote that his book is "un livre d'un disciple". Walras's works "pour la première fois, ont traité la théorie économique dans une manière vraiment scientifique", Schumpeter wrote, and maintained that "Je m'efforcerai toujours de travailler sur les bases indiquées par vous, de continuer votre oeuvre", at the same time hoping that the Austrian school would cease to be "réfractaire au traitement exacte des problèmes économique". Walras defined Schumpeter's book "un très bel ouvrage et très considérable" (letter to Georges Renard, December 24, 1908). Schumpeter's dynamics is thus thought of as an extension of Walras's theory. This does not mean that

Walras approved this theoretical program (see Andersen 2011): in fact, as Schumpeter himself recalled in his preface to the Japanese edition of the *Theorie der wirtschaftlichen Entwicklung* (Schumpeter 1937), Walras thought that economic life is essentially passive, and it merely adapts itself to the natural and social influences that may be acting on it. Schumpeter adamantly disagreed with Walras's vision: he felt that it was wrong, and that there was a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained. It was the limit of Walras's theory, or the limits of equilibrium theory, according to Schumpeter. And Schumpeter hoped that a purely economic theory of economic change which does not merely rely on external factors propelling the economic system from one equilibrium to another was possible. It is this theory that Schumpeter tried to build in the complementary second book on economic dynamics—actually *Wesen* and *Entwicklung* were originally conceived as a two-volume book—but the new book became an independent one.

Beyond the limited domain reserved for equilibrium economics, there is the territory of other modes of study: Schumpeter writes that he considers the controversy "between pure theory and history to be largely overcome" and that he, for each scientific problem, will "investigate whether the one or the other treatment is most recommendable" (Schumpeter 1934 [1911], p. vii).

Schumpeter's Economics: *Theorie der wirtschaftlichen Entwicklung (Theory of Economic Evolution)*, 1911[14]

Theorie der wirtschaftlichen Entwicklung develops the essence of Schumpeter's dynamics or, rather, his evolutionary theory. The contents of this edition, in seven chapters, differ from those of the subsequent

[14] The book was translated into English in 1934, in abridged form, as *The Theory of Economic Development*. Andersen (2011) maintains that *Entwicklung* can be translated as both development and evolution "but it is the latter term that best represents a modern description of Schumpeter's theory" (p. 5). Andersen emphasizes that "What Schumpeter analysed can better be described as evolution—that is, the unplanned processes of the irreversible change of biological species, human languages, and the routines of social life that emerge from the combined functioning of mechanisms of innovation, inertia and selection…. Thus the title…should be thought of as *The*

editions (in particular, the English edition of 1934). The most conspicuous difference is that Schumpeter deleted Chap. 7, which presented the model of the national economy as a whole, because, as Schumpeter himself said, its "theory of cultural evolution" distracted readers from the economic contents of the book. Subsequent editions thus lost an approach to social change presented in Chap. 7 based on a synthesis of the classical work of Mill and Marx as well as the German Historical School, which from the methodological standpoint is of fundamental importance to understanding Schumpeter's research program.

In the first edition, Schumpeter explicitly acknowledges only the intellectual influence of Leon Walras and Friedrich von Wieser, but other, unstated, influences were also important, like Karl Marx, John Bates Clark, and Eugen Böhm-Bawerk. Then, in the preface to the Japanese edition of 1937, Schumpeter notes that Walras and Marx provided the crucial inspiration for what he tried to achieve in the book.

Theorie's first chapter contains a summary of *Wesen*. Here, Schumpeter explicitly credits the equilibrium-based Walrasian system as a scientific foundation for economics. Its starting point is a reinterpretation of Walras's analysis of general economic equilibrium. This equilibrium is the result of the equilibrating forces if the economic system is not disturbed, a stationary equilibrium Schumpeter calls "the circular flow of economic life", where economic life runs on in channels essentially the same year after year "similar to the circulation of the blood in an animal organism" (Schumpeter 1911, p. 61), and all economic activity follows known routines in order to satisfy wants. Every firm is in perfect economic equilibrium, as is every household. Economic development, the "fundamental phenomenon", which Schumpeter deals with in the second chapter, considered as a change in economic life that arises from within and not from without, is a disturbance of this circular flow:

> Development…is a distinct phenomenon, entirely foreign to what may be observed in the circular flow or in the tendency towards equilibrium. It is

Theory of Economic Evolution. This conclusion is supported by the fact that his large 1939 book, *Business Cycles*, only speaks of 'economic evolution'" (Andersen 2011, pp. 5–6).

> spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing. (ibid. p. 64)

Static analysis, Schumpeter writes, is unable to predict the consequences of these discontinuous changes, but "can only investigate the new equilibrium position after the changes have occurred" (ibid., p. 61). A different analysis must be elaborated: "our theory of development is nothing but a treatment of this phenomenon" (ibid., p. 64). The first question is: which phenomena determine this discontinuous change? Innovations, or "new combinations", which appear in the sphere of industrial and commercial life, Schumpeter answers.[15] Development is defined by "the carrying out of new combinations" (ibid., p. 66). It covers different cases:

> (1) The introduction of a new good…or a new quality of a good; (2) the introduction of a new method of production…; (3) the opening of a new market…; (4) the conquest of a new source of supply or raw materials or half-manufactured goods…; (5) the carrying out of the new organization of any industry, like the creation of a monopoly position…or the breaking up of a monopoly position. (ibid.)

Entrepreneurs are the people 'carrying out' these new combinations. They are capable of initiating innovative action, and this is how the economic system evolves. The entrepreneur is the theoretical construct that allows Schumpeter to endogenize economic change. The new combinations are not usually carried out "by the same people who control the productive or commercial process which is to be displaced by the new" (ibid.), but are embodied in new firms. Schumpeterian entrepreneurs are not necessarily the possessors of the capital used for carrying out the new combinations because in many cases they use stocks of capital supplied

[15] In *Capitalism, Socialism and and Democracy* (1942), Schumpeter will define this innovative process as a process of "creative destruction" and will consider it to be the essential fact about capitalism. Elliott (1980) considers this concept of creative destruction the essential similarity between Marx and Schumpeter, emphasizing their common visions of capitalism. Actually, the term was derived from his reading of Marx in the first part of the 1942 book. Sombart's analysis of Marx may be considered another source of the concept.

through the mechanisms of credit by capitalists or bankers. The connection between credit and innovation is a very close one, and one that enables the formation of new firms which are the exponents of the new combinations.

The carrying out of new combinations is, Schumpeter maintains, "a special process and the object of a special kind of 'function'" (ibid., p. 79).[16] This is outside the "boundaries of routine" (ibid., p. 84), and therefore presents difficulties and "involves a new element" (ibid.), "the phenomenon of leadership" (ibid.):

> The nature of these difficulties may be focussed in the following three points. First, outside these accustomed channels the individual is without those data for his decisions and those rules of conduct which are usually very accurately known to him within them. Of course he must still foresee and estimate on the basis of his experience. But many things must remain uncertain, still others are only ascertainable within wide limits, some can perhaps only be 'guessed'…. In economic life actions must be taken without working out all the details of what is to be done. Here the success of everything depends upon intuition.… The second [point] lies in the psyche of the businessman himself…. [The] mental freedom presupposes a great surplus force over the everyday demand and is something peculiar and by nature rare. The third point consists in the reaction of the social environment against one who wishes to do something new.… In economic matters this resistance manifests itself first of all in the groups threatened by the innovation, then in the difficulty in finding the necessary cooperation, finally in the difficulty in winning over consumers…. There is leadership only for these reasons. (ibid., pp. 85–87)

As regards the motives for entrepreneurs' behavior, they cannot be reduced to those of the economic man. These are grouped into three main categories:

> First of all, there is the dream and the will to found a private kingdom, usually, though not necessarily, also a dynasty…. Then there is the will to

[16] A fact that has been neglected in the literature should be emphasized, viz. that Schumpeter's characterization of entrepreneurship bears strong similarities to that of Marshall in the *Principles* and in *Industry and Trade*.

> conquer: the impulse to fight, to prove oneself superior to others, to succeed for the sake, not of the fruits of success, but of success itself…. Finally, there is the joy of creating, of getting things done, or simply of exercising one's energy and ingenuity. (ibid., p. 93)

Chapter 3 considers credit creation and capital. Looking at the economic system from a perspective focusing on the role of innovation, Schumpeter points out that the importance of credit cannot be dissociated from entrepreneurial action. Credit mechanisms acquire a high level of significance only at the moment when the utilization of credit is linked to carrying out 'new combinations' and moving production into 'new channels'. From this point of view, "the entrepreneur is the typical debtor in capitalist society" (ibid., p. 102).

Entrepreneurial profit can be explained on the basis of the foundations laid in the first three chapters. It is the direct result of the activity of innovation. Schumpeter explains the process with an example:

> If anyone in an economic system in which the textile industry produces only with hand labor sees the possibility of founding a business which uses power-looms…he, first of all, needs purchasing power. He borrows it from a bank and creates his business…. If a worker with such a loom is now in a position to produce six times as much as a hand-worker a day, it is obvious that…the business must yield a surplus over costs, a difference between receipts and outlay [of course under the main condition that "the price of product must not fall when the new supply appears"]…. But now comes the second act of the drama. The spell is broken and new businesses are continually arising under the impulse of the alluring profit. A complete reorganisation of the industry occurs…. The final result must be a new equilibrium position, in which, with new data, the law of cost again rules…[and] the surplus of the entrepreneur in question and of his immediate followers disappears…. Nevertheless, the surplus is realised…. Now to whom does it fall? Obviously to the individuals who introduced the looms into the circular flow…. They are entrepreneurs. And their profit, the surplus…is an entrepreneurial profit. (ibid., pp. 130–132)

This entrepreneurial profit is not a rent, a wage, nor a return to capital, Schumpeter writes: "it is the expression of the value of what the

entrepreneur contributes to production" (ibid., p. 153) and emphasizes that "without development there is no profit, without profit no development" (ibid., p. 154). Therefore, the innovative action of the entrepreneurs is how the economic system evolves. Schumpeter's theory of 'interest on capital', presented in Chap. 5, is built on the foundation of entrepreneurial activity and its profit. It is zero in a stationary state (an assertion which led to a controversy with Böhm-Bawerk) and can be considered essentially a "tax on entrepreneurial profit" (ibid., p. 210).

The last chapter of the book outlines an early form of the Schumpeterian theory of business cycles. The economic system does not move along continually and smoothly, but it is characterized by "counter-movements, setbacks, incidents of the most various kinds" (ibid., p. 216). Why is it that economic development should "display those characteristic ups and downs" (ibid., p. 223)? Schumpeter's answer is that it depends on the fact that the new combinations "appear, if at all, discontinuously in groups or swarms" (ibid.). By referring to and developing Tugan-Baranovsky's theory, Schumpeter proves that cycles are inherent to a market economy due to the specific nature of the process of development induced by innovation. In the business cycle, the economic upturn is dominated by innovation and the downturn is dominated by crisis and the reorganization. The benefits, in terms of increased productivity, created by innovations, come at a cost, the liquidation of activities based on old routines. Later, in 1939, Schumpeter will publish a large book on the topic of business cycles.

The New Generation: Ludwig von Mises

Mises's aim was to extend and complete Austrian analysis in order to construct a systematic economics on a radically subjective basis. In doing so, he went beyond his Austrian masters, and in fact he is considered the founder of the Neo-Austrian school of thought that developed in the 1920s.

Biographical Note

Ludwig Heinrich Edler von Mises was born on September 29, 1881, in Lemberg (now Lviv), Galicia, in a Viennese Jewish family. When he was a child, the family returned to Vienna. He attended the Akademisches Gymnasium where he received a humanistic education, and he then entered the University of Vienna to study law, graduating with a law degree in 1906. His major professor was the economic historian Karl Grünberg, a member of the German Historical School and follower of Knapp. At the end of 1903, he read Menger's *Principles*, a discovery that changed his life. He then attended Böhm-Bawerk's seminar for several years. After graduation, he practiced law and taught economics at the Vienna Commercial Academy for Women. In 1909, he joined the Vienna Chamber of Commerce and Industry, where he remained for twenty-five years (except during the war). Here, he combined his professional work with research, the main output being his *Theorie des Geldes und der Umlaufsmittel*, translated into English as *Theory of Money and Credit* (1934). In his *Recollections* he writes:

> I attended Böhm-Bawerk's seminar regularly until I qualified for lecturing in 1913. During the last two winter semesters that I still attended the Böhm-Bawerk seminar, we discussed my *The Theory of Money and Credit*. (Mises 1978 [1940–1941], p. 27)

He served as an officer at the front during the war, and was decorated. At the end of the war, he was director of the Austrian Reparations Commission of the League of Nations. In 1920, in a meeting of the Austrian Association of Economics, he presented a critique of socialism, which was to become famous (see volume II of this book). In 1934, he left Austria and went to teach at the Institute of International Studies in Geneva until 1940—while in Switzerland, Mises married Margit Herzfeld Serény, a former actress—when he left Europe to seek refuge in the United States. After a period of difficulties, in 1945, he became a visiting professor at New York University in 1945 and held this position until his retirement in 1969. In the United States, he published his magnus opus *Human Action* (Mises 1949). Mises retired from teaching at the age of eighty-seven and died at the age of ninety-two in New York.

Mises's Economics: The *Theorie des Geldes und der Umlaufsmittel* (*The Theory of Money and Credit*), 1912

The *Theorie des Geldes* is Mises's first book, begun in 1909 and published in 1912. It is organized in three parts: the first part deals with the meaning, place, and function of money; the second—the most important—with the value of money, the problem of measuring it, and the social consequences of variations in it; and the third with the relation of money and banking, in particular, fiduciary media and credit policy. In the second edition, which came out in 1924, the author added a new part on post-war monetary reconstruction. The main contribution of the book is its extension of the marginal utility theory to the value of money. This was a task that had not been considered feasible, as the German economist, financier, and politician Karl Helfferich (1872–1924), pupil of Knapp, had argued in his *Das Geld* (Knapp 1905). As regards this situation, Mises writes:

> The systems of Menger and Böhm-Bawerk were no longer wholly satisfactory to me. I was ready to proceed further on the road these old masters had discovered. But I could not use their treatment of those problems with which monetary theory must begin. According to prevailing opinion at that time, the theory of money could be clearly separated from the total structure of economic problems—it did not, in fact, even belong with economics; in a certain respect it was an independent discipline.… It was my intention to reveal this position as erroneous and restore the theory of money to its appropriate position as an integral part of the science of economics. (Mises 1984, pp. 37–38)

To do so, Mises extends and develops Carl Menger's general approach to the theory of money. He did not simply apply the Mengerian concepts to a special case that hitherto had been neglected. His aim was to revise the general theory of subjective value and develop a new theory of money in line with the subjectivist approach. He stressed the methodological importance of that approach. In his view, all economic phenomena must be traced back to individual decision-making: he emphasized that aggregate considerations lead into error, and that a correct causal analysis of

the pricing process must start from individual choices. For example, discussing Helfferich's assertions, Mises stated that the error of the German economists was to regard the utility of money from the point of view of the community instead of from that of the individual. The objective was to integrate money into micro-theory, opposing the largely accepted quantity theory of money and the macroeconomic approach.

The main task of the economic analysis of money is to explain the purchasing power of money, that is, the exchange ratios between money and all other goods, or money price. The question is that money is demanded not for its own sake but to purchase other goods in exchange, so it has no subjective use-value that can explain its exchange value. To apply marginal utility to money, economists had to deal with the problem called the 'Austrian circle': they can see how the prices of goods could be determined by the respective marginal utilities of these items, but, unlike these goods, which are demanded in order to be consumed, money is demanded and kept in cash balances in order to be spent on goods. But how then can we explain the price of money in terms of its marginal utility?

In Part II, Chap. 8, Mises deals with the determinants of the purchasing power of money. Mises maintains that the demand for money on any given day is equal to its purchasing power on the previous day. The demand for money always has a historical component. He thought we must push the analysis backward until the point is found when a commodity used as money was not used as a medium of indirect exchange but demanded, instead, solely for its own direct consumption use, in an ancient day when the money commodity was not money but a useful barter commodity, demanded for its qualities as a directly consumable commodity. Therefore, a demand to hold money must assume a preexisting purchasing power: Mises writes that "a historical-continuous component is contained in the objective exchange-value of money" (ibid., p. 111). Mises called this demonstration 'regression theorem' (Mises introduced the term later, in his *Human Action*): the demand for money can be pushed back to the day before the money-commodity became money, when it has purchasing power only as a commodity in a state of barter. At that point, its exchange value is explained by the general theory of subjective value and marginal utility. In this way, he overcame the

'Austrian circle'. Mises was also able to support the thesis of the market origin of money, an idea proposed earlier by Menger.

In Part III of *The Theory of Money and Credit*, there is also a draft of an Austrian theory of the business cycle. Here again, Mises's aim is to integrate the explanation of the business cycle with the "micro"-analysis of prices and production. Mises thought that the market economy could not in itself lead to a continuing series of booms and busts, and that the explanation of the business cycle must thus lie outside the market, in some external intervention. Essentially based on Böhm-Bawerk's and Wicksell's theoretical components, he argues that the phenomenon can be explained by the central bank's behavior. Encouraged and promoted by the government and its central bank, bank credit and bank money expand in a market economy that is functioning harmoniously. As the banks expand the supply of money and lend the new money to businesses, the rate of interest is pushed below the rate which reflects the voluntary proportions of consumption and investment by the public. As the interest rate is artificially lowered, the businesses expand the structure of production, adding to capital investment, especially in the 'remote' processes of production: in lengthy projects, machinery, industrial raw materials, and so on. The new money is used to bid up wages and other costs and to transfer resources into these earlier or 'higher' orders of investment. Then, when the workers and other producers receive the new money, their time preferences having remained unchanged, they spend it in the old proportions. But this means that the public will not be saving enough to purchase the new high-order investments, and a collapse of those businesses and investments becomes inevitable. The recession or depression is then seen as an inevitable re-adjustment of the production system, by which the market liquidates the unsound 'overinvestments' of the inflationary boom and returns to the consumption/investment proportion preferred by the consumers.

The book was met without great approval at the time of its publication. It was discussed in Böhm-Bawerk's seminar, where it was not well received, as well as in the German-speaking world.[17] In the Anglophone

[17] About Böhm-Bawerk's criticism of Mises's *Theory*, Mises himself writes: "Both Menger and Böhm-Bawerk tacitly assumed the neutrality of money. They had developed the theory of direct

world, Keynes wrote a critical review in the pages of the 1914 issue of the *Economic Journal*, maintaining that it was "the work of an acute and cultivated mind", but "it is critical rather than constructive, dialectical and not original" (Keynes 1914, p. 417).

5.4 Marxist and Neo-Ricardian Economics in Vienna and Berlin: Rudolf Hilferding (1877–1941) and Ladislaus von Bortkiewicz (1868–1931)

Prologue

In the 1890s, in particular, after the publication of the third volume of Marx's *Kapital* in 1894, and then in the years before the war, a lively debate emerged in the German-speaking world. Originating around the issues of the third volume—specifically the problem of transformation of values into prices of production and the breakdown of capitalism—the debate soon extended to Marx's complete philosophical and economic work, as part of a more general discussion of the crisis of Marxism (see Chap. 8 in this book). The German-speaking world was the center of this debate—which was also extensive in Italy, France, and Russia—and Böhm-Bawerk's famous 1896 *Essay* was the marginalist critique of Marx *par excellence*, the main target of Marxist scholars' attacks. The crisis of Marxism took place in a context influenced by important changes in the development of capitalism and a cultural environment that was profoundly different from the one in which Marx's theory had originally developed. As regards the last point in particular, Marxism was significantly influenced by the return to Kant, or neo-Kantianism, the

exchange and held to the opinion that all problems of economic theory could be solved with the imaginary concept of market exchanges without the use of money. My theory of the inevitable non-neutrality of money now made this position untenable. But Böhm-Bawerk refused to admit this.… According to him, the old doctrine was correct 'in principle' and maintains its full significance for an analysis aimed at 'purely economic action'. In real life there is resistance and friction which cause the result to deviate from that arrived at theoretically" (Mises 1978, p. 40).

dominant philosophical movement in German universities from the 1870s until the First World War.

In this connection, an original form of Marxism developed—the so-called Austro-Marxism—in Vienna. The Austro-Marxism group (Otto Bauer, Karl Renner, Rudolf Hilferding, Max Adler, and others, who were also active in the Austrian socialist movement) was established at the beginning of the new century and organized around journals such as the *Marx-Studien*, founded in 1904, where the group's members presented most of their work. From the political standpoint, they were critics of revisionism in German social democracy. From the theoretical standpoint, they made important contributions to Marxism in their analyses of the change in capitalism and on Marxism as a method of social inquiry. Among them, Rudolf Hilferding is considered the leading economic theoretician of Austro-Marxism: his *Finanzkapital* (1910) contributed significantly to the analysis of capitalism's recent development.

Berlin, with its lively debates on the relationship between economics and mathematics, the classical economists and Walras, and on Marx's theory of value and prices, can be considered the cradle of the neo-Ricardian economics, as it was here that an original mathematical school of political economy formed around the economist and statistician Ladislaus von Bortkiewicz.

Rudolf Hilferding in Vienna

Biographical Note

Rudolf Hilferding was born in Vienna on August 10, 1877, the son of a wealthy Jewish businessman. He studied medicine at the University of Vienna and obtained his doctorate in 1901. He practiced medicine as a pediatrician until 1906 (and during his military service in the First World War), but thereafter he devoted himself exclusively to politics, where he was actively involved in the socialist movement, and to the study of economic theory: he came in contact with the central figures of the Austrian School—he also attended Böhm-Bawerk's seminar in 1905, when many Marxists participated, along with Schumpeter (Taylor 1951)—and tried

to lay the foundations for his Marxist critique of subjectivism in economics. From 1902, he contributed frequently to *Die Neue Zeit*, the theoretical journal of the Social-Democratic Party of Germany (SPD). From 1904 to 1923, he and Max Adler published the *Marx-Studien* series in Vienna as the flagship journal of Austrian Marxism. The inaugural issue of the journal published Hilferding's first important monograph, entitled Böhm-Bawerk's *Criticism of Marx* (Hilferding 1904). It was a rejoinder to Böhm-Bawerk's paper (originally published in 1896), *Karl Marx and the Close of His System*. According to Paul Sweezy, Hilferding's analysis "is probably the clearest statement we have of the fundamental difference in outlook between Marxian economics and modern orthodox economics" (Sweezy 1949, p. xix). In 1910, he published his major work, *Das Finanzkapital* (*Finance Capital*), which had been drafted in 1905. It was his last book, as he fully devoted himself to politics soon after its publication. In 1914, he voted against war credits, and by doing so he joined the left wing of the SPD, which, after the party's split in 1917, formed the Independent Social Democratic Party of Germany (USPD). In 1919, he became a German citizen. In 1922, after the majority fraction of the USPD had been transformed into the German Communist Party (KPD), Hilferding followed the party's minority fraction which returned to the SPD. He edited the party's theoretical journal, *Die Gesellschaft*, and was uninterruptedly elected an MP from 1924 to 1933. He was appointed Minister of Finance in 1923 and again in 1928: he dealt with the pressing problems of inflation and the renegotiation of war reparations, which required monetary stabilization as a precondition, but his action had little effect.[18] When Hitler came to power in 1933, Hilferding went into exile: he moved to Denmark, then to Switzerland and in 1938 to Paris, adopting the pseudonym Richard Kern. His identity was discovered under the Vichy government. On February 9, 1941, while planning his escape to the United States, he was handed over to the Gestapo by the Vichy authorities and was either executed or committed suicide a few days later. His wife Margarete died in a concentration camp in 1942.

[18] The difficulty of his action was well understood by Schumpeter (1939, p. 715): "The minister Hilferding, much too good an economist not to see what was wrong and much too good a Marxist not to realize that there are situations in which anticapitalist policy is in the end anti-socialist, actually went so far as to attempt a very 'capitalistic' fiscal reform".

Hilferding's Economics: *Das Finanzkapital. Eine Studie über die jüngste Entwicklung des Kapitalismus* (*Finance Capital. A Study of the Latest Phase of Capitalist Development*), 1910

The publication of *Das Finanzkapital* in 1910, which took a Marxist approach to building on the basic ideas of Hobson's *Imperialism*, made Hilferding one of the most preeminent Marxist theoreticians since Marx's death, his book being considered by German and Austrian Social Democratic leaders, like Karl Kautsky and Otto Bauer, as a continuation of Marx's *Kapital*. The idea of a 'latest', monopolistic-imperialist stage of capitalism was also adopted by Russian intellectuals Nikolai Ivanovich Bukharin (1888–1938), economist and Bolshevik politician, and Vladimir Ilyich Lenin (1870–1924), later to emerge as the leader of the Russian revolution in 1917.

In fact, in *Finance Capital*, Hilferding introduced the idea of stages of capitalism and the notion of monopoly capitalism as characterizing the latest phase of capitalism (Milios 2001). Hilferding's study is concerned with the development of Marx's analysis in the second and third volumes of *Das Kapital* in the light of later economic developments. The book is divided into five sections devoted to the theory of money and credit (the most controversial part of the book),[19] the growth of joint-stock companies, the restriction of competition by cartels, economic crises, and imperialism. According to Hilferding, a structural change had occurred in capitalism as a result of the development of the joint-stock company, which separated ownership and control of firms (a thesis which probably influenced Schumpeter's idea of a separation of roles between capitalists and entrepreneurs). The joint-stock company produces a new category of profit, called *Gründergewinn*, that is, the difference between the rate of profit and the rate of interest. The existence of joint-stock companies is accompanied by an increasing centralization of capital, and, as a consequence, by control over a large

[19] Hilferding recognized that his theory of money was influenced by contemporary theories, in particular, those of Karl Helfferich and Georg Friedrich Knapp.

number of companies by a small number of people. The credit system and banks have a crucial role in this process through the fusion of bank and industrial capital, viz. finance capital, in which the banks assume a dominant position. Finance capital is defined as "the capital under the control of banks—or money capital—which is provided to industrial enterprises, or capital in the control of the banks and in the use of industry" (Hilferding 1910, p. 309). At the same time, due to technological progress, the need for fixed capital increases, inducing the rate of profit to fall and competition to increase: this latter fact determines the formation of cartels, trusts, and monopolies favored by the banks, and an aggressive policy to conquer foreign markets, which, in turn, increases competition between nation-states. The endogenous process of concentration of capital modifies the relation of the capitalist class to the state, which increases its active intervention in the economy by introducing tariff barriers (in order to protect the domestic market) and reducing competition, and by promoting imperialist policies to appropriate or control the world market and raw materials. The extension of cartels and state intervention in the economy—at the basis of his concept of organized capitalism—make it possible to reduce the extent of economic crises and gain some degree of control over them, and they permit a partially planned development of the economy. As a consequence, Hilferding maintains that the breakdown of capitalism would not be a consequence of an economic breakdown, but of the action of social and political forces to complete the process of establishing a rational economic system. At the end of the book, Hilferding writes that the socialization of the big Berlin banks would facilitate the rule of socialism by giving control of the major German industries.

Ladislaus von Bortkiewicz in Berlin

Biographical Note

Ladislaus von Bortkiewicz was born to a Polish family in St. Petersburg, Russia, on August 7, 1868. After studying law at the University of St.

Petersburg, he continued his studies in Germany, at the University of Göttingen, with Wilhelm Lexis (1837–1914), eminent economist and statistician, who was his Ph.D. advisor in 1892–1893. Further studies in economics and statistics led him to Strasbourg, where he worked together with Georg Friedrich Knapp (1842–1926), another prominent statistician of the day, and in 1895 he became a *privatdozent*. He was also a follower of Léon Walras, who valued him as a correspondent. In 1901, he accepted a position at the University of Berlin where he stayed for the rest of his life, from 1920 onward as a full professor, lecturing on statistics, insurance science, mathematics, economics, and mathematical statistics. From 1907 until 1922, he was the only professor of statistics at the University. In addition, from 1906 until 1923, he taught at the newly founded Berlin School of Economics.

Bortkiewicz was deeply interested in mathematical economics and in Ricardo's and Marx's economics. Although an effective group of followers was never formed in Germany, Bortkiewicz's home in Berlin was a sort of intellectual open house. As the Swedish statistician Oskar Anderson (1932) recalls, it was for decades a place of pilgrimage, where scholars from different European countries gathered to discuss problems and seek advice (see also Gumbel 1968).

Bortkiewicz died in Berlin on July 15, 1931.

Bortkiewicz's Economics: "Wertrechnung und Presirechnung im Marxschen System" (Value and Price in the Marxian System), 1906–1907

Bortkiewicz can be considered the most eminent representative of that small group of scholars who, between the second half of the 1890s and the first decades of the 1900s, established an original research program that applied mathematical method to the theory of prices in a classical political economy framework (see Marchionatti and Fiorini 2000 and the references quoted therein, and Marchionatti 2019). In this setting, Bortkiewicz referred significantly to the work of the Russian mathematical economist Vladimir K. Dmitriev (1868–1913), who wrote three essays entitled *Ekonomicheskie Ocherki* (*Economic Essays on Value,*

Competition and Utility), published together in 1904 (Dmitriev 1904): the first of them, on "The theory of value of D. Ricardo", had previously been published in 1898.[20]

Bortkiewicz (1906, 1907, 1921) maintained that Walrasian general equilibrium analysis could be interpreted as a wider setting within which to insert the cost equations determined in the Ricardian model. Similarly, Dmitriev, on the title page of the 1904 edition of his *Essays*, had promised an "organic synthesis of the labour theory of value and the theory of marginal utility". However, the distinctive feature of Bortkiewicz's work is that he used a "classical" approach: in fact, a common subject of their inquiry was the defense and mathematical reformulation of Ricardo's and Marx's classical theory of prices against the criticisms of Walras (on Ricardo) and Böhm-Bawerk and his followers (on Marx). In his first essay on Ricardo, Dmitriev rejected Walras's criticism of Ricardo: Walras had accused Ricardo of trying to make "one equation determines two unknowns" by suggesting that price is determined by the cost of production, consisting of profit plus wages and profit, calculated as the difference between aggregate prices and wages. Using the mathematical method, Dmitriev was the first to demonstrate rigorously that Ricardo's theory was immune to Walras's criticism.

In two famous and much-praised essays published in 1906–1907,[21] Bortkiewicz tried to answer the question: was Marx's transformation of

[20] In addition to Bortkiewicz and Dmitriev, we should also mention the Russian Marxist mathematician Georg von Charasoff (1877–1931) (see Egidi and Gilibert 1984; Kurz 1995; Stamatis 1999; Gehrke 2013; Parys 2014), who was the only 'Marxist' in this group of scholars—"not a Marxist in the conventional sense of the term", as he wrote to Kautsky in 1909 (quoted in Gehrke 2013, p. 22). Born in Russia, von Charasoff emigrated to Germany for political reasons. He went to Heidelberg, where he obtained his Ph.D. in mathematics in 1902. He then lived some years in Zurich and Lausanne until 1915. As far as we know, he worked principally on his own, starting from the study of the classical economists and Marx, as well as the works of Menger, Böhm-Bawerk, and Walras, as he writes in the preface of Charasoff (1909), and his contemporary literature, in particular Bortkiewicz (1906, 1907). He published two books—*Karl Marx über die menschliche und kapitalistische Wirtschaft* (Charasoff 1909) and *Das System des Marxismus: Darstellung und Kritik* (Charasoff 1910) that were originally intended as part of a trilogy devoted to the study of Marxist economic theory. His work received limited attention in Germany (it was, indeed, strongly criticized by the Marxist Otto Bauer [1911]) and remained unknown abroad.

[21] Schumpeter (1932) wrote that "By far [von Bortkiewicz's] most important achievement is his analysis of the theoretical framework of the Marxian system, much the best thing ever written on it" (p. 303).

value into prices of production correct from a mathematical point of view? He tackled this problem and attempted to formulate a logically unassailable objectivist approach to the classical and Marxist theory of value and distribution. He assumed value and price to be "a purely theoretical structure" (Bortkiewicz 1907, p. 6), where the price (the natural price of classical economists) represented a higher degree of approximation to reality than the value. Bortkiewicz considered Marx's attempt to calculate value into prices "as a failure" (p. 13); however, he thought that "the idea of such a double calculation should not be dismissed out of hand" (ibid.). Adopting the algebraic method used by Dmitriev in his work on Ricardo, Bortkiewicz offered a solution to the price problem from a neo-Ricardian perspective: in contemporary terminology, Bortkiewicz-Dmitriev's model is a system of commodity production by means of dated labor. In his work, Bortkiewicz demonstrated that the price could be determined simply by objective factors (the condition of production) independently of subjective considerations: we can call this operation an 'extraction' of the formal mathematical core of classical (i.e., Ricardian-Marxist) value theory.

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6

Economics in the European Peripheries

6.1 Introduction

Beyond the European centers of Cambridge, Lausanne, Berlin, and Vienna, the peripheries of economic theory stretch. Some—particularly in the early days—were backwaters where economic thinking was limited or outdated; others increasingly reflected the work being done in the leading centers and sometimes also gave rise to original theoretical developments. In the rest of Europe, theoretical thinking in economics, connected in different ways with that of the centers, made important advances in Sweden with the work of Knut Wicksell and, to a lesser extent, Gustav Cassel. As Schumpeter wrote, Wicksell's work in Scandinavia can be considered "one of the most important factors in the emergence of the economics of our own time, and not only in Sweden" (Schumpeter 1954, p. 862). Elsewhere in Europe, economic thinking was, at the theoretical level, less original. However, to appreciate the heterogeneity and relevance of European economics as a whole in this period, three other countries should be mentioned: Italy above all, followed by France and Russia.

R. Marchionatti, *Economic Theory in the Twentieth Century, An Intellectual History - Volume I*, https://doi.org/10.1007/978-3-030-40297-6_6

6.2 Economics in Sweden: Knut Wicksell (1851–1926) and Gustav Cassel (1866–1944)

Prologue

In the second part of the nineteenth century, Sweden, as well as all the Scandinavian countries and the Netherlands, was, Schumpeter writes, "quite above any battle of methods" (Schumpeter 1954, p. 861). The new economics made its debut in Sweden with the 'Nordic Marshall', Knut Wicksell.

There were very few economists in Sweden at the beginning of the 1900s (Sandelin 1991). In 1902, there were only two professors of economics in the country, namely David Davidson (1854–1942) in Uppsala and Knut Wicksell (1851–1926) in Lund. By 1910, the number had increased to five, since new chairs had been filled in Göteborg in 1903 by Gustaf Steffen (1864–1929), at Stockholm University in 1904 by Gustav Cassel (1866–1945), and at the Stockholm School of Economics in 1909 by Eli Heckscher (1879–1952). All of these men were influenced by Austrian and German economics—and all of them, with the exception of Heckscher, had studied in Germany: this interaction has been called "the Baltic exchange" (Sandelin and Trautwein 2008).

Davidson was very famous in his country but internationally almost unknown, essentially because he wrote only in Swedish. He is remembered, above all, as the founder in 1899 of the *Ekonomisk Tidskrift*, the most influential Swedish economic journal, then known as the *Swedish Journal of Economics*, and now as the *Scandinavian Journal of Economics*. Undoubtedly, Wicksell and Cassel were the most important economists of this small group, as their theoretical contributions had an important, though often delayed, international impact.

Knut Wicksell[1]

On the occasion of the English translation of Wicksell's *Vorlesungen uber Nationalokonomie (Lectures on Political Economy)* in 1936, the reviewer wrote in the *Economic Journal*:

> Knut Wicksell was in many ways a model of what an economist ought to be. He was a master of the mathematical technique, and never became its slave. He took a keen interest in his country's economic policy, and was not afraid to propose bold measures, particularly during the Great War; but his cosmic vision was never blurred by narrow considerations of national advantage. And, finally, he was well aware of the clash of "ends" in modern society and the consequent difficulty of applying, unadulterated, the axioms of pure theory to the world of reality. (Thomas 1936, p. 293)

In the introduction to this translation of the *Lectures*, Lionel Robbins (1934) recalls that Wicksell was the contemporary of men like Böhm-Bawerk and Pareto, whose work falls naturally under the headings appropriate to the so-called Schools, but, he adds, Wicksell fits into no such classification: "No economist of similar rank has been more open to outside influences" (Robbins 1934, p. ix). In fact, from the beginning of his work in the 1890s, he stood apart from the disputes of the Schools, deriving equally from the good elements in each of them:

> a pioneer of a generation which stands beyond these early factions and can perceive both the common denominator and the particular contribution in their respective systems. There is no economist whose work more strongly exemplifies both the element of continuity and the element of progress in the central tradition of theoretical economics. (ibid.)

Robbins concludes that the system Wicksell constructed was not specifically his own "but the system common to the best work of the past hundred years of economic theory" (ibid. p. 10).

During his lifetime, Wicksell received little international recognition. It was only in the 1930s, when *Interest and Prices* and then the *Lectures*

[1] For an outstanding biography of Wicksell, see Gårdlund (1958).

were translated into English, that his work became increasingly known—and Keynes contributed significantly to this process.

Biographical Note

Wicksell was born in Stockholm on December 20, 1851—the same year as Böhm-Bawerk and Wieser. His parents died when he was very young, and from the age of fifteen, he lived with maternal relatives. After attending high school, he enrolled at the University of Uppsala in 1869, choosing mathematics and physics as his main fields of study. He graduated in 1873. He then continued his studies for a higher degree in mathematics and physics, but he received his doctorate only in 1885. In those years, he had become a radical free thinker, particularly influenced by neo-Malthusianism and deeply involved in the social questions of his times, and for many years he earned a living from public lectures and journalism. In 1885, he began to travel across Europe, largely supported by grants. He went to London, Strasbourg, Berlin, and Vienna—where he stayed for a few months in late 1888 and early 1889, and attended Carl Menger's lectures and knew Böhm-Bawerk's main work, of which he wrote: "I was soon lost in the book…it came to me as a revelation". It was thus that he started on the road to economics. In the meantime, he had married—it was a common law marriage—Anna Bugge, a Norwegian teacher and lawyer, later a leader in the movement for universal suffrage and in the peace movements and Swedish delegate to the League of Nations.

In 1892, the German *Jahrbücher fur Nationalökonomie und Statistik* published Wicksell's first article in a scholarly periodical: "Kapitalzins und Arbeitslohn" ("Interest and wages"). In the following year, he developed the ideas presented in the article in his first book, *Über Wert, Kapital und Rente (Value, Capital and Rent)*, which was favorably reviewed by Böhm-Bawerk and Walras. It was, first of all, a work of synthesis. He reformulated the marginal productivity theory of distribution, demonstrating the 'product exhaustion theorem', or the determinacy of functional distribution on the basis of product-exhaustion by imputation of distributive shares to factors of production in terms of their respective

marginal productivity. He reached this result at substantially the same time that Wicksteed, independently, demonstrated it in his *Coordination of the Laws of Distribution*.

In 1896, he presented his doctoral dissertation in economics, where he discussed the problem of the incidence of taxation. The book *Finanztheoretische Untersuchungen* (*Inquiries in Public Finance*) was published the following year (Wicksell 1896). Richard Musgrave (1983, p. 6) wrote that it was "the most creative book in public finance ever written". By the mid-1890s, Wicksell's theoretical thinking turned toward a new subject, the theory of money. During 1896–1897, he worked on monetary problems with the economic support of the Loren Foundation, and in 1898, he published *Geldzins und Güterpreise* (*Interest and Prices*). The book was received without enthusiasm, with the sole exception of a review in the *Economic Journal* by Marshall's colleague, C. P. Sanger, who wrote a warmly appreciative review and even suggested that the book should be translated into English (Sanger 1898)—but, as noted earlier, this did not happen until over thirty years later, in 1934.

Wicksell then applied for a *dozentship* at the universities of Stockholm and Uppsala, but he was unable to gain a chair, because at the time economics in Sweden was taught at the faculties of law and professors were required to have a law degree. He thus enrolled again at the University of Uppsala where he completed a four-year study of law in two years and subsequently became an associate professor of economics at that university in 1899. He was granted a chair in Economics in Lund in 1900, at the age of fifty, and was promoted to full professor in 1904.

During his fifteen years at the University of Lund, he wrote his *Lectures on Political Economy* (in two volumes published, respectively, in 1901 and 1906) and a number of articles in *Ekonomisk Tidskrift* (the journal founded by Davidson) and other journals. He also continued his radical lecturing and newspaper writing, on such subjects as population policy, free speech, the extension of suffrage, women's rights, antimonarchism, atheism, disarmament, and the appeasement of Russia—all extremely controversial subjects.

After his retirement in 1916, he moved back to Stockholm and spent the last ten years of his life working on scientific articles and taking part in royal committees on monetary policy and public finance. He was also

an active member of the Swedish Economic Association and a participant (elected president in 1917) in the Economists' Club in Stockholm, a circle of economists who later were members of the so-called Stockholm School of Economics—including Emil Sommarin, Erik Lindahl, Bertil Ohlin, and others. He died on May 2, 1926, at the age of seventy-four. Although he never was a Socialist, his memory was honored by all the main organizations of the Labour Party and the Trade Union Movement: "In the elaborate funeral procession"—Gårdlund (1978, p. 132) (see also Gårdlund's [1958] biography) writes—"similar to those usually reserved for statesmen, most of the 30 banners presented were red standards of the Labor Movement".

Wicksell's Economics: *Über Wert, Kapital und Rente (Value, Capital and Rent)*, 1894, and *Vorlesungen über Nationalökonomie, I* (*Lectures on Political Economy, I*), 1901

Value, Capital and Rent was, first of all, a work of synthesis of the theories of value and distribution of Wicksell's great predecessors in marginalist-neoclassical economics: the theory of value of Jevons, Menger, and Walras, and Böhm-Bawerk's analysis of capital are fused in a Walrasian framework in order to stress the mutual dependence of all elements in the price mechanism. *Lectures I* completed Wicksell's reworking of Böhm-Bawerk's theory of capital and interest. Actually, the latter was the core of both books. In the pages of the June 1894 issue of the *Economic Journal*, A. W. Flux reviewed Wicksell's book together with Wicksteed's *Essay*, emphasizing that "the special interest of…[Wicksell's] book centres in the mathematical expression of Böhm-Bawerk's theories relating to interestx, &c" (Flux 1894, p. 307). And Robbins (1934, p. xiii) writes that "by a judicious selection from the best elements in earlier theories [in the field of capital and interest] he achieved a reformulation of this part of the theory of production from which…all future work in this field which aspires to be taken seriously must commence". Stigler (1941, p. 269) confirms this opinion, calling Wicksell "the great follower of Böhm-Bawerk's theory of capital and interest".

The logical premise to his work is outlined in the introductory statements in both books, which discuss the methodological and analytical novelty of the marginalist-neoclassical doctrine compared to the German Historical School. In the Introduction to *Lectures*, Part I, Wicksell refers to modern economics as "a thoroughly revolutionary programme" (Wicksell 1901, p. 4) and then criticizes the German Historical School by emphasizing the importance of abstract theory:

> It has been customary in the so-called historical school of political economy to deprecate all abstract reasoning within the science as being useless. This view, which, however, seems to be dying out, evidently disregards the fact that all human thought, of whatever kind, must necessarily be abstract. *Historical* research itself begins by abstracting from all those innumerable data influencing the problem at issue which are not mentioned in existing historical documents; and when it applies the results obtained by the historical method to modern times, or when it tests them—as it must almost always do—by contemporary thought, it also abstracts from all the material and spiritual changes of the intervening time—a process which may be permissible, but which may lead to serious error. If this school were consistent, therefore, it should refrain from all conclusions and from all thought beyond the purely mechanical recording of facts. Fortunately, it does not pursue its thesis to its logical conclusion, but, on the contrary, has enriched political economy by much extremely valuable research, which will always retain its place among the treasures of the science, even though it does not, and cannot, constitute the whole if it; and even though—like theoretical research—it cannot claim more than approximate validity. (ibid., p. 11)

Part I of *Value, Capital and Rent* and *Lectures I* presents "The New Theory of Value". Chapters 1–7 of the *Lectures I* contain a complete exposition of the theory: after defining marginal utility as a synthesis of utility (considered as a cardinal magnitude) and scarcity, Wicksell considers the determination of market value under conditions of free competition, but he criticizes the Walrasian idea that under free competition, each of the exchanging parties obtains the maximum amount of satisfaction for his needs. Lastly, he discusses the determination of price under imperfect competition along Marshallian lines. Part II of the two books presents Wicksell's original contribution on "The New Theory of Capital

and its relations to the theory of wages, ground-rent and values of goods". Wicksell outlines the state of the theory at the beginning of the new century as follows:

> There still exists no exhaustive presentation of this subject on modern lines; at least, not in an elementary form. Walras in his *Éléments* once and for all correctly formulated the solution to the problems of production, distribution, and exchange as a whole, but his treatment of the economic function of capital is hardly satisfactory. Böhm-Bawerk, on the other hand, whose work *Kapital und Kapitalzins*—and especially its latter part, *Positive Theorie des Kapitals*—is the chief source for the modern theory of capital, did not concern himself with the synthetic treatment of the problem of production and distribution as a whole. An attempt to combine the work of both these writers into a single whole is to be found in my essay, *Uber Wert, Kapital und Rente*; and also in the elegant but unfortunately unfinished articles of Enrico Barone "Studi sulla Distribuzione" (*Giornale degli Economisti*, 1896). P. H. Wicksteed's succinct *Co-ordination of the Laws of Distribution* (London, 1894) is interesting and rich in ideas—but not easy to read. Jevons' *Theory of Political Economy* contains many instructive, though scattered, remarks on production. The most exhaustive treatment of the subject in English, from the modern point of view, is to be found in Marshall's *Principles of Economics*, an abridgment of which was published under the title *Elements of the Economics of Industry*. (ibid., p. 101)

In its final version, the analysis is divided in two parts, 'production without capital' and 'capitalist production'. In a non-capitalistic production economy, in the absence of capital but with labor and land, it is assumed that the period of production is one year and that the law of diminishing returns operates. In this context, the wage of the worker equals his marginal productivity, and the residual portion of the product is the rent. At this point, Wicksell asks: when each factor is rewarded its marginal product, is the total product exhausted? He answers that it is competition that drives firms to produce an output at which profits are zero. Perfect competition ensures that producers will produce at the point of minimum average cost, that is, at the point in their production function where there are constant returns to scale. Thus, the possibility of increasing/decreasing returns to scale can be ignored: competition

effectively ensures that constant returns will hold in equilibrium. In this way, Wicksell overcomes Wicksteed's formulation. Wicksteed assumed constant returns to scale and adopted a homogeneous and linear production function in his analysis. For this, he was criticized by Edgeworth, Pareto, Walras, and Barone because of the unrealistic character of his assumptions. Wicksell showed that constant returns to scale need not be assumed. Wicksell then introduces capitalist production. His ideas on capital rested on Böhm-Bawerk:

> It was not until Böhm-Bawerk published his great work that we acquired a theory of the nature and functions of capital, and of the origin and determination of interest, which, in clearness and exhaustiveness, satisfies even the most exacting demands. But in spite of his brilliant style, Böhm-Bawerk's exposition is marred by a rather excessive diffuseness; its wealth of examples is sometimes confusing to the reader. On the other hand, in my opinion, his logical analysis of the subject was, in one important respect, not carried as far as would be desirable from an expository point of view. (ibid., p. 147)

He introduced significant improvements: he abandoned Böhm's three grounds for interest and adopted an explanation of interest as the marginal productivity of waiting; he replaced Böhm's average period of production with a concept of capital as the time structure of inputs invested for various terms in production, a structure capable of change in two dimensions—width and height.

Wicksell's Economics: *Geldzins und Güterpreise* (*Interest and Prices*), 1898 and *Vorlesungen über Nationalökonomie, II* (*Lectures on Political Economy, II*), 1906

In his Preface to *Geldzins und Güterpreise* (*Interest and Prices*) (1898), Wicksell emphasized the "lack [of] any real, logically worked out theory of money". *Interest and Prices* and its 1906 development and conclusive result of his reflections in *Lectures on Political Economy, II*—"there is no essential difference between the theoretical content of the two books" (Laidler 1991, p. 120)—constitute Wicksell's great contribution to

monetary analysis. The book was presented as "a study of the causes regulating the value of money". As Ohlin (1936, p. xiv) wrote, here Wicksell "bridged the gap between price theory and monetary theory".

Wicksell's starting point is the quantity theory of money, which he considers the only theory of money that can make any claim to real scientific importance. Unfortunately, as he writes in 1898 (Wicksell 1936 [1898], p. 41), the available version of the quantity theory might provide "a real explanation of its subject matter…only on assumptions that…have little relation to practice". The two problems identified were the assumption that the velocity of circulation of money is fixed, and the question of the transmission mechanism, as he considers that that hypothesized by the traditional theory is too simple. His new theory was a reformulation of the quantity theory of money in terms of a mechanism concerning the relationship between the rate of interest and the general level of prices. More precisely, price level fluctuations, which are not due to a change in gold production, are due to a divergence between the bank rate or market rate of interest and the real rate, that is, the expected rate of return on newly produced capital goods. The mechanism is analyzed in two cases, which represent theoretically limiting cases—the pure cash economy and the pure credit economy:

> If we can obtain a clear picture of the causes responsible for the value of money in *both* these imaginary cases, we shall…have found the right key to a solution of the complications which monetary phenomena exhibit in practice. (ibid., pp. 70–71)

The Quantity Theory is a relatively good description of the pure cash payment system, where the velocity is considered "almost constant", Wicksell writes, but becomes a less and less accurate approximation of reality as the payment system in the economy develops toward a pure credit payment system. Wicksell presented the pure credit system model as "a precise antithesis to the equally imaginary case of a pure cash system, in which credit plays no part whatever" (ibid., p. 70). As Laidler (1991, p. 127) writes, the treatment of an economy characterized by highly developed credit institutions "had…occupied every monetary economist from Adam Smith onwards, not least Wicksell's contemporaries in

England and the United States, but none of them dealt with it with the depth and care which marked [Wicksell's] work". The crucial fact emphasized by Wicksell is that the great and principal agent in accelerating or retarding the velocity of circulation is credit. In a system of organized credit, or a credit economy, the interest rate can represent the mechanism of transmission at work.[2]

A 'pure credit system' is an economy in which all payments are made by transfers between bank accounts, and in which all deposits earn interest. Whatever the banks lend will be spent in purchases of goods and services and return to the system through the sellers' accounts. If banks expand their business lending at a similar pace, they will not face adverse balances in the interbank clearing. The supply of (deposit) money in the banking *system* is completely endogenous:

> No matter what amount of money may be demanded from the banks, that is the amount which they are in a position to lend… The 'supply of money' is thus furnished by the demand itself. (Wicksell 1936 [1898]: pp. 110–111)

Wicksell distinguishes the market or money rate of interest, charged by banks on their loans to customers, from the natural (or real) rate of interest. The latter is defined as follows:

> The rate of interest at which *the demand for loan capital and the supply of savings* exactly agree, and which more or less corresponds to the expected yield on the newly created capital, will then be the normal or natural real rate. (ibid. p. 193)

As he writes in *Interest and Prices*, it is that rate of interest "which is neutral in respect to commodity prices, and tends neither to raise nor to

[2] The role of the interest rate in the transmission mechanism had also been at the center of Marshall's *Evidence Before the Gold and Silver Commission* in 1886. Here, Marshall stressed the importance for discount policy of the rise in the demand for capital during times of rising prices and high profits, an idea that was later developed, especially by Fisher, in *Appreciation and Interest*. However, according to Ohlin (1926), neither Marshall nor Fisher seems to have understood the connection between the real rate of interest, as determined by the supply of the factors of production, and the discount rate, the price at which capital is actually lent: Wicksell's analysis is "more general and deeper" (Ohlin 1926, p. 506). See also Ohlin 1927.

lower them" (ibid., p. 102) and that rate of interest "which would be determined by supply and demand if no use were made of money" (ibid.). Chapter 9 of the book analyzes the interaction of the market and natural rate of interest, and its consequences for the price level. A discrepancy between the two rates sets in motion a cumulative process in which rising prices induce a tendency for the discrepancy in question to be closed by a rising money rate of interest (ibid. p. 117).

Gustav Cassel

A rival of Wicksell on the theoretical as well as political side during his whole life, Gustav Cassel gained a worldwide reputation from his extensive participation in public internal and international economic affairs, particularly in the 1920s. His controversial standing as an economist was achieved between 1899 and 1918, when he attempted to construct an original version of neoclassicism, which rejected the marginalist notions of value and utility, and was largely derived from Walras, although Cassel made a cursory acknowledgment of his debt to the great French economist only in his early publications, for which Wicksell reproached him. In the 1920s and 1930s, Cassel's simplified Walrasian model presented in his *Theory of Social Economy* (1918) became the version of Walras's system—called the Walras-Cassel model—which was known and discussed in the German-speaking world. In the 1930s in particular, it was the basic reference in the Viennese Mathematical Colloquium of the contributions by Karl Schlesinger, Abraham, and John von Neumann, which created modern economics.

Biographical Note

Cassel was born into a wealthy merchant family in Stockholm on October 20, 1866. He started his studies in engineering, then shifted to mathematics, and, in 1894, took a doctorate in mathematics at the University of Uppsala. Soon, he turned to studies in economics, his first interest being in the works of Walras. He continued with a period of study in

Germany—where he attended lectures by Gustav Schmoller, Adolph Wagner, and other representatives of the Historical School which he found very unsatisfactory, even if his early writings on social policy, competition, taxes, and income were influenced by these German economists[3]—and, in England, where he made the acquaintance of Alfred Marshall. In this period, he published several articles of economic theory where he criticized Ricardo's theory of value as well as Marshall's theory. In 1899, he presented his own theory of price in an article in German, "Grundriss einer elementaren Preislehre" (Cassel 1899), devoted to the general equilibrium theory and centering on the principle of scarcity, which governs all the prices of goods and factors. The article was accepted by Albert Schäffle for publication in the *Zeitschrift für die gesamte Staatswissenschaft*. It was an article in the spirit of Walras, with a substantial difference: the theory of value was abandoned and replaced by a direct study of price formation.

In 1901, he competed unsuccessfully with Knut Wicksell for a professorship at the University of Lund. In 1903, he published his first major book on *The Nature and Necessity of Interest* (Cassel 1903), an attempt at resurrecting theory of capital, in which he rejected Böhm-Bawerk's theory of interest and defined interest as the price of waiting, governed, like other prices, by the Walrasian principle of scarcity. In 1904, he published two articles in the *Ekonomisk Tidskrift* about the theory of the business cycle and on the secular development of the general level of prices: all these writings were later incorporated in his major work of 1918, *Theoretische Sozialökonomie*. He tried again to compete for a professor's position in 1904, for the newly created chair at Stockholm University, and this time he succeeded. Here, he remained until his retirement in 1933.

Over the years, his activities in the field of public affairs increased in importance. In Sweden, he worked as an adviser to the government, and his public lectures and articles for newspapers on a wide range of political issues made him a public authority (see Carlson and Jonung 2006). He participated as a delegate to many international conferences and acted as an adviser on monetary problems for various nations (Germany, Russia,

[3] The influence that German economists as well as English Fabianism—in London he had met the Webbs—exerted on Cassel vanished in the years of the First World War, when he turned into a marked economic liberal.

the United States)[4] and international organizations—the League of Nations invited him to write a memorandum on the world monetary problems in 1921. His many writings on this subject before and after the First World War had a strong international influence: *The World's Monetary Problems* (1912), *Money and Foreign Exchange after 1914* (1922), *Outlines of the Development of the Monetary System* (1931), and *The Downfall of the Gold Standard* (1936). He made a well-known and widely discussed recommendation in a memorandum on *The World's Monetary Problems* in 1921 to return to the gold standard as a means of restoring international economic order, at the same time warning against the risks of deflation, which would result from returning to prewar parities. In this memorandum, he also presented the idea of using purchasing power parity to compare different countries' currencies, which Keynes later incorporated in his *Tract on Monetary Reform* (1923). But his influence waned with the coming of the international great depression and the rise of Keynesian economics.

Cassel died on January 14, 1945, in Jönköping in southern Sweden.

Cassel's Economics: *Theoretische Sozialökonomie (The Theory of Social Economy),* 1918

Theoretische Sozialökonomie, where by *Sozialökonomie* (social economy) Cassel simply means an exchange economy, was Cassel's theoretical magnum opus. It was completed by 1914, but, due to the war, publication of the book was postponed until 1918. It was translated into English in 1923 as *The Theory of Social Economy*. It was republished in many successive editions (in both German and English) without substantial changes.

The work is essentially a simplified exposition of price theory in the Walras tradition, but Cassel emphasized his departure from the marginalist-neoclassical tradition in rejecting, as he had done in his 1899 article, the utility theory as an explanation of subjective behavior,

[4] During the First World War, Cassel was asked by the government of Germany to help solve some of the country's economic problems. In 1922, he advised on the establishment of the Russian State Bank, and in 1928, he testified before the US House of Representatives Currency and Banking Committee regarding means for stabilizing the purchasing power of the dollar.

regarding money prices as the basic building block of the economic system. He writes in his introduction:

> From the first beginnings of my study of this science I have felt that it ought to be possible to do away with the whole of the old theory of value as an independent chapter of economics and build up the science from the beginning on the theory of prices, and that we in this matter would be able to rid ourselves of a lot of unnecessary discussions, mostly of rather scholastic nature, which had burdened earlier treatises on economics. I made a first attempt to draw up the outlines of such a presentation of economics in the paper *Outlines of an Elementary Theory of Prices* (published in German, 1899). Since that time, I have worked further on the program laid down. In *The Nature and Necessity of Interest* (London: Macmillan, 1903), the treatment of interest as a price was carried through. (Cassel 1918, p. v)

In his review of Cassel's book in the *Economic Journal* (1926), the American economist A. B. Wolfe effectively summarizes the fundamental characteristic of Cassel's work:

> The essential difference between Cassel and other orthodox theorists lies in the way he images the economic process as a whole. Where they see sacrifice and utility, the play of real cost and intensity of demand, he sketches his economic picture with the bold, hard lines of the inter-play of prices restricting amounts demanded to the available scarce supplies. Where they, as a rule, provide some kind of background of political and social values, he concentrates our whole attention on the foreground of the price mechanism. (Wolfe 1926, p. 61)

The volume is divided into four books: the first is devoted to a "general survey of the social economy" where five chapters examine the economic system in general, the exchange economy, the economic principle in the exchange economy, and the mechanism of pricing. The second book, "The pricing of the factors of production" is divided into five chapters devoted to interest, rent, and wages. The third book deals with money: the origin of money, bank money, the value of money, and international payments, while the fourth book deals with the theory of trade cycles.

A fifth book on the theory of international trade was added in a new post-war edition.

In his exposition, Cassel dealt first with the static state and then with what he calls the progressive state, which is characterized by uniform growth. Considerations of dynamics, including cyclical variation, were offered as a supplement to the more fundamental economics of the static and progressive states. In analyzing the trade cycle, Cassel considered many factors at work: money, credit, trade flows, speculation in securities markets, and, above all, movements in the interest rate and corresponding changes in the profitability of capital.

The general theory of pricing, essentially presented in Chap. 3, "The economic principle in the exchange economy", is the central feature of the book. Cassel aims at a wholly objective analysis in terms of price. Indeed, the subjective value theory is rejected as superfluous and the concept of scarcity is at the core of the treatment of the exchange economy. Prices are determined in a general equilibrium context: any one price is a function of all prices and cannot be determined until all are determined "together and simultaneously": prices and quantities are determined by a set of simultaneous equations containing as many equations as there are unknown quantities. The theory of distribution, discussed in the same book, is an integral part of Cassel's general theory of pricing.

6.3 A Glance at Economics in Italy, France, and Russia

Economics in Italy

Schumpeter offers an effective portrayal of economic science in Italy at the beginning of the twentieth century:

> The most benevolent observer could not have paid any compliments to Italian economics in the early 1870's; the most malevolent observer could not have denied that it was second to none by 1914. The most conspicuous component of this truly astounding achievement was no doubt the work of Pareto and his school. (Schumpeter 1954, p. 855)

But the work of Pareto and his school does not complete the picture of Italian economics. As regards pure economics, in addition to Pareto's school (see Chap. 4), we should first mention the economist who introduced Pareto to the new economics, Maffeo Pantaleoni (1857–1924). Professor of political economy in many universities, including Rome from 1902 onward, and editor of the *Giornale degli Economisti*—the theoretical organ of the marginalist school in Italy and, at the same time, a tool of liberal political battles—Pantaleoni was, in Piero Sraffa's words (Sraffa 1924), the "prince" of Italian economists. Although he did not create a school, many Italian scholars considered him their master. Ricci (1925) called him the "Italian Marshall", a designation that Groenewegen (1998) considered eminently appropriate in view of Pantaleoni's combination of classical economics with the marginalist theory of utility. His *Principi di economia pura* (Pantaleoni 1889) "gave an important lead away from old and towards new things" (Schumpeter, p. 857): translated into English as *Pure Economics* in 1898, it was generally considered as an encapsulation of modern economic theory. "We do not know", wrote Irving Fisher in his review, "where else in English can be found so compact and excellent an epitome of modern economic theory" (Fisher 1898). The structure of the book is the following: Part I deals with the Theory of Utility; Part II, with the Theory of Value, which includes a specific chapter on the law of supply and demand, including reciprocal demands and stable and unstable equilibria; and Part III on applications of the general analysis to categories of commodities. The hedonist hypothesis is at the core of the book:

> Economic science consists of the laws of wealth systematically deduced from the hypothesis that men are actuated exclusively by the desire to realize the fullest possible satisfaction of their wants, with the least possible individual sacrifice. (Pantaleoni 1889 [1989], p. 3)

Pantaleoni was always a believer in the hedonistic hypothesis. In his obituary for Pareto (1924), he restated his argument that psychological hedonism is more scientific and empirical than other hypotheses upon which choice theory can be based (including Pareto's theory of choice).

However, the 'pure economics' season of Pantaleoni's career did not last long. Around the end of the century, he began to analyze 'impure

economics', in writings centering on the relations between economics, statistics, and history. These issues occupied his attention for the remainder of his career. As Bini (1997) pointed out, this second phase differed from the *Principi* essentially in two respects: the static approach of the *Principi* gave way to dynamic considerations and institutional changes, and disequilibrium analysis replaced equilibrium analysis. These studies, although original, are considered theoretically lacking. As Schumpeter wrote, "he was the first theorist to adumbrate a theory of endogenous fluctuations", but "nothing of this he carried very far…. He disseminated suggestions" (Schumpeter 1954, pp. 857–858).

Two other economists working in the field of pure economics should also be mentioned, of course, in addition to the Pareto's school's contributions: the little-known Giovanni Battista Antonelli (1858–1944), an engineer and economist who in 1886 privately published a memoir entitled *Sulla teoria matematica dell'economia politica* (Antonelli 1886), which though highly regarded by Walras, otherwise received only limited attention, and the early work on money and banking of the young Marco Fanno (1878–1965) (Fanno 1913; see also Arena 1998).

"In a variety of lines and in all applied fields", Schumpeter writes (Schumpeter 1954, p. 855), Italian economics attained a high level. Luigi Einaudi (1874–1961) catalyzed an approach in which building an economic theory was seen as a fruitful interlacing of pure theory and historical and applied analysis, in sharp contrast with the German view. Professor at the University of Turin from 1896, he was one of the most representative figures in Italian post-unification history. His activity was not limited to economics: for almost sixty years, from the end of the 1880s to the 1950s, he was an important figure in Italian cultural and political life. He was the director of two journals—*Riforma Sociale* (a journal often in theoretical contrast with Pantaleoni's *Giornale degli Economisti*) and *Rivista di storia economica*—, a columnist writing on economic issues first for *La Stampa* and subsequently for *Corriere della Sera*, a contributor to and the Italian correspondent of *The Economist*, Senator of the Kingdom, and, after the Second World War, the architect of Italy's economic stabilization economy as Governor of the Bank of Italy, Budget Minister and Vice-President of the Council of Ministers, and the first President of the Italian Republic after the Constitution came into force. As an economist,

Einaudi belongs to the neoclassical school as far as his method and conceptual structure is concerned; at the same time, however, marked classical components can also be noted in his work (see Forte and Marchionatti 2010). The importance of Einaudi's contribution to public finance, essentially developed after 1914, is widely acknowledged: James Buchanan (1960), in his assessment of the Italian school of public finance, calls Einaudi "one of the important contributors to the Italian tradition". He was the leader of the Turin school of economics, a school that was an expression of this fertile season of Italian economic thought, which developed around Einaudi, and earlier, around his master Cognetti de Martiis (see Marchionatti et al. 2013). In addition to Einaudi, the most important members of this school were Pasquale Jannaccone (1872–1959) and Attilio Cabiati (1872–1950). They are chiefly noteworthy for their work in international economics: Jannaccone for his theory of dumping (1914), presented as an instance of a more general theory of price discrimination that anticipated Jacob Viner's work on dumping (1923) (see Cantono and Marchionatti 2012); Cabiati for his writings on the international monetary system in the period between the two world wars. Turin was also home to Achille Loria (1857–1943), for many years professor of political economy, whose work, widely translated abroad, was in Schumpeter's somewhat malevolent opinion, "a curious cross product of genius and bad training" (Schumpeter 1954, p. 856). Loria was well known internationally between the 1890s and the war, thanks to his role as Italian correspondent of the Royal Economic Society from 1895 (Marchionatti 1999) and far from negligible influence of his theories concerning the role of land in the social process and his interpretation of history (see Benson 1950).

Economics in France

The French situation was, according to Schumpeter, a "curious case" of political interest prevailing over theory. Here, Schumpeter refers to the laissez-faire ultras of the Paris group led by the Belgian-born economist Gustave de Molinari (1819–1912): of classical liberal formation and quite alien to the new marginalist-neoclassical economics, de Molinari

was the editor, between 1881 and 1909, of the leading journal of political economy in France, the *Journal des Economistes*, where he conducted his crusade against all forms of economic interventionism and protectionism, as well as imperialism and socialism, at the same time, publishing theoretical articles by Walras and Pareto. Molinari's orthodox liberal school was opposed by a group of economists who gathered around the 'heterodox' *Revue d'Economie Politique*, founded in 1887, the most representative being Charles Gide (1847–1932), professor at the university of Bordeaux, Montpellier e Paris and then at the Collège de France, sympathizer of the Historical School, and his collaborator, the Swiss-born Charles Rist (1874–1955), who succeeded Gide in the chair at Montpellier. They also published an important *Histoire des doctrines économiques, depuis les physiocrates jusqu'à nos jours* (Gide and List 1909).

In addition to these two groups that dominated the scene, mention should be made of the Walrasians and the group of engineers of the so-called *Grandes Écoles*. The few Walrasians in France included Albert Aupetit and Etienne Antonelli as mentioned earlier (see Chap. 4), as well as the mathematician Hermann Laurent (1841–1908), author of a summary of the Walras-Pareto theory (see Breton 1998). The engineers who continued the great French engineering tradition cultivated a quantitative form of economics, dealing with administrative issues as heirs of Jules Dupuit (1804–1866), a precursor of marginalism. Among them, we can mention Clément Colson (1853–1939), propagator of mathematical economics and author of a *Cours d'Économie Politique* (Colson 1901–1907) (see Zoulboulakis 1998), as well as Lucien March (1859–1933) and Marcel Lenoir (1881–1927), pioneers of quantitative economics and econometrics with studies on the movement of prices (see Desrosières 1998; Chaigneau and Le Gall 1998).

Economics in Russia

The significant theoretical work developed by Russian economists (see Barnett 2005 and Allisson 2015), with the exception of the already examined case of Eugen Slutsky (see Chap. 4), should be discussed as an essential part of the theoretical developments and debates on Marxism and

neo-Ricardism in the German-speaking world. The best-known economist of that period was Mikhail Tugan-Baranovsky, whose influence on Arthur Spiethoff's theory of cycles was mentioned earlier (see Chap. 4). His 'legal Marxist' work, which was an attempt to make a critical synthesis of the work of Marx, the English classical economists and the Austrians, culminating in his *Theoretische Grundlagen des Marxismus* (1905), belongs essentially to German debate on Marx (see Chap. 8). The Russian economic-mathematical school produced such eminent scholars as Vladimir K. Dmitriev and Georg von Charasoff, but, here, again, their importance can be appreciated in connection with the German-speaking world's theoretical thinking and, in particular, in relation to Bortkiewicz's neo-Ricardian work in Berlin (see Chap. 5).

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7

Economics in the United States: Between Classicism, Neoclassicism, and Institutionalism

7.1 Prologue

The Late Emergence of Economics as a Field of Research in the United States

Economics as an independent focus of research in America was a quite recent event. Starting from near zero in 1870, as Schumpeter (1954) wrote, the field progressed rapidly in the United States and, by around 1914, had achieved a high international standing. Indeed, if we consider the state of the art of economics when the country's centennial was celebrated in 1876, we can say that "the US was largely on the periphery of major intellectual developments in the discipline" (Barber 2003, p. 231). This does not mean that economic issues were not considered of public relevance. Some major economic topics—in particular, monetary issues and free trade and protectionist policies—were widely discussed, but by writers who were substantially amateur economists. In effect, the two American economists who gained international reputation in those years, Henry Carey (1793–1879) and Henry George (1839–1897), were not academics. The rapid growth of the American economy in the last decades

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of the 1800s and the impetuous process of industrialization and modernization after the Civil War made a more professional level of knowledge in the economic field increasingly necessary. This end was achieved by promoting and transforming higher education in the country and abroad—often following European, and above all German, models and practices. Thus, as part of the field's academicization, a number of universities began to offer graduate programs in economics, beginning with Johns Hopkins (see Parrish 1967; Coats 1985), the first American university to award graduate degrees on the German model. At the same time, the European pilgrimage was crucial in increasing the quality of education in the social sciences and particularly in economics, as periods of study abroad were extremely important in the 'new' discipline's development.

In particular, large numbers of young Americans embarked on a period of study in German universities during the late 1870s and early 1880s, and they then returned to occupy posts in American universities. Many of these young scholars were to have a significant impact on the discipline in the United States, including John Bates Clark, Richard T. Ely, Edwin R. A. Seligman, Henry Carter Adams, and Simon Nelson Patten. They represented a 'new school' of German-trained economists, influenced by the German Historical School. As such, they were determined to challenge the 'old school'—the classical-Ricardian orthodoxy and the English laissez-faire policy views, which had hitherto dominated the intellectual scene in economics—whose leaders in the United States were Simon Newcomb (1835–1909), mathematician and astronomer, at Johns Hopkins, William Graham Sumner (1840–1910) at Yale, and James Laurence Laughlin (1850–1933), who taught at Chicago after a short stay in Harvard. By the mid-1880s, the clash between old and new schools was unavoidable.

The American *Methodenstreit* of the 1880s and the Foundation of the American Economic Association

The rivalry between new and old schoolers gave rise to what became known as the American *Methodenstreit* of the 1880s. The battle began in

1884 and saw two professors at Johns Hopkins University, Richard Ely and Simon Newcomb, in opposing camps.

Richard T. Ely (1854–1943) was perhaps the most representative of the new generation of economists who studied in Europe with members of the German Historical School. "That excellent German professor in an American skin", as Schumpeter (1954, p. 874, note) defined him, he was educated at before going to Germany for graduate studies in the late 1870s, spending three years at Heidelberg under Karl Knies. After his return to America, Ely joined the faculty of Johns Hopkins University where he was professor of political economy from 1881 to 1892, later moving to the University of Wisconsin and, from 1925 to 1933, to Northwestern University in Chicago. He was the author (and then co-author) of what was for many years one of the most popular textbooks, the *Outlines of Economics* (1893), and one of the founders of the American Economic Association (AEA) in 1885 (see Coats 1993). Simon Newcomb (1835–1919) was a famous American scientist (see Moyer 1992), mainly a mathematician—he had studied mathematics at Harvard—and an astronomer, but more generally he was a polymath. He was also interested (a secondary interest for him) in economics, where he was influenced by classical economists and, among the marginalist thinkers, by Jevons's *Principles*. He published his *Principles of Political Economy* in 1885, a book substantially classical in its approach, appreciated by Fisher for its development of the quantity theory of money, as well as by Keynes.

In 1884, Ely, at the time associate in political economy, published an essay attacking the method of the English school as sterile and criticizing mathematico-economic works as "a not very successful attempt to develop further the older political economy" and claiming that "works which have advocated the application of mathematics to economics form no essential part of the development of economic literature" (Ely 1884, p. 60n.). Newcomb replied that Ely's work was an example of intellectual confusion and an irrational proceeding. These positions were restated in 1886 in *Science*, the journal of the American Association for the Advancement of Science. Ely (1886) doubled down on his criticism and maintained that economists' task consists of understanding the "laws of Progress", promoting the economic and social growth of mankind and discussing the issue of what ought to be, and that the ethical ideal to be

embraced was "simply the Christian doctrine of talents committed to men, all to be improved". Newcomb (1886), on the other hand, maintained that it was a "contradiction in terms" to regard discussion of what ought to be as 'science'; that the principle of 'non-interference' in economic affairs favored progress, and that public intervention was suspect because governments were incapable of acting on "sound business principles". The conflict was not confined to the controversy between the two scholars, but it widened to the institutional level, where it involved the newly created American Economic Association—of which Ely was first Secretary and whose first president was Francis Amasa Walker, previously professor at Yale and then president of the Massachusetts Institute of Technology in 1881—and the Political Economy Club, created in 1883, with Newcomb as president and Laughlin as secretary-treasurer.

The *Methodenstreit* died down in the early 1890s, as was reflected in the restructuring of the American Economic Association in 1892, when Ely resigned as secretary and Charles Dunbar (1830–1900), first professor of economics at Harvard in 1876 and founder of the *Quarterly Journal of Economics*, was elected president. Thus, after seven years of the Association's existence, the election of Dunbar marked a turning point in its development, with the entry of more traditionalist and moderate views.

1890s–1918: The Neoclassical Revolution and Its Institutionalist Criticism

Fundamental changes at the theoretical level took place on the economic scene in the 1890s. Original American economic thinking of increasingly high standing began to emerge with the marginalist work of J. Bates Clark and Irving Fisher—first-rate theoreticians, and builders of the new marginalist and neoclassical economics in America—and the institutionalist work of Thorstein Veblen, without forgetting Frank William Taussig's important contribution. Clark, Fisher, and Taussig were, according to Schumpeter (1954, p. 868) "'the' great American economists of that period", the triumvirate. Taussig, as Tobin (1985, pp. 3–4) writes, "belongs in the triumvirate less for his own theoretical contributions than for his applied studies in international trade and tariffs, his distinguished

public service, and his celebrated Socratic teaching of theory to generations of Harvard graduate students". Tobin compares Taussig's work, as well as his views and attitudes, to Marshall's. In fact, the picture of the American scene would be incomplete without mentioning the impact that the publication of Marshall's *Principles* in 1890 had on American economists. During his visit to the country in the 1880s, Marshall had established close links with his American colleagues, and when the *Principles* were published, they were favorably received by the majority of them. Many reviews of the first edition of *Principles* appeared in the United States. A long article review by J. B. Clark in the March 1891 issue of the *Political Science Quarterly* presented the new book as follows:

> This work surpasses even the expectations that were formed concerning it. Its merit and importance justify the eulogistic reviews of it that have appeared in America and especially in England; and there is that in the work that gives to it a more distinctly epoch-making quality than can be attributed to any work that has appeared in many years. Following in the series of economic classics the works of Ricardo, Malthus, Mill, Jevons, Cairnes and Sidgwick, it is in character most nearly allied to the work of Mr. Mill, since it systematizes a great amount of seemingly divergent thought. Adding its own special contribution to the general result of past and present thinking, it presents the science of economics as it stands today in a nearer approach to unity than has seemed to be possible. (Clark 1891, p. 126)

As Backhouse et al. (2010) argue, we can say that Marshall's *Principles* represented economic orthodoxy in America during the period.[1]

Of the other figures who were of a certain relevance in the world of American economics, the most important was James Laurence Laughlin (1850–1933), leader of the Chicago economists. Other minor economists included, first, the two 'Austrians' Herbert Davenport (1861–1931) and Frank A. Fetter (1863–1949), both professors in many American universities, from Chicago to Cornell and Princeton; second, Simon

[1] Backhouse et al. (2010) maintain that Marshall's *Principles* represented economic orthodoxy right up to the publication of Samuelson's *Foundations of Economic Analysis.* We believe that this statement is only partially true for the period after the First World War, when Marshall's economics were at the center of a lively controversy.

Patten (1852–1922), historicist political economist at the University of Pennsylvania and social philosopher; and, lastly, Henry Ludwell Moore (1869–1958), professor at Columbia, who attempted to provide a statistical complement to Walras's and Pareto's pure economics—though his most important contribution in this direction was *Synthetic Economics*, published in 1929.

At an altogether different theoretical level, we have the revolutionary work of Thorstein Veblen and the early contributions of the emergent Institutionalist movement that he inspired. In addition to Veblen, John R. Commons (1862–1945) is usually considered one of the fathers of Institutionalism. In fact, he was to be the author of one of the attempts to provide a theoretical foundation for institutionalism—*Institutionalist Economics* (1934)—though he was not regarded as part of this movement until the mid-1920s.

An Academic Network in Evolution

By the end of the 1890s, there were a number of economic departments and centers of economic studies in the United States; the most important were Columbia, Harvard, Chicago, and Yale.

Columbia, in New York City, was among the first institutions to make room for economics courses in the curriculum. It was a locus of reformist political economy and progressive sentiment and, from the second half of the 1890s, an epicenter of marginalism and neoclassicism in the United States: in fact, it was Clark's academic home from 1895 until his retirement, while Moore came to Columbia in 1902 and remained there for the remainder of his career.

At Yale, political economy was taught from the 1870s by William Graham Sumner—rigid laissez-faire economist, then known as a sociologist, a fierce opponent of the younger economists who had returned from Germany and antipathetic to classical economics—and Francis A. Walker, who left Yale in 1881. In the 1890s, Fisher became Yale's most important economist.

The Harvard University Department of Economics was established in 1897 under the division of History, Government, and Economics, but

political economy had been taught at Harvard since 1871 when Charles Franklin Dunbar was appointed professor of economics. At that time, as Mason (1982) writes, Dunbar was probably better prepared than any other academic economist in the United States. Harvard economists during the 1870s and 1880s professed the doctrine of the British classical economists. Taussig appeared on the scene in 1883 and made Harvard great in economics.

Economics at the University of Chicago is linked to Laughlin, who was the first chairman of the economics department established in 1897. Chicago is also the university where Veblen taught, and Institutionalism was born.

Harvard and Chicago also hosted important economic journals, fundamental channels through which ideas could circulate: at Harvard, the *Quarterly Journal of Economics* was founded in 1886, and at Chicago, the *Journal of Political Economy* was founded in 1892. At Columbia, the social science journal *Political Science Quarterly* frequently included articles on economic subjects. In 1911, another economic journal was founded: the AEA periodical, the *American Economic Review*.

7.2 Economics at Columbia: J. B. Clark (1847–1938)

John Bates Clark has been called "the master of American marginalism" by Schumpeter, and there can be no doubt that he was one of the pioneers of the doctrine in America. He independently discovered the marginal utility and marginal productivity theory. He represented his theory as an outgrowth of Ricardo's theory of rent, as Schumpeter (1954) writes, emphasizing his originality:

> what he did was to turn the 'Ricardian' theory of rent, which with Ricardo had no other function than to eliminate rent from the price problem by making it an intramarginal surplus, into a principle that was of general application to all kinds of competitive returns…*without becoming tautological in the process*—marginal utility (and disutility) coming in quite naturally on this route. In spite of the priority of Thünen, on the one hand,

> and Jevons, Menger, and Walras, on the other, this was an achievement of the first order of importance and, so we may add now, of subjective originality. (Schumpeter 1954, p. 868)

Though this formulation, if "judged with reference to elegance of analysis…was inferior to that of Jevons and Walras", as Stigler (1941, p. 296) maintained, it, nevertheless, gave American economics an analytical approach to the ethics of distribution. Clark's distribution ethics offered a theoretically anchored middle way between radical laissez-faire and socialism, centering on the idea of efficiency (see Leonard 2003).

Biographical Note

Clark was born in Providence, Rhode Island, on January 26, 1847, into a merchant family. He was educated at Amherst College where he obtained his B.A. in 1872. Initially interested in philosophy, he then decided to turn to economics. After graduation, he went to Germany, where he studied for three years under Karl Knies at the University of Heidelberg. In fact, Clark was part of the new generation of progressive German-trained American economists, although he was never a doctrinaire practitioner of the historical approach, and was at the same time strongly influenced by Christian Socialism.

After returning to the United States in 1875, Clark taught at Carleton College, in Minnesota, where Thorstein Veblen was among his students. In 1881, Clark got an appointment at Smith College and, in 1893, went to Amherst College. In 1885, he helped found the American Economic Association, serving as its first vice-president. In 1886, he published his first book, *The Philosophy of Wealth* (Clark 1886), where he incorporated several essays previously published between 1887 and 1883 in the *New Englander* (a journal which ceased publication in the 1890s). The book deals mainly with social justice. It also contains a statement of the principle of marginal utility, called by Clark "effective utility" and an early treatment of capital that was then developed in later writings.

Clark changed his position in the mid-1880s—his *Capital and its Earnings* (Clark 1888) was an important passage. To some extent, the change arose from the need to counter the growing popularity of agrarian socialists like Henry George. Drawing on older American theories of property based on labor, George attacked the "unearned increment" of rent on land as patently unjust and thus subject to expropriation. To respond to George, Clark sought to show that earnings on land are no different than earnings on other factors of production. During the following years, Clark was absorbed by the theory of distribution, writing a series of papers leading to his neoclassical magnus opus *The Distribution of Wealth* (1899). As Clark's son, the institutionalist economist J. M. Clark, emphasized, one of the aims Clark pursued in developing his marginal productivity theory was to rebut Marxian exploitation theory.

In 1895, just after being elected third president of the American Economic Association, he joined the faculty of Columbia University in New York City, where he would remain for the rest of his career. In 1896, he became editor of the *Political Science Quarterly*, serving as editor until 1911. Under Clark, Columbia became the home of the so-called Social Value school of marginalist economics (which emphasized the social roots of value), which was followed, in various degrees, by his students, including Alvin S. Johnson (1874–1971), Benjamin M. Anderson (1886–1949), and Paul H. Douglas (1892–1976). The circle of Clark's sympathizers was large, in the United States and abroad, but the precise extent of his influence is difficult to determine, as Schumpeter (1954, p. 836) noted.

On the question of monopoly and competition, Clark published two influential volumes, *The Control of Trusts* (1901) and *The Problem of Monopoly* (1904). They were followed by other works on these subjects, where he stressed the force of potential competition, the methods of unfair competition that had been used to handicap or extinguish small competitors, and the need to protect small competitors against such methods. His ideas were reflected in the part of the antitrust legislation of 1914 that included the prohibition of unfair competition and in the establishment of a Fair Trade Commission.

After 1912, Clark devoted himself to pacifist causes. He served as the first director of the division of economics and history of the Carnegie

Endowment for International Peace, from 1911 to 1923. In the latter year, he retired from Columbia. His last publication, *A Tender of Peace* (1935), was a brief plea for a League of Nations with sufficient power and resolution to enforce peace. Clark died in New York City on March 21, 1938.

Clark's Economics: *The Distribution of Wealth*, 1899

The *Philosophy of Wealth* (1886) reflects Clark's German training, combined with his Christian ethics. Clark criticized classical economists for adhering to the idea of an economic man solely motivated by self-interest and believing in competition as "the great regulator" (Clark 1886, p. 148). But, Clarks adds, competition "had, in important fields, practically disappeared", and "it ought to disappear" because it was "incapable of working justice": "the alternative regulator is moral force" (ibid.). Clark emphasized the importance of placing the individual in an 'organic' context, as an integral part of a social body. He proposes public intervention to restrain industrialists' economic power, to achieve justice in distribution between capital and labor through arbitration, and to supplant competition with cooperation—his support for a cooperative system, rather than a competitive system, reflected the ideas of English Christian Socialism, which were then gaining ground in the United States—or, as he maintained a few years later, with arbitration and profit sharing. The emergence of Marxian socialism in the United States and the agrarian socialism of Henry George, which Clark opposed, contributed to transforming Clark's position, and his vision changed substantially in his 1899 *Distribution of Wealth*.[2] Here, the impulse to social reform "was displaced by the logic of value", as Seligman (1962, p. 315) maintained, and the ethical problem—distributive justice—was solved by the very functioning of the economic system.

The *Distribution*—based on Clark's writings since 1888—offers for the first time a complete discussion of the neoclassical theory of distribution. Clark writes in the preface:

[2] According to Tobin (1985), Clark "completely reversed his earlier position". For an opposing view, viz. that the 'two Clarks' can be reconciled, see Henry 1995.

> It is the purpose of this work to show that the distribution of the income of society is controlled by a natural law, and that this law, if it worked without friction, would give to every agent of production the amount of wealth which that agent creates. (Clark 1899, p. v)

The general thesis is that

> where natural laws have their way, the share of income that attaches to any productive function is gauged by the actual product of it. In other words, free competition tends to give to labor what labor creates, to capitalists what capital creates, and to entrepreneurs what the coordinating function creates. (ibid., p. 3)

According to Clark, proving this thesis is crucial because "the right of society to exist in its present form, and the probability that it will continue…to exist, are at stake. These facts lend to this problem of distribution its measureless importance" (ibid.). In other words, Clark's aim was to elaborate a theory which was, at the same time, both a moral and a political justification of the market's pricing.

Clark's analysis is essentially static. He felt that, despite its unreality, static analysis was able to get at the essence of the economic system in the long run: that wages and interest would conform to the natural rates given by static conditions. As Clark writes in the preface, his analysis "tries…to isolate the static forces that act in distribution from the dynamic forces" because

> In the midst of all changes there are at work forces that fix rates to which, at any one moment, wages and interest tend to conform. However stormy may be the ocean, there is an ideal level surface projecting itself through the waves, and the actual surface of the turbulent water fluctuates about it. There are, likewise, static standards with which, in the most turbulent markets, actual values, wages and interest tend to coincide. (ibid., vi)

In Chap. 3, "The place of distribution within the natural divisions of economics", Clark divides the field into the study of universal laws, that is, static economics and dynamic economics, maintaining that static economics is the science of distribution. Distribution is governed by market

laws. The rise and fall of a price, Clark writes, is the result of a collective action but, if "the resultant is collective", "the motives in this movement are individualistic" (ibid., p. 46): "each man pursues his own interest; but, as the outcome of his activity, society acts as a solitary man would act under the influence of the law of diminishing utility" (ibid.). Profits are eliminated by competition so that there were only two shares in the total product, interest and wages. In Chap. 8, "Wages tend to equal the product of marginal labor", Clark stated that paying each factor of production its marginal product would just exhaust the total product. Clark concludes that under perfectly competitive markets, each factor of production would receive a return equal to the value of its marginal product. This return measures the contribution of a factor both to the particular product being produced and to society. The return to capital is justified by the fact that capital is productive. The return to land is, likewise, not an unearned income but a return to the productivity of land. The same applies to the return to labor. Therefore, the distribution of income that results from perfectly competitive markets is an ethically correct distribution, in that it rewards the factors of production according to their economic contributions to the social product.

7.3 Economics at Yale: Irving Fisher (1867–1947)

Schumpeter wrote that "some future historian may well consider Fisher as the greatest of America's scientific economists up to our own day" (Schumpeter 1954, p. 872), a prediction that James Tobin (1985) maintains that time has substantiated. Fisher was a creative scholar who made seminal and durable contributions in many fields of neoclassical economic science. He was America's first mathematical economist, but, with his stress on statistics, pioneered the econometric approach. As Schumpeter (1948, p. 220) wrote:

> [Fisher's work] as a whole ideally fits the program of "the advancement of economic theory in its relation to statistics and mathematics" and of the "unification of the theoretical-quantitative and the empirical-quantitative

> approach" [Section 1 of the Constitution of the Econometric Society].… We must look upon him as the most important of the pioneers of econometrics since William Petty.

Much more than an economist, Fisher was highly engaged in non-academic activities: he was a crusader for hygienic living, promoting activities for public and private health, supported prohibition—as president of citizens' committees and by writing books—and campaigned for the League of Nations. He was also an inventor and entrepreneur.[3] Despite his high intellectual stature, he was unable to form a school, a fact that Schumpeter considers 'strange', and was probably due at least, in part, to the fact that for many years he taught at Yale only half time.

Biographical Note

Irving Fisher was born in the small town of Saugerties, New York, on February 27, 1867, the son of a congregational minister. After finishing high school, he went to Yale in 1884—the year his father died of tuberculosis—where he obtained his B.A. in 1888. At Yale, he studied mathematics, science, social science, and philosophy with teachers like the mathematical physicist Josiah Willard Gibbs (1839–1903), one of the greatest American scientists of the nineteenth century—from whom he got "the art and habit of scientific thinking and the general philosophy of life" (Westerfield 1947, p. 656)—the sociologist and economist Graham Sumner, opponent of the new German-influenced economists, and the economist Arthur Twining Hadley (1856–1930), well known at that time for his important studies on railroad transportation. His route into economics was different from that of most American economists of his time. He obtained his Ph.D. in 1891 with a dissertation in mathematical economics, a field he chose with Sumner's encouragement: it was essentially an exposition of Walrasian general equilibrium theory. One year later, the dissertation was published with the title *Mathematical Investigations in the Theory of Value and Prices* (Fisher 1997 [1892]).

[3] The intellectual climate of the epoch that nourished his thought was surveyed in Sasuly (1947).

Appointed Tutor in mathematics in 1892, he also taught an undergraduate course on the subject of his dissertation.

In 1894–1895, after his marriage to Margaret Hazard, he went to Europe where he met and spent time with many important mathematicians like Ludwig Helmholtz, Ferdinand Georg Frobenius, and Henri Poincaré and some of the leading economists of his time—Edgeworth in the United Kingdom; Walras and Pareto in Lausanne; Pantaleoni and Barone in Italy; and Menger, Böhm-Bawerk, and Wieser in Vienna. On his return, he became Assistant Professor of Political and Social Science and, in 1898, full professor of economics. He stayed at Yale throughout his career (see Barber 2005), until his retirement in 1935.

In 1898, Fisher contracted tuberculosis which forced him to take leave from Yale for three years. He returned to teaching and research in 1901. In the following years, he published two books in quick succession, resuming the interrupted discourse that had started with *Appreciation and Interest* (Fisher 1896): *The Nature of Capital and Income* (Fisher 1906) and *The Rate of Interest* (Fisher 1907), later revised and republished in 1930 with the title *The Theory of Interest* (Fisher 1930) which can be considered companion volumes of the *Mathematical Investigations*. This work's investigation of the theory of money was completed in 1911 with *The Purchasing Power of Money*. Two chapters of this book were devoted to proposing a 'compensated dollar' as a cure for the evils of unstable purchasing power. This was an issue that Fisher dealt with until the end of his life, and which stimulated his interest in studying index numbers and the statistics of prices (see Fisher 1922). In 1930, together with Ragnar Frisch and Charles F. Roos, he founded the Econometric Society and was its first president (see Volume II of this book). The 1929 stock market crash took him by surprise, and this error in judgement damaged his reputation. During the early 1930s, he developed a new theory of business cycles and depressions, published in the book *Booms and Depressions* (Fisher 1932) and in some articles (in particular, Fisher 1933). In the following years, he produced a large number of publications—technical and popular writings dealing, in particular, with the measurement of purchasing power and methods of stabilization.

Fisher died in New York on April 29, 1947.

Fisher's Economics: *Mathematical Investigations*, 1892

Fisher's doctoral dissertation—*Mathematical Investigations in the Theory of Value and Prices* (1892)—analyzed equilibria in exchange and production economies. In his analysis, Fisher wrote Walrasian equations without knowing Walras's text. He got to know Walras's *Éléments*, as well as Edgeworth's *Mathematical Psychics*, only as he was finishing his dissertation. Fisher developed many important concepts in consumer and utility theory, predating what was to become Pareto's line of argument since 1900. In fact, in a review of Fisher's *Investigations*, Edgeworth recognized that Fisher had strengthened the foundations of pure economic theory, while Ragnar Frisch many years later, in 1947, described the book as a work of "monumental importance" (Frisch 1947, p. 72). He emphasized Fisher's "new clearness" to the idea of marginal utility, his "happy illustrations" of the theory of exchange, his use of indifference curves and indifference surfaces, and his demonstration of the unessentiality of "certain attributes of utility as a quality". Edgeworth thought that this conclusion on the utility concept was of 'unexpected importance'.

Fisher's *Mathematical Investigations* is divided into two parts, which make different assumptions regarding the agents' utility functions. In Part One, Fisher assumes that the utility of a commodity for each agent depends only on the amount of the commodity under consideration (i.e., he assumes an additively separable utility function). In Part Two, Fisher assumes that the utility of a commodity depends on the amounts of all commodities consumed (i.e., he assumes a general utility function). Fisher—like Pareto—emphasizes the importance of adopting the experimental scientific method in economics: "The laws of economics are framed to explain facts" (Fisher 1997 [1892], p. 11).

He begins (Chap. 1) with a discussion of the concept of utility, which he wants to free from all psychological connotations. This separation of the concept of utility from the hedonistic premises that were initially at its basis was asserted for the first time by Fisher and Pareto. Fisher writes:

> The economist need not envelop his own science in the hazes of ethics, psychology, biology and metaphysics. Perhaps utility is an unfortunate word to express the magnitude intended. Desirability would be less mis-

> leading, and its opposite, undesirability, is certainly preferable to dis-utility. 'Utility' is the heritage of Bentham and his theory of pleasures and pains. For us his *word* is the more acceptable, the less it is entangled with his *theory*. (ibid., p. 23)

He thus thinks that "we content ourselves…with the following simple economic postulate: *Each individual acts as he desires*" (ibid., p. 11). Fisher, like Pareto, assumes that each agent acts according to his preferences. The utility function is the numerical representation of these preferences.

Chapter 2 begins by pointing out analogies and similarities between economics and mechanics. Fisher attempts to offer "a systematic representation in terms of mechanical interaction of that beautiful and intricate equilibrium which manifests itself on the 'exchanges' of a great city but of which the causes and effects lie far outside" (ibid., p. 24). He deals with the issue in Chap. 3 of the second part of the book, entitled "Mechanical Analogies". Mechanics, according to Fisher, can provide a conceptual structure for describing the market. He writes: "Energy [work] is force times space, just as gain is marginal utility times commodity" (ibid., p. 85). And he introduces the following table of comparison (Table 7.1).[4]

The subsequent analysis in Part I considers the behavior of a consumer or producer with respect to one commodity. Fisher shows that (1) a consumer maximizes his utility by consuming an amount of this commodity such that its marginal utility equals its price and (2) a producer maximizes his utility by producing an amount of a commodity such that the marginal disutility of this quantity equals its negative price. Fisher then discusses the case of many consumers for one commodity and shows that the marginal utilities for all consumers must be the same in order to have the optimal behavior. To illustrate this case, Fisher constructs a hydrostatic device consisting of several cisterns connected by tubes, where each cistern represents the marginal utility of a consumer. If the cisterns are

[4] Fisher's use of mechanical analogy differs from that used by Pareto: in Pareto, mechanical analogies serve as a tool, while in Fisher the analogy between mechanics and economics is deeper. For a comparison and a discussion, see Marchionatti and Gambino 1997.

Table 7.1 Fisher's table of comparison between mechanics and economics

In Mechanics		*In Economics*
A particle	corresponds to	An individual
Space	corresponds to	An individual
Force	corresponds to	Marginal utility or disutility
Work	corresponds to	Disutility
Energy	corresponds to	Utility
Work or energy = force × space		Disutility or utility = marginal utility × commodity
Force is a vector (directed in space)		Marginal utility is a vector (directed in com.)
Forces are added by vector addition		Marginal utilities are added by vector addition (parallelogram of marginal utility)
Work and Energy are scalars		Disutility and utility are scalars
The *total work* done by a particle in moving from the origin to a given position is the integral of the resisting *forces* along all space axes (resisting forces are those directed toward the origin) multiplied by the distances moved along those axes		The *total disutility* suffered by an individual in assuming a given position in the 'economic world' is the integral of the *marginal disutility* along all commod. axes (marginal disutilities are directed toward the origin) multiplied by the distances moved along those axes
The '*total energy*' (the work done upon the particle) may be defined as the like integral with respect to *impelling forces*		The *total utility* enjoyed by the individual is the like integral with respect to *marg. utilities*
The *net energy* of the particle may be defined as the 'total energy' less the 'total work'		The net utility or gain of the individual is the 'total utility' less the total disutility

Source: Fisher (1997 [1892])

filled with water, the liquid will seek its level and thus lead to an equalization of marginal utilities for all the consumers. In Chap. 4, Fisher studies the general case with m commodities and n agents. In Chap. 5, he integrates consumption and production into a single model.

The second part of the book generalizes the analysis presented in Part One. Fisher assumes general utility functions. He employs the

Edgeworthian concept of indifference curves and budget constraints to illustrate graphically the utility maximizing behavior of a consumer.

Fisher's Economics: *The Rate of Interest*, 1907

Schumpeter (1948) notes that the Walrasian system presupposes a schema of economic accounting and that this schema of accounting centers on the themes of capital values and income values:

> This is why Walras included in his *Éléments d'economie politique pure* a few paragraphs that might have been entitled: elementary principles of accounting. And this is also why Irving Fisher supplemented the *Investigations* by a volume on the *Nature of Capital and Income*. (Schumpeter 1948, p. 223)

The Nature of Capital and Income (1906) is a sort of philosophy of economic accounting and links practical business transactions with the theories of abstract economics. Fisher devotes particular attention to the concepts of capital values and income, which can be clarified by considering how accountants approached the question. Here, the difference between stocks and flows is important. By capitalizing income at the current rate of interest, the tie to capital as a fund is made, and the value is determined as a process of discounting to the present. Interest is a flow category, like other incomes, and is the link between capital and income.

Fisher's theory of the determination of rates of interest is to be found in *The Rate of Interest*, published in 1907, and in the new enlarged edition of the same work, published in 1930 under the title *The Theory of Interest*. In this revised form, it is, according to Schumpeter, "the peak achievement, so far as perfection within its own frame is concerned, of the literature of interest" (ibid., p. 225). It "is an almost complete theory of the capitalist process as a whole, with all the interdependences displayed that exist between the rate of interest and all the other elements of the economic system" (ibid., p. 226). In Fisher's conception, interest plays a central role in the theory of value and distribution, as it is fundamental in the determination of prices.

The book (we mainly refer to the 1930 enlarged edition) is divided into four parts. Part I gives the conceptual apparatus, already developed in *Nature of Capital and Income*. Part II presents the theory in words and Part III in mathematical form. Part IV is devoted to a further discussion of issues such as the relation of discovery and invention to interest rates and the relation to interest to money and prices, as well as the statistical work. The book is dedicated to the memory of Böhm-Bawerk and, more surprisingly, to John Rae (a mid-1800 Scottish-Canadian economist and adventurer) "who laid the foundations upon which I endeavored to build". But the book made a sharp break with Böhm-Bawerk. As Fisher writes in the preface to the 1907 edition to explain how his theory differs from former versions:

> The difficult problem is not whether the rate of interest is an *agio*, or premium, for of this there can be no question, but upon what does that *agio* [in 1930 substituted by impatience] depend and in what manner? Does it depend, for instance, on the volume of money, the amount of capital, the productivity of capital, the "superior productivity of roundabout processes," the labor of the capitalist, the helplessness of the laborer, or upon some other condition?
>
> The solution here offered is that the rate of interest depends on the character of the income-stream,—its size composition, probability, and above all, its distribution in time. It might be called a theory of *prospective provision of income*. (Fisher 1907, pp. vii–viii)

Fisher introduces two concepts in his analysis: impatience (or time preference) and investment opportunity. Impatience explains the existence of interest: starting from a situation of equality between current and planned future consumption, the individual requires a quantity of future consumption greater than that of current consumption as a compensation for an additional unit of saving. Investment opportunity (or marginal rate of return over cost) was similar to the Keynesian notion of 'marginal efficiency of capital', as Keynes himself acknowledged in the *General Theory*. Fisher presents his theory by a series of approximations, in which the first stage deals with the case in which income-streams are fixed and certain; the second stage with the case in which income-streams

are not fixed, but variations can be foreseen. In the first stage, elements of risk and uncertainty are introduced. The equilibrium point, which clears the market, clears it at a rate of interest registering (in a perfect market) all impatience rates and all opportunity rates so that the marginal time preference and the marginal return over cost are equal.

Fisher's Economics: *The Purchasing Power of Money, Its Determination and Relation to Credit, Interest, and Crises*, 1911

Keynes (1911, p. 393) considered Fisher's *Purchasing Power of Money* "a better exposition of monetary theory" than available elsewhere at that time, when the cash-balance approach had not yet been developed by Pigou. The book, dedicated to the memory of Simon Newcomb, set forth the principles determining the purchasing power of money, or its mathematical reciprocal, the level of prices. Fisher writes in the preface that:

> [The purchasing power of money] depends exclusively on five definite factors: (1) the volume of money in circulation; (2) its velocity of circulation; (3) the volume of bank deposits subject to check; (4) its velocity; and (5) the volume of trade. (Fisher 1911, p. 5)

It is a restatement of the quantity theory of money.[5] The second chapter develops the theory. "The quantity theory will be made more clear by the equation of exchange" (ibid., p. 19). This is an expression that originates with Newcomb (1885) and Edgeworth (1887): "The equation of exchange is a statement, in mathematical form, of the total transactions effected in a certain period in a given community" (ibid.).

The algebraic statement is as follows. Fisher denotes the total amount of money in circulation by M, while V is the velocity of circulation of money, the number of times that an amount of money circulates in a period of time. Thus MV expresses the monetary circulation in a given

[5] It is important to note that Fisher considered his book a response to Laughlin's radical criticism of the quantity theory of money. Fisher thought that the Chicago economist's theory was not to be rejected but restated.

period of time: it is the money side of the equation. Turning to the goods side of the equation, we have to deal with the prices of goods exchanged and quantities of goods exchanged, which can be expressed as ΣpQ. The equation of exchange may therefore be written $MV = \Sigma pQ$, or $MV = PT$.

By means of this equation, Fisher expresses three theorems:

> (1) If V and the Q's remain invariable while M varies in any ratio, the money side of the equation will vary in the same ratio and therefore its equal, the goods side, must vary in that same ratio also; consequently, either the p's will all vary in that ratio or else some p's will vary more than in that ratio and others enough less to compensate and maintain the same average.
>
> (2) If M and the Q's remain invariable while V varies in any ratio, the money side of the equation will vary in the same ratio, and therefore its equal, the goods side, must vary in that ratio also; consequently, the p's will all vary in the same ratio or else some will vary more and others enough less to compensate.
>
> (3) If M and V remain invariable, the money side and the goods side will remain invariable; consequently, if the Q's all vary in a given ratio, either the p's must all vary in the inverse ratio or else some of them will vary more and others enough less to compensate. (ibid., pp. 25–26)

Fisher concludes:

> To recapitulate, we find then that, under the conditions assumed, the price level varies (1) directly as the quantity of money in circulation (M), (2) directly as the velocity of its circulation (V), (3) inversely as the volume of trade done by it (T). The first of these three relations is worth emphasis. It constitutes the "quantity theory of money. (ibid., p. 27)

The equation of exchange, a truism in itself, becomes a theory when specific assumptions are made about its components. By assuming that V and Q are constant, we have the quantity theory of money in the strongest form: in this case, the level of prices varies directly with the quantity of money in circulation:

> The quantity theory of money thus rests, ultimately, upon the fundamental peculiarity which money alone of all goods possesses,—the fact that it has no power to satisfy human wants except a power to purchase things which do have such power. (ibid., p. 28)

In Chap. 3, Fisher introduces the study of banking operations, which implies the existence of two species of currency: "one, banknotes, belonging to the category of money; and the other, deposits, belonging outside of that category, but constituting an excellent substitute" (ibid., p. 36). The total value of purchases in a year is therefore no longer to be measured by MV, but by $MV + M'V'$, where M' expresses the total deposits and V' their velocity of circulation. The equation of exchange, therefore, becomes: $MV + M'V' = \Sigma pQ = PT$. Fisher maintains that "the inclusion of deposit currency does not normally disturb the quantitative relation between money and prices" (ibid., p. 39) because "there tends to be a normal ratio of bank deposits (M') to the quantity of money" (ibid.). This is true in equilibrium, Fisher specifies, not during periods of transition when it is by no means rigid. Chapter 4 investigates these periods of transition. In equilibrium, if the quantity of money is doubled, prices double: Fisher calls this the permanent or ultimate effect, which follows after a new equilibrium is established. But in the period of transition, different, temporary, effects prevail. The transition periods may be characterized either by rising prices or by falling prices. The crucial fact, Fisher writes, is the effect of changing prices on the rate of interest. In fact, "the peculiar behavior of the rate of interest during transition periods is largely responsible for the crises and depressions in which price movements end" (ibid., p. 40):

> It has been seen that rising prices tend towards a higher nominal interest, and falling prices tend towards a lower, but that in general the adjustment is incomplete. With any initial rise of prices comes an expansion of loans, owing to the fact that interest does not at once adjust itself. This produces profits for the enterpriser-borrower, and his demand for loans further extends deposit currency. This extension still further raises prices, a result accentuated by a rise in velocities though somewhat mitigated by an increase in trade. When interest has become adjusted to rising prices, and

> loans and deposits have reached the limit set for them by the bank reserves and other conditions, the fact that prices no longer are rising necessitates a new adjustment. Those whose business has been unduly extended now find the high rates of interest oppressive. Failures result, constituting a commercial crisis. A reaction sets in; a reverse movement is initiated. A fall of prices, once begun, tends to be accelerated for reasons exactly corresponding to those which operate in the opposite situation. (ibid., p. 48)

Chapters 5–7 are devoted to investigating the indirect influences on prices and purchasing power. "Myriads of factors [consumer preferences, technology, the nature of competition, import and export of capital, the organization of monetary systems, etc.] play upon the purchasing power of money" (ibid., p. 87), Fisher recognizes, but he maintains that:

> The value of our analysis consists rather in simplifying the problem by setting forth clearly the five proximate causes [those connected by the equation of exchange] through which all others whatsoever must operate. At the close of our study, as at the beginning, stands forth the equation of exchange as the great determinant of the purchasing power of money. (ibid.)

After two chapters discussing the index numbers of the purchasing power of money, the long Chapters 11 and 12 are devoted to a statistical and historical study of changes in the quantity of currency and of the effects of these changes on prices, in order to show that "the equation of exchange, which has already been proved *a priori*, may also be verified by actual statistics" (ibid., p. 154).[6] This study of empirical evidence is also developed in the appendices:

> The price level, then, is the result of the five great causes mentioned, normally varying directly with the quantity of money (and with deposits which normally vary in unison with the quantity of money), provided that

[6] On his interest on statistics, Fisher (1947) wrote: "My own interest in statistics has not been primarily that of a statistician, but that of an economist, as indicated in the title of my address as President of the American Statistical Association in 1932, which was 'Statistics in the Service of Economics.' That is, I have valued statistics as an instrument to help fulfill one of the great ambitions of my life, namely, to do what I could toward making economics into a genuine science" (Fisher 1947, p. 74).

> the velocities of circulation and the volume of trade remain unchanged, and that there be a given state of development of deposit banking. This is one of the chief propositions concerning the level of prices or its reciprocal, the purchasing power of money. It constitutes the so-called quantity theory of money. The qualifying adverb "normally" is inserted in the formulation in order to provide for the transitional periods or credit cycles. Practically, this proposition is an exact law of proportion, as exact and as fundamental in economic science as the exact law of proportion between pressure and density of gases in physics, assuming temperature to remain the same. It is, of course, true that, in practice, velocities and trade seldom remain unchanged, just as it seldom happens that temperature remains unchanged. But the *tendency* represented in the quantity theory remains true, whatever happens to the other elements involved, just as the *tendency* represented in the density theory remains true whatever happens to temperature. Only those who fail to grasp the significance of what a scientific law really is can fail to see the significance and importance of the quantitative law of money. A scientific law is not a formulation of statistics or of history. It is a formulation of what holds true under given conditions. Statistics and history can be used to illustrate and verify laws only by making suitable allowances for changed conditions. It is by making such allowances that we have pursued our study of the last ten centuries in the rough and of the last decade and a half in detail. In each case we found the facts in accord with the principles previously formulated. (ibid., pp. 179–180)

The last chapter of the book is devoted to the problem of monetary policy and of making purchasing power more stable.

7.4 Economics at Harvard: Frank Taussig (1859–1940) and the First Harvard School

Frank Taussig is regarded as the 'American Marshall' (Schumpeter), not only for his affinity to the doctrines of Alfred Marshall—he considered Marshall's *Principles* the most important contribution since John Stuart Mill in the Ricardo-Mill tradition—but also for his highly influential role in American economics. He was a crucial figure in the spread of Neoclassicism throughout the United States, rejecting a radical

conception of marginalism, but stressing the congruity of Classical and Neoclassical economics. As Dorfman (1946–1959, vol. III) wrote, "he was first and last a follower of the classical tradition of Ricardo and John Stuart Mill" (p. 265) and the work in his main field of research, international economics, can be characterized as "a restatement and an elaboration of the analysis of the English classical school", as Viner wrote (Viner 1936, p. 5). Moreover, though one of the leaders of the 'old school', he was not alien to the teaching of the German school, and he was able to integrate classical theoretical analysis with institutional insights and empirical data. As Schumpeter et al. (1941) write:

> To him, economics always remained political economy. His early training and his general equipment were not only as much historical as they were theoretical; they were primarily historical. The practical problem in its historical, legal, political, in short, in its institutional aspects attracted him much more than any theoretical refinements ever did. And nobody who knew him can have failed to admire his ability to see problems in their sociological settings and in their historical perspectives. It was, then, in a thoroughly historical spirit that he approached his chosen subject: international trade. (Schumpeter et al. 1941, pp. 341–342)

Last but not least, he was a great teacher and organizer, exercising a "tremendous influence" (Dorfman, 1946–1959, vol. III, p. 270) on the course of American economics, and he was at the same time highly esteemed in the rest of the world—in 1933, he became the only American economist ever awarded an honorary doctorate by Cambridge University.

Biographical Note

Frank William Taussig was born in St. Louis, Missouri, on December 28, 1859, the son of two Czechoslovakian emigrants of the 1840s, William Taussig, who became a successful businessman, and Adele Wuerpel. He was educated in St. Louis Public Schools and at Smith Academy in the same city. He then went to Washington University but, after a year, migrated to Harvard in 1875, studying history and economics—his teacher in economics was Charles Dunbar—and graduated in 1879 in

history. After the B.A., he traveled in Europe for a year, taking some time to study political economy and Roman law at the University of Berlin, as well as in other European countries. Upon returning to Harvard in order to enter the Law School, he accepted the position of secretary to Harvard President Charles W. Eliot at the same time studying for his Ph.D. in economics. The subject of his dissertation was the history of American tariff legislation. It was published in 1883 as a book, *Protection to Young Industries as Applied in the United States* (Taussig 1883). This was his line of research for many years: the first book was followed by *The History of the Present Tariff, 1860–1883* (Taussig 1885), then developed in *The Tariff History of the United States* (Taussig 1888) and in various other enlarged editions until 1931, while in 1915 he published *Some Aspects of the Tariff Question*.

In 1882, Taussig was appointed instructor in political economy and entrusted with the introductory course in economics during the temporary absence of Charles Dunbar. In 1886, he obtained the LL.B. (Bachelor of Laws) and, at the same time, was appointed assistant professor of political economy.

He then published *The Silver Situation in the United States* (Taussig 1891) which dealt with the economic and political aspects of the silver question, which became the standard work of the anti-silver school. In 1892, he became Full Professor and in 1901 the newly established Henry Lee Professorship was conferred upon him. In 1895, he was elected American Correspondent of the British Economic Association. In 1896, he was appointed to the editorial chair of the *Quarterly Journal of Economics,* a position he was to fill until 1935.

A nervous breakdown in 1901 caused him to leave Harvard for two years, resuming his work in 1903. In 1904, he was elected president of the AEA. From 1905 to 1911, he worked on his *Principles of Economics* (Taussig 1911), which became one of the most widely used textbooks of economics in the United States, reedited and revised three times, until 1939. In it he systematized the result of his own thought, in particular, in the fourth section on international trade. In general, the *Principles* present "Taussig's individual version of that system which we now call classical and which marks the transitional stage lying between the teaching of the old classics (Smith-Ricardo-Mill) and the theoretical work of our own epoch" (Schumpeter et al. 1941, p. 352).

In 1917, he accepted the chairmanship of the newly created United States Tariff Commission. With the country's entry into the war, he also became a member of various committees, at the same time acting as advisor to President Wilson. In 1919, he joined the Advisory Committee on the Peace and attended the Paris Conference. In November 1919, Wilson invited him to attend the second industrial conference in Washington for promoting peace between capital and labor. He then returned to Harvard. He published *Free Trade, the Tariff and Reciprocity* (Taussig 1920), a book of collected essays, and *International Trade* (Taussig 1927). Then he published *American Business Leaders: A Study in Social Origins and Social Stratification* (Taussig 1932), a book of economic sociology, which had been one of his 'institutionalist' research interests since 1916, when he published *Inventors and Money-Makers*, a book analyzing the entrepreneur and his behavior. He resigned his chair at Harvard in 1935 and the editorship of the *Quarterly Journal of Economics* in 1936.

He died on November 11, 1940. The successor to his chair was Joseph Schumpeter.

The Governance of the Department of Economics and the Birth of the First Harvard School

Mason (1982) writes that "if anyone is entitled to be called the 'grand old man' of economics at Harvard, it is certainly Taussig":

> Although he must be ranked below his contemporaries J. B. Clark and Irving Fisher as an economic theorist, he was a competent theorist and something more than that in the field of international trade. As a teacher of economics, he was unexcelled, and generations of young economists can testify to this excellence. Schumpeter [1954, p. 870] called him "one of the greatest teachers of economics who ever lived" and correctly observed that "no man had more to do with the steady rise of economics throughout the period than had he." *He was furthermore the force that held together at various stages a group of somewhat cantankerous individuals and molded them into a functioning department*. (Mason 1982, p. 394, our italics)

When Taussig became full professor in 1892, Harvard was not in the forefront of American universities in terms of courses of economics given and number of students enrolled. It was not until 1897 that Economics became a separate department in the division of *History, Government, and Economics*, but the number of doctoral degrees conferred was very small until the end of the decade. Nor did the following decade begin promisingly, as Dunbar died, other teachers left, and Taussig suffered a nervous breakdown. But in the space of a few years, the department began to flourish under Taussig's leadership. As regards the theoretical side, Dorfman (1946–1959, vol. IV, p. 236) notes that "in Frank W. Taussig, Thomas Nixon Carver [1865–1961], and Charles J. Bullock [1869–1941], Harvard had an outstanding group of value theorists". As regards the applied fields, the department became very strong: Taussig in international trade; Carver in agricultural economics; William Ripley (1867–1941), who joined the Department in 1901, in railway economics, trusts and corporations, and labor economics; Bullock, in public finance; Oliver Sprague (1873–1943) in the field of money and banking and on financial crises; and Edwin F. Gay (1867–1946), who had come to Harvard as an instructor in 1902, in economic history in the United States:

> This was a strong and well-rounded department, and during the period from 1902 or 1903 and the first world war could lay claim to being the leading center of economic thought in the country. (Mason 1982, p. 403)

Moreover, in order to strengthen the applied fields, the Graduate School of Business Administration had been launched in 1908. Many of the writings of the faculty members in the various fields mentioned appeared in the *Quarterly Journal of Economics*, which during that period became one of the leading economic journals in the English-speaking world. Although the Department was outstanding during the first two decades of the century, it was becoming increasingly inbred: no one who had not taken his Ph.D. at Harvard was invited in any other than a visiting capacity between 1903 and 1919. Taussig's students James W. Angell (1898–1986), Frank D. Graham (1890–1949), Jacob Viner (1892–1970), and John H. Williams (1887–1980) gave considerable impetus to

research in international trade along the lines he had established. Not surprisingly, Dennis Robertson, in his review of *International Trade* in the *Economic Journal*, used the term Harvard School:

> By publishing this book Professor Taussig has put a fitting crown both on his own long services to economic science and on the notable corpus of work in the field of international trade which, largely it is to be supposed under his own inspiration, has emanated in recent years from the Harvard School. (Robertson 1928, p. 276)

Taussig's International Economics: A Note

As mentioned earlier, Taussig's work in the field of theory of international trade can be seen as a restatement of the English classical school's analysis. His originality, as Viner (1936) wrote, rests on an effective synthesis of complex and varied materials of "received doctrine" into a coordinated whole. His main contributions were in revising the classical doctrine of comparative costs—considering problems arising from the existence of different types of labor—analyzing the mechanism of international trade under paper money conditions and, perhaps, most importantly, analyzing tariff questions and commercial policy. In his *Some Aspects of the Tariff Question* (Taussig 1915), he discusses the controversy between free trade and protection at the theoretical and empirical levels with a look at the history of several industries. Two conclusions were particularly important: first, that the free trade system was beneficial only if maintained for a long time, the greatest evil being a changing tariff system; second, the infant industry argument for protection was theoretically valid, though he was skeptical of its actual application.

7.5 Economics in Chicago: James L. Laughlin (1850–1933) and Thorstein Veblen (1857–1929)

James Laurence Laughlin

"Most dogmatically classical among…younger economists of the traditional school was J. L. Laughlin", so Dorfman (Dorfman 1946–1959, vol. III, p. 271) writes. A follower of J. E. Cairnes and J. S. Mill (but ignoring his social philosophy) and a firm believer in free competition, he was the tireless organizer of the Department of Economics at Chicago University and made important contributions in the field of money and credit.

Biographical Note

James Laurence Laughlin was born in Deerfield, Ohio, on April 2, 1850, of a middle-class family. He was able to study at Harvard on a scholarship, earning his B.A. in history in 1873. In 1878, he became an instructor in economics at Harvard under Charles Dunbar and, after receiving his Ph.D. (in history), he finally turned to economics, specializing in the area of money and banking. He was appointed assistant professor at Harvard in 1883. In the same year he helped to found, with Simon Newcomb and William Graham Sumner, the Political Economy Club in New York, which was the nucleus of orthodox opposition to the AEA during its formative stage. His main work of this period was *The History of Bimetallism in the United States* (Laughlin 1885), according to Milton Friedman "unquestionably a major scholarly contribution" (Friedman 1990, p. 94).

In 1887, Laughlin left his post at Harvard to work for a Philadelphia insurance company. In 1890, he returned to academia, becoming a professor of political economy and finance at Cornell University. He was there for two years before the newly created University of Chicago invited him, in 1892, to form its first economics department and take up the

editorship of the new *Journal of Political Economy*. He brought the young Thorstein Veblen with him from Cornell: it seems that this was a condition of his coming to Chicago. His major theoretical work, written in those years, was *Principles of Money* (1903), money being, according to Laughlin, a part of economics which needed reorganization.

But Laughlin's main role in Chicago was in heading the department, putting his imprint on it for the first quarter-century of its existence. In that period, he left the department for two years, between 1911 and 1913, to serve as chairman of the National Citizens' League committee for educating the public on the urgency of banking reform along lines, as Barber (2003, p. 289) maintains, "that were ultimately imbedded in the Federal Reserve Act of 1913". Laughlin retired from the University of Chicago in 1916. After his retirement, he worked for many years on money: From 1918 to 1933, he published several books, the most important being *Credit of the Nations* (Laughlin 1918), Money, Credit and Prices (Laughlin 1919), *A New Exposition of Money, Credit, and Prices* (Laughlin 1931)—a two-volume treatise which summarized his doctrine—and his last book, *The Federal Reserve Act: Its Origin and Problems* (Laughlin 1933). He died on November 28, 1933.

Teacher, Organizer, and Monetary Economist

Laughlin is usually considered to have exercised a major influence through his teaching more than through his theoretical contributions (though the latter were not insignificant). As Mitchell writes:

> Professor Laughlin's indubitable success as a teacher puzzled many who did not pass through his classroom. He was not an original thinker of great power. He did not enrich economics as did, for example, the elder Clark, Irving Fisher, Veblen, and John R. Commons—to name only fellow countrymen. He did not even keep abreast of current developments in economic theory. Mill and Cairnes were the models to which he clung; he saw nothing but dangerous nonsense in Karl Marx; for all his historical training, he had no use for Schmoller; he could not make much of the Austrians; he did not assimilate Marshall; Pareto was quite beyond his ken. He had a prim and tidy mind, which he kept in perfect order by admitting

> nothing that did not harmonize with the furnishings installed in the 1880's. (Mitchell 1941, pp. 879–880)

Scholars agree that his contribution to American scholarship as teacher and departmental head was his "most important and lasting contribution" (Friedman 1990). As one of his students wrote:

> A very considerable proportion of all the men who have made an important mark in American economic thought between 1895 and 1930, beginning with Thorstein Veblen and coming down to Jacob Viner…were connected at one time or another, as members or as students, with his [Laughlin's] Department of Political Economy. (Nef 1934, p. 780)

Although his opinions were those of a conservative and Republican, he chose what he considered the best men in the field independently of their persuasions—men who were usually quite heterogeneous from the political point of view as well, like Thorstein Veblen and Wesley Mitchell. "And so it came about that one of the most conservative heads of an economic department in the country had politically the most liberal and economically the least orthodox department" (ibid., p. 781). It is also worth mentioning (see Rutherford 2010) that Laughlin and his successor as department head, Leon C. Marshall (1879–1966), encouraged women students. We should mention Katharine Bement Davis (1860–1935) and Edith Abbott (1876–1957), both students of Laughlin and Veblen and Ph.D.s in economics, as well as leading activists in US social reforms.

Laughlin's reputation as an economist rests on his work in monetary and banking economics: as Laidler (2010) writes, he "was one of America's most influential monetary economists between the 1880s and the foundation of the Federal Reserve System in 1913" (Laidler 2010, p. 70). *The History of Bimetallism in the United States* (Laughlin 1885)—revised for a second edition in 1896 and a third in 1900—was a major scholarly contribution and was cited by both proponents and opponents of bimetallism. A supporter of monometallism and of the gold standard system, Laughlin was an active leader of the opposition to the free-silver movement, which he considered an inflationist position, and a supporter of 'sound money'. He threw himself into the public controversy, debating

with William Hope 'Coin' Harvey (1851–1936), a lawyer and politician who supported bimetallism. Laughlin considered this proposal fallacious, as it was based on a crude version of the quantity theory of money. Theoretically, in fact, he opposed quantity theory of money—as a supporter of the classical cost-of-production theory of value he considered the price-level variations determined by changes in the cost of production of individual goods—and debated vigorously with Fisher, whose *Purchasing Power of Money* (1911) can be read as a rebuttal of Laughlin's ideas.

Thorstein Veblen

"Intellectually homeless", "something of an anarchist", "a man from another planet"—so Joseph Dorfman, his biographer, defines Thorstein Veblen, the "disturbing voice" that appeared at the turn of the century in American economics (see Dorfman 1946–1959, vol. III, pp. 434–435; see also Dorfman 1934). Veblen was, as Hutchison aptly writes, the opposite of J. B. Clark, of whom the young Veblen was a pupil:

> These two are a pair as nicely representative of two extreme poles, or 'ideal types', of economic thinking as can be found in the history of the subject, much more widely and diametrically opposed or apart than Malthus and Ricardo, or perhaps even than Schmoller and Menger. (Hutchison 1953, p. 262)

Veblen was the great intellectual radical in American economics. Hobson called him "one of the few original thinkers of his age in the field of sociology and economics" (Hobson 1937, p. 139). More recently, Samuels (1990) put Veblen together with Weber and Pareto as one of the three writers who at the beginning of the twentieth century produced a comprehensive theory of society. Veblen produced a classic critical analysis of American capitalism, its ethical foundations, and of the economic theory of his time. He was particularly critical of Clark's version of economic theory, taking issue with the idea of the individual as a rational-utility maximizer and Clark's treatment of growth and change (see Veblen 1908). On this latter point, Veblen also considered Marshall's thinking unsatisfying:

> Any sympathetic reader of Professor Marshall's great work…comes away with a sense of swift and smooth movement and interaction of parts; but it is the movement of a…self-balanced mechanism, not that of a cumulatively unfolding process or an institutional adaptation to cumulatively unfolding exigencies. (Veblen 1898, p. 173)

More generally, Veblen made a major contribution to constructing an evolutionary economics.

Biographical Note

Thorstein Veblen was born in Manitowoc County, Wisconsin, on July 30, 1857. His parents, who had emigrated in 1847 from rural Norway to America's Midwest, were farmers. After common school, he attended Carleton College in Minnesota, where his teacher of political economy was John Bates Clark. Upon graduation in 1880, he went for his post-graduate training to Johns Hopkins University in 1881 and then to Yale in 1882. He completed his Ph.D. in philosophy at Yale in 1884, with a dissertation on Kant with Noah Porter, moral philosopher and psychologist, though he continued to be interested in economics. Ill-health forced him to return to the family farm for some years. He then entered Cornell University, in Ithaca, New York, where a large department of economics had been recently established, and obtained a Ph.D. in economics under James Laurence Laughlin. When Laughlin went to the University of Chicago in 1892 to become the chairman of the Department of Political Economy, he brought Veblen with him. Veblen remained in Chicago until 1906 as Graduate Fellow, reader, instructor and, from 1900, Assistant Professor, at the same time serving as managing editor of the *Journal of Political Economy*. In Chicago, Veblen wrote some of his more important works, including the essay *The Preconceptions of Economic Science* (Veblen 1899–1900) and two books, *The Theory of the Leisure Class* (1899) and *The Theory of Business Enterprise* (1904). Also worth mentioning are his 1906 lectures on Marx (Veblen 1906)—one of his major interests—where he aired his opposition to some crucial aspects of

Marx's thought: its rationalism, its economic theory of value, as well as its teleological conception of history.

Rumors of marital infidelities—in 1888, Veblen had married Ellen Rolfe, his classmate at Carleton, but their marriage had broken up in the Chicago years—forced Veblen to leave Chicago. He moved to the newly established Stanford University, where he remained for three years as associate professor of economics. He then held a position at the University of Missouri. During the war, he worked in the government's Food Administration. At the same time, he published several books: *The Instinct of Workmanship* (Veblen 1914), *Imperial Germany and the Industrial Revolution* (Veblen 1915), and *The Higher Learning in America* (Veblen 1918). In 1919, he returned to teaching at the just-founded New School for Social Research in New York—Veblen helped to found it along with many New York progressive intellectuals. In this period, he published three more books: *The Vested Interests and the State of the Industrial Arts* (Veblen 1919a), *The Engineers and the Price System* (Veblen 1921), and *Absentee Ownership and Business Enterprise in Recent Times* (Veblen 1923), as well as a collection of his essays, *The Place of Science in Modern Civilization* (Veblen 1919b).

In 1926, he left New York for Palo Alto, California, where he died on August 3, 1929.

From the Criticism of Economics to the Foundation of an Evolutionary Economics

Veblen wrote a series of impressive essays in his Chicago years, mainly published in the *Quarterly Journal of Economics* and then collected in *The Place of Science in Modern Civilization,* where he developed a radical critique of all economic theory, from Smith to neoclassical economists: these essays are the logical premise to Veblen's economics.

In the first essay, "Why is Economics Not an Evolutionary Science?" (Veblen 1898), Veblen begins by stating that "economics is helplessly behind the times and unable to handle its subject-matter in a way to entitle it to standing as a modern science" (Veblen 1898, p. 373). Modern sciences, Veblen writes, are evolutionary sciences—evolutionary science "is a theory of a process, of an unfolding sequence" (p. 375)—and

"economics is not an evolutionary science" (ibid., p. 374). Economics is substantially "a taxonomic science", Veblen adds—"a body of logically consistent propositions concerning the normal relations of things" (ibid., p. 384), even though he recognizes that some economists diverge from the taxonomic line and show "an inclination to make the science a genetic account of the economic life process" (Veblen 1899, p. 123), essentially referring to Marshall, the Austrians, and, above all, to the Historical School. However, in his analysis of the development of economic thought in "The Preconceptions of Economic Science", an essay published in three parts in the *Quarterly Journal of Economics* (Veblen 1899–1900) Veblen considers the economic theory of his day in its essence as a re-elaboration of English classical political economy.[7] It maintains a theoretical framework alien to the genetic view: a static character, an outmoded psychology based on a hedonistic attitude, and a teleological approach. Veblen considers the Historical School an exception, but only partially:

> The economists of the classical trend have made no serious attempt to depart from the standpoint of taxonomy and make their science a genetic account of the economic life process.… Much the same is true for the Historical School. The latter have attempted an account of developmental sequence, but they have followed the lines of pre-Darwinian speculations on development rather than lines which modern science would recognize as evolutionary. They have given a narrative survey of phenomena, not a genetic account of an unfolding process. In this work they have, no doubt, achieved results of permanent value; but the results achieved are scarcely to be classed as economic theory. (1898, pp. 388–389)

As regards the Austrians, Veblen recognizes, referring to Menger, that their discussion of subjective value as the outcome of a valuation process must be taken as a genetic study of this range of facts, but he adds that they were unable to break with the classical tradition due to the their "faulty conception of human nature" (p. 389), a characteristic common

[7] Veblen also considers Marx essentially a classical economist. A close student of Marx's work, for which he had considerable admiration, he, nevertheless, strongly criticized Marx's theories. See Veblen 1906. Here, Veblen situates Marx's system within the Hegelian materialistic conception of history where movement occurred via conflict. He says that, from a modern scientific point of view, Marx's theory was weak: first, it offered no adequate proof of the labor theory of value; second, the law of capital accumulation and the causes that should have led to the collapse of the capitalistic system were not confirmed by facts.

to the neoclassical tradition as a whole—Veblen does not see Marshall as an exception from this point of view. Veblen writes:

> In all the received formulations of economic theory, whether at the hands of English economists or those of the Continent, the human material with which the inquiry is concerned is conceived in hedonistic terms; that is to say, in terms of a passive and substantially inert and immutably given human nature.… The hedonistic conception of man is that of a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli that shift him about the area, but leave him intact…He is an isolated, definitive human datum, in stable equilibrium except for the buffets of the impinging forces that displace him in one direction or another. (ibid., p. 389)

In the light of recent psychological and anthropological research, Veblen writes, a different conception of human nature emerges. According to this conception, man is not simply "a bundle of desires" but rather "a coherent structure of propensities and habits which seeks realization and expression in an unfolding activity" (ibid., p. 390):

> The economic life history of the individual is a cumulative process of adaptation of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the past process…. What is true of the individual in this respect is true of the group in which he lives. All economic change is a change in the economic community…. The change is always in last resort a change in habits of thought. (ibid., p. 391)

The evolutionary point of view thus "leaves no place for a formulation of natural laws in terms of definitive normality" (ibid., p. 392). In Veblen's theoretical framework, men's interest in the material means of life shapes the economic life history of any community. This economic interest, Veblen writes, has guided the formation and growth of "that range of conventionalities and methods of life that are currently recognized as economic institutions" (ibid.). It follows that "an evolutionary economics must be the theory of a process of cultural growth as determined by the economic interest" (ibid., p. 393). In this perspective which departs from

the hedonistic calculus, the human being is an active agent whose behavior is governed by instincts, habits, and conventions: in the long run, Veblen maintains, it is not directly determined by instincts, but it is a matter of institutions, defined as socially shared habits of thought. The explanation of economic life is to be found in the nature of institutions. Veblen's economic theory is a theory of the evolution—in the sense of emergence and growth—of economic institutions.

Veblen conceived of history as several stages—savagery, barbarism, the era of handicraft production, and the business era—the latter being his contemporary culture. In each stage, different instincts and habits have prevailed. In Veblen's scheme, three chief instincts are positively connected with economic activity: the instinct of workmanship, the parental bent, and the bent of idle curiosity, frequently contaminated and distorted by other hostile instincts like predatory instincts prevailing in the barbaric era, which produce negative effects. Veblen's analysis of capitalist society is grounded in this theoretical framework.

Veblen's Institutional Economics: *The Theory of the Leisure Class: An Economic Study of Institutions*, 1899, and *The Theory of Business Enterprise*, 1904

Written in "Veblenesque style" (Seligman 1962, I, p. 134) compounded of humor, literary devices, and attempts to stimulate the reader's emotions, *The Theory of the Leisure Class: An Economic Study of Institutions*, as Dorfman (1946–1959, vol. III, p. 444) writes, "contains the most withering dissections of contemporary capitalism yet penned", written "in the terse impersonal manner of a man from another planet" (ibid., p. 446):

> The nature of the control of the captains of finance over the material welfare of the community was worked out in terms of the canons and activities of the gentleman of leisure and his apparent prototype, the barbarian chieftain (read "modern businessman"). The system of free contract became the system of status; the system conforming to the machine process became the industrial republic. The commercialization of life with its poisoning of the springs of survival and advance was traced, not to men's concern with

> material production, but to its antithesis, pecuniary exploitation. (ibid., p. 445)

Veblen maintains that modern industrial society featured a leisure class—composed of people exempted from manual work and from practicing economically productive occupations—supported by subordinated working classes employed in economically productive occupations. The material consumption of the leisure class, he writes in Chap. 2, has little to do with either comfort or subsistence, and much to do with social esteem from the community. The main social characteristic of the leisure class is the practice of conspicuous leisure as a "non-productive consumption of time". Theoretically, the consumption of luxury products (goods and services) is limited to the leisure class because the working classes have other things and activities on which to spend their limited income. Yet, such is not the case because the lower classes consume expensive alcoholic beverages and narcotic drugs. In doing so, the working classes seek to emulate the standards of life and play of the leisure class because they are the people "at the head of the social structure in point of reputability". In that emulation of the leisure class, social manners are a result of the non-productive consumption of time by the upper social classes; thus, the social utility of "conspicuous consumption" and of "conspicuous leisure" lies in their wastefulness of time and resources. To the leisure class, a material object becomes a product of conspicuous consumption when it is integrated in "the canon of honorific waste", by being regarded as either beautiful or worthy of possession for itself. Consequently, to the lower classes, possessing such an object becomes an exercise in the pecuniary emulation of the leisure class. Dress is also an expression of the pecuniary culture because in a consumer society, the function of clothes is to define the wearer as a man or a woman who belongs to a given social class, not for protection from the environment. The existence of the leisure class influences the behavior of the individual man and woman, by way of social ambition. To rise in society, a person from a lower class emulates the characteristics of the desired upper class and assumes the habits of economic consumption and social attitudes.

In this society, then, the instinct toward hard work could become atrophied by emulating the predator—the successful businessman. The

distinction made in the *Leisure Class* between 'the pecuniary and the industrial' as two categories of the modern economic institution is developed in *The Theory of Business Enterprise* (1904), where a contrast is drawn between the culture of 'business enterprise' and 'pecuniary or business employments' on the one hand and 'the modern complex of mechanical industry' and 'industrial or mechanical employments' on the other hand. Influenced by Veblen's observation of the Great Merger Movement in the period from 1897 to 1904 in the United States and of the growth of Wall Street and absentee owners, the main purpose of *The Theory of Business Enterprise* is to analyze two 'clashing' motivations: the motivation of business and that of industry, making money versus making goods. Business's motivation is 'pecuniary gain', and its aim is the accumulation of wealth, to maximize individual financial gain. Since one of the worst fears of the 'captains of industry' was an uncontrollable increase in production that would have meant a collapse of profits, their main goal is to curtail production in order to keep prices and thus profits high. To achieve this goal, business enterprise aims at monopolistic practices. In Veblen's estimation, businessmen were predators, engaged in 'watchful waiting' for opportunities to make a killing in the market. At these points, his analysis is very close to Marx's analysis of capitalist concentration and crisis, and it aims at constructing a theory of corporation finance in order to explain business behavior and the cyclical movements of the economy. Veblen's theory was expanded in later works, especially *Absentee Ownership* (1923).

The Birth of the Institutionalist School in Chicago

In the period up to 1918, as Rutherford (2010, p. 26) writes, the department of economics at the University of Chicago contained, at various times, "virtually all of those individuals most closely associated with the founding of the institutionalist movement": Thorstein Veblen, Robert Hoxie, Wesley Mitchell, and Walton Hamilton, men who expressed the many sides of institutionalist analysis. Thus, Chicago "has a strong claim to be seen…as the birthplace of what became known as institutional economics" (ibid.), and which was to burgeon after the war.

Veblen, as we have seen, published some of his most important works during his fourteen years at Chicago and influenced many students, Wesley Mitchell and Robert Hoxie being among the most noteworthy.

Wesley Mitchell (1874–1948), who received his doctorate under Laughlin, was instructor of economics at Chicago between 1899 and 1903. Then he moved in succession to Berkeley, Harvard, and, lastly, Columbia, where he became professor of economics in 1914 and where he remained for the rest of his life. He was one of the founders of the New School for Social Research in New York in 1919 and of the National Bureau of Economic Research (NBER) in 1920. In Chicago, he was deeply influenced by Veblen: in fact, though he entered university to study classics, he was so impressed by the courses of John Dewey and Thorstein Veblen that he changed to philosophy and economics. After some studies of the economic history of the United States, his main field of research soon became business cycles, the subject of an important book (Mitchell 1913). This was the first expression of Mitchell's interest in empirically based theoretical research, which continued after the First World War and until the 1940s, together with his institutional activity at NBER: according to Seligman (1962, p. 157) he "exemplified the application of empirical investigation to Veblenian concepts at its best" (see Volume II of this book).

Robert Hoxie (1868–1916), a close friend of Veblen, completed his doctorate at the University of Chicago in 1905, teaching there from 1906 until his tragic death in 1916. Though he focused on a wide range of topics, from price theory to bimetallism, his main interest was labor economics and trade unionism in particular: on this subject he published a book considered a classic: *Trade Unionism in the United States* (Hoxie 1919). It seems that he was the first to use the term 'institutional economist' to describe himself (Hamilton 1919).

Walton Hale Hamilton (1881–1958) was hired by Laughlin on Hoxie's recommendation in 1913 and stayed in Chicago until 1915, when he moved to Amherst College. He later went on to the Robert Brookings Graduate School and finally to Yale University, where in 1928 he became professor of law at the Law School. During the 1930s, he was active in the New Deal. His main research interest was economic regulation, where he addressed the relationship between government and the economy in

particular. In a paper presented at a 1918 meeting of the AEA, he outlined what Rutherford describes as the original institutionalist manifesto and introduced the term 'institutional approach to economics' in the economic literature (Hamilton 1919).

On the threshold of the First World War, another institutionalist scholar appeared on the Chicago scene: Harold Moulton (1893–1965), who, like another young institutionalist at Columbia, J. Maurice Clark (1884–1963), the son of J. B. Clark, published his most important works in the interwar period. One of Laughlin's doctoral students, Moulton became assistant professor at Chicago in 1914. Later appointed to a full professorship, he stayed at Chicago until 1922. In this period, he co-authored (with Clark and Hamilton) *Readings in the Economics of War* (1918).

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8

Great Controversies

8.1 Marginalists and Neoclassicists versus Historicists: From the Menger Versus Schmoller *Methodenstreit* to the Attempt at Reconciliation in J. N. Keynes's *Scope and Method of Political Economy*, 1883–1891

The German *Methodenstreit* (battle of methods) between Carl Menger and Gustav Schmoller in the 1880s was one of the most intense methodological controversies ever to occur in the development of economic theory. But the *Methodenstreit* went beyond Germany, influencing economic debate in other European countries and in the United States (see Chap. 7). Starting from the 1890s, however, the controversy subsided not only as a result of the growing dominance of marginalist-neoclassical though but also because of the attempts at reconciliation—John Neville Keynes's work in England, in particular—and developments in the methodological and theoretical debate itself.

R. Marchionatti, *Economic Theory in the Twentieth Century, An Intellectual History - Volume I*, https://doi.org/10.1007/978-3-030-40297-6_8

In the history of economics, the controversy between Menger and Schmoller has mainly been interpreted as a dispute between the inductive and deductive methods, as Schmoller himself suggested—a dispute that occupied two generations of economists, producing a literature so vast that it was judged "a history of wasted energies" (Schumpeter) by many economists of the following generations. But from a broader perspective, it can also be seen as an attempt to emphasize the historical and changing nature of socio-economic phenomena, as opposed to the simplified and mechanistic views of the rational behavior approach.

1883, Menger Versus Schmoller

In 1883, when the Historical School led by Gustav Schmoller dominated the German-speaking academic world, Carl Menger published *Untersuchungen über die Methode der Sozialwissenschaften* (*Investigations into the Method of the Social Sciences*) after a period of gestation of eight years, persuaded that methodological issues took priority in moving political economy forward. The book was intended as a critique of the allegedly anti-theoretical attitudes of the Historical School, whose error was to confuse "theoretical economics" with the "history of economy" (Menger 1883, p. 49), in order to establish the central place of deductive and abstract theory in economics. Menger distinguished between the "realistic-empirical orientation of theoretical research" and the "exact" orientation and considers the search for so-called exact laws to be the sole task of purely theoretical research in economics:

> The realistic-empirical orientation of theoretical research, as we saw, offers us in all realms of the world of phenomena results which are formally imperfect, however important and valuable they may be for human knowledge and practical life. They are theories which give us only a deficient understanding of the phenomena, only an uncertain prediction of them, and by no means an assured control of them. From the very beginning, too, the human mind has followed another orientation of theoretical research beside the one discussed above. It is different from the latter both in its aims and in its approaches to cognition.

> The aim of this orientation, which in the future we will call the *exact* one, an aim which research pursues in the same way in all realms of the world of phenomena, is the determination of strict laws of phenomena, of regularities in the succession of phenomena which do not present themselves to us as absolute, but which in respect to the approaches to cognition by which we attain to them simply bear within themselves the guarantee of absoluteness. It is the determination of laws of phenomena which commonly are called "laws of nature," but more correctly should be designated by the expression "*exact laws*." (Menger 1883, p. 59)

Menger argued that realist-empirical generalizations can by their nature never attain the strictness that necessarily characterizes logical implications: "an empirical law lacks the guarantee of absolute validity a priori" (ibid., p. 70).

Soon after Menger's book appeared, Schmoller published an unfavorable review in his *Jahrbuch für Gesetzgebung*, which contrasted it with Wilhelm Dilthey's *Einleitung in die Geisteswissenschaften, Versuch einer Grundlegung für das Studium der Gesellschaft und der Geschichte* (*Inquiry into the Method of the Social Sciences*, 1883). In 1883, Wilhelm Dilthey (1833–1911) was professor of philosophy at the University of Berlin, where he occupied the chair once held by Hegel. At that time, his work dealt essentially with the epistemological foundations of the social sciences. His aim was, as Schmoller writes, to raise the Historical School's position "into the continuity of western epistemology" (Schmoller 1883, p. 239), avoiding the excesses of scientific positivism and Marx's historical determinism. Schmoller thus used Dilthey's book to illustrate the errors of the direction taken by Menger.[1] Schmoller referred to Menger as a disciple of what he considered the outmoded classical economics and argued forcefully for a drastic change of theoretical orientation, viz. for principles of economics based on empirical historical data rather than the classical and neoclassical economists' axiomatic-deductive approach.

Menger replied with a strongly polemical pamphlet, *Irrthümer des Historismus in der deutschen Nationalökonomie* (*Errors of Historicism in German Economics,* 1884), written in the form of letter to a friend, where

[1] On the relationship between Schmoller and Dilthey, see Salley (1993–1994).

he essentially repeated the arguments of his *Untersuchungen*. Schmoller received it from Menger for review in his *Jahrbuch* but returned it to the Austrian economist unread and wrote a final attack in his journal.

The ensuing debate divided the German-speaking world neatly: Austria and its universities for the Austrian School; Germany and its universities for the German Historical School. As mentioned earlier, its influence was also felt over a much wider area, in particular, where the Historical School had a non-marginal role: in France, Italy, and the United Kingdom, as well as in the United States. In England, John Neville Keynes published a book in 1891 on the scope and method of economics in the English *Methodenstreit* that was considered a standard work on method for many decades.

1891, J. N. Keynes's Reconciliation Attempt in *Scope and Method of Political Economy*

Keynes's *Scope and Method of Political Economy* is considered the most important British work on methodology in the late nineteenth century. Not only did it provide a methodological underpinning for Marshall's theory (Blaug 1980; Moore 2003), but it also substantially ended the methodological debate between English orthodox and historical economists (at that time represented by William Cunningham [1849–1919] and William Ashley [1860–1927] in particular) that is now generally referred to as the English *Methodenstreit* (Moore 2003, p. 5). The book sought to reconcile the late classical tradition of John Stuart Mill and John E. Cairnes with the new claims of the Historical School. Starting from Henry Sidgwick's methodological discussion in his *Principles of Political Economy* (1883), Keynes presented his views in a spirit of compromise, maintaining that economists of both schools used the same methods when they were discussing the same problems and their differences concerned the relative importance of "different aspects of their work":

> The main points involved in controversies about economic method may be indicated in outline by briefly contrasting two broadly distinguished

> schools, one of which describes political economy as positive, abstract, and deductive, while the other describes it as ethical, realistic, and inductive. It should be distinctly understood that this sharp contrast is not to be found in the actual economic writings of the best economists of either school. In the methods that they employ—when they are really discussing the same problems—there is to a great extent substantial agreement. They differ, however, in the relative importance that they attach to different aspects of their work; and in their formal statements about method these differences become exaggerated. (Keynes 1891, pp. 9–10)

Keynes maintains that induction is inadequate "to yield more than empirical generalizations of uncertain validity" (ibid., p. 14)—and is thus inappropriate as a starting point in economics—and that the right method of procedure is the a priori method of starting from "a few and indispensable facts of human nature" (ibid.). Political economy is a science of tendencies, Keynes writes, its object being to work out and ascertain the result of certain great forces, as if these alone operated, and nothing else exerted any modifying influence. The role of comparison with observed facts is to test the conclusions deductively obtained. The method of specific experience is thus an indispensable supplement to deductive reasoning, even if it is inefficacious for the discovery of economic law.

The Historical School, by contrast, holds an "ethical, realistic, and inductive" (ibid., p. 20) view of economics. However, Keynes maintains, the opposition with the classical English school must not be exaggerated. The Historical School simply "realise more vividly the concrete problems, and hence lay stress on all the points which the English school have tended to overlook. But the difference is strictly speaking one of degree only". Keynes concludes that "no one method will be advocated to the entire exclusion of other methods" (ibid., p. 29). Scientific activity is a search for truths, Keynes writes, and the basis for this is observation or induction. Deduction is crucial, but it would be of no significance unless the premises on which it worked were founded on observation. However, Keynes confirms that the subject matter of economics is too complicated to be amenable to an inductive treatment. In this sense, he substantially rejected the historical method as the method of economics.

Undoubtedly, the book reveals Keynes's adherence to Marshall's approach, but with a qualification. In the years immediately before the publication of the *Principles*, Marshall had an important discussion with Keynes about his *Scope and Method*, the proofs of which Marshall read and commented on (see Coase 1975, pp. 25–26; Marshall 1996, vol. 1). In a letter to Keynes probably dating from September 1889, Marshall indicates where they differ, objecting to Keynes' "more orderly nature" and saying that in his new book he had taken "an extreme position as to the methods & scope of economics", maintaining that "economics has to use every method known to science". In fact, the essential difference between Marshall and Neville Keynes seems to lie in the fact that Keynes considered the subject matter of economics to be too complicated to be amenable of inductive treatment, and thus he saw deductive reasoning as an essential characteristic of economics, whereas Marshall was attempting to develop a method capable of dealing with complexity and, consequently, required every available scientific method.

Schumpeter on the *Methodenstreit*: A Note

As mentioned earlier, Schumpeter expressed the opinion that the German controversy was "substantially a history of wasted energies" (1954, p. 814). His explanation of why neither party felt able to adopt a conciliatory position is more interesting: "below the ruffled surface of polemical arguments and slogans", Schumpeter writes, "neither party really did question its opponent's position outright" (ibid.). The reasons for this inability are important "for the sociology and history of science". The many mutual misunderstandings that enter into all scientific controversies, and the clashes of temperaments and intellectual bents are two of these reasons, but a third is perhaps the most important:

> We must never forget that genuine schools are sociological realities—living beings. They have their structures—relations between leaders and followers—their flags, their battle cries, their moods, their all-too-human interests…. Victory and conquest, defeat and loss of ground, are in themselves values for such school and part of their very existence. They will try to

> appropriate labels that are considered honorific—in our case, *both* parties laid claim to such epithets as 'empiric', 'realistic', 'modern', 'exact'—and to affix derogatory labels—'speculative', 'futile', 'subordinate'—to the work of the enemy. These labels may mean little or nothing in themselves, but they acquire a life of their own and in turn keep controversy alive. (ibid., p. 815)

8.2 On the Relation Between Economics and Mathematics: Controversies on the Application of Mathematics to Political Economy

The Edgeworth-Walras-Bortkiewicz Controversy on the Application of Mathematics to Political Economy, 1889–1891[2]

In the years 1889–1891, Francis Y. Edgeworth, Léon Walras, and Ladislaus von Bortkiewicz directly, and Marshall indirectly, were involved in a bitter controversy that was highly representative of the dispute on economics and mathematics. The economists involved in the controversy agreed that mathematics was necessary for deductive reasoning in economics, but they disagreed on the extent of its use.

The History of the Controversy

In September 1889, Edgeworth reviewed the second edition of Walras's *Eléments d'économie politique pure* in the science journal *Nature*. In the same year, he delivered his Presidential Address to Section F of the British Association for the Advancement of Science, entitled "On the Application of Mathematics to Political Economy", likewise published in *Nature*. In these writings, Edgeworth criticized some points advanced by the "Helvetian Jevons", as he called Walras: the criticism of the theory of the entrepreneur and of the theory of *tâtonnement* are of particular interest as

[2] This chapter is essentially based on Marchionatti (2007).

regards the application of mathematics to political economy. Edgeworth declared that he agreed with Walras "in his plea for the use of mathematical reasoning in economics", but maintained that there was an "excessive elaboration" of mathematical reasoning in the *Eléments*.

Walras (who considered Edgeworth to be "a bit enfeoffed to Marshall", letter to Luigi Perozzo, October 13, 1889, in Jaffé 1965, II, 358–359) showed anger and disappointment at Edgeworth's review and *Opening Address*. On October 17, in a letter to Ladislaus von Bortkiewicz, then a young economist and statistician interested in Walras's work, whom he deemed capable of defending his theory, Walras wrote that the moment had come to clarify the object of pure economics "so that mathematical economics will not wander off on all kinds of sterile fantasies that will discredit it" (Jaffé 1965, II, 364) and asked Bortkiewicz to reply to Edgeworth. Bortkiewicz's paper was published in the *Revue d'économie politique* at the beginning of 1890. Edgeworth replied the following year in a long article entitled "La théorie mathématique de l'offre et de la demande et le coût de production" (The mathematical theory of supply and demand and the cost of production), also published in the *Revue d'économie politique.* Bortkiewicz recognized that Edgeworth raised some real difficulties, expressed some doubts about his ability to continue the controversy, and informed Walras of his decision to break off the debate (letter of September 13, 1891). At this point, Walras concluded that the direct controversy should be stopped (letter to Bortkiewicz, February 27, 1891). From the correspondence with Vilfredo Pareto in the years immediately after the controversy, it seems that Walras hoped that the Italian economist could support his position in the controversy with the 'English school'. Pareto did, in fact, support Walras's position in his pre-*Cours* writings as well as in the *Cours* on some specific points of the controversy, but he also expressed an attitude toward the method of economics that differed from Walras's. Edgeworth added a short note to his 1889 *Opening Address* when it was republished in his *Papers Relating to Political Economy* in 1925. Here, he took up the controversy again in order to reaffirm his criticism of more than thirty years before and to restate his position on the application of mathematics to economics, which was profoundly different from Walras's.

The Issues Under Discussion

The theoretical core of the controversy is represented by two issues—the theory of the entrepreneur and the theory of *tâtonnement*. The first issue, the concept of the entrepreneur who makes neither a profit nor a loss, is a characteristic of Walrasian equilibrium in production: in the state of perfect equilibrium, when there is equality in the quantities supplied and demanded and equality of price and average cost, profit does not exist, since total profit is the difference between price and average cost multiplied by the number of units of output sold. Hence, in equilibrium, the Walrasian entrepreneur makes neither a profit nor a loss. The second issue—one of the most controversial issues in Walrasian literature—is the so-called *tâtonnement*, which according to Walras is the process whereby prices reach equilibrium in a competitive market system.

The Notion of Ideal Entrepreneur Versus the Principle of Industrial Competition

In his review, Edgeworth maintained that the concept of the ideal entrepreneur who makes neither a profit nor a loss is an "extreme abstraction". Edgeworth notes that Walras confines his attention to final utility, but that "his [Walras's] view *on this and other points* would have been more exact", "if [Walras] had considered the part which the disutility of labour…plays as a factor of economic equilibrium". In his *Opening Address*, Edgeworth repeats this critique, reproaching Walras because his factors determining equilibrium do not include the concept of the cost of production "considered as importing sacrifice and effort" (i.e., in terms of disutility). Edgeworth holds that Walras considers the maximization of individual advantage "according to the law of final utility" alone. This may be accepted, Edgeworth explains, only to illustrate "the operation of a simple market" of free competition, but Walras's representation cannot be accepted "when we advance from the simplest type of market to the complexities introduced by division of labour" (Edgeworth 1889b, p. 281). In this case, "we could hardly conceive it possible to deduce *a priori* the position of equilibrium towards which a system so complicated

tends" (ibid.). Bortkiewicz (1890) writes that Walras left cost of production out of his theory of exchange in which the quantities of the several products were designated as parameters and introduced the cost of production into his theory of production where these quantities became variables to be determined by a twofold condition: that cost of production must equal price and that the quantities demanded of productive services must equal the quantities offered. Hence, Walras, Bortkiewicz maintains, did not make abstraction of the cost of production considered as importing sacrifice and effort. These were included in his theory under another name, "personal capital services" ("services des capitaux personelles"). As far as the general validity of the Walrasian model is concerned, Bortkiewicz thinks that Edgeworth is not clear when he says that the model is valid only in the case of the simplest type of market. Actually, Bortkiewicz and Walras (see letters of December 25 and 29, 1889) did not understand what Edgeworth meant by the expression "complexities introduced by division of labour". Bortkiewicz thought that this expression was lacking in significance.

In fact, Edgeworth's criticism of the ideal entrepreneur turns out to be a criticism of Walras's mode of conceiving competition, which is considered to be too limited. In particular, with "complexities introduced by division of labour", Edgeworth refers to the existence of "industrial competition", a seemingly classical concept introduced by J. E. Cairnes in his 1874 *Some Leading Principles of Political Economy* and used by H. Sidgwick in his 1883 *Principles of Political Economy*. According to Cairnes, industrial competition takes place between the producers of different commodities (i.e., in different industries) and tends to bring wages and profits into correspondence with the sacrifices undergone. By contrast, commercial competition is what takes place between dealers in the same commodity and operates toward equality of price (see Cairnes 1874, p. 363). In other words, industrial competition is a force equalizing the remunerations of producers in different industries. Assuming industrial competition, "normal" values are thus considered to be determined by cost of production, as Sidgwick notes (see Sidgwick 1883, p. 182). Edgeworth used the concept of commercial and industrial competition: he first considered economic equilibrium without including cost of production explicitly—"the system of markets…is that which would arise if all the

articles of exchange were periodically rained down like *manna* upon several proprietors" (p. 277)—that is, in commercial competition. He then takes account of efforts and sacrifices in order to consider equilibrium as the result of the combined effect of utility and cost of production and thus deal with industrial competition. The final utility of the exchanged articles is equal in equilibrium, Edgeworth writes. Similarly, the final disutilities must be equal. Thus, the advantages for an individual who balances advantages and costs of an occupation must be at least as great as in any other position open to him. This condition, Edgeworth writes, can be expressed with the equation of "the net advantages (or total utilities) in different occupations" under conditions of openness of markets and free factor mobility—a concept introduced by Marshall in his *Economics of Industry*. The two equations—that of the final utility for different kinds of expenditure and that of the net advantages in different occupations—may be considered the conditions of normal economic equilibrium of industrial competition. Consequently, according to Edgeworth, industrial competition, which characterizes the modern economic world, can be represented only by considering the disutility of labor in a "more explicit" way than Walras's. In 1925, Edgeworth reexamined the controversy with Walras on this point in a note and reasserted his position:

> Economic theory…does require the recognition of…industrial competition.… Walras's peculiar doctrine…cut him [the entrepreneur] from this essential principle [industrial competition]…. It is difficult to see how the equality…of profits in different occupations can be reconciled with this favourite tenet of the Lausanne School. Of course it may be tolerated as an extreme abstraction, a simplification permissible to a path-breaker. But it seems to deserve pardon rather than praise. (Edgeworth 1925, p. 311)

As for the mathematical problem of dealing with industrial competition, Edgeworth writes, "it is seen to be no longer a straightforward problem in algebra or geometry" (Edgeworth 1889a, p. 545). "It does not seem easy or helpful to represent [this mode of competition] by physical analogies". Unlike commercial competition, which may be likened "to a system of lakes flowing into each other", industrial competition, Edgeworth

writes, may be compared "to a system of vessels so communicating by means of valves, that when the level in one exceeded that of another to a certain extent, then *per saltum* a considerable portion of the contents of that one (a finite difference as compared with the differentials of the open system) is discharged into the other" (Edgeworth 1889b, p. 280). From the complexity of the mathematical problem of dealing with industrial competition, he deduces that the use of mathematics should be limited. Marshall had just published the *Principles* (Marshall 2013 [1890]), which Edgeworth enthusiastically reviewed (Edgeworth 1891): Edgeworth thought that Marshall's approach to the issue seemed the correct one. In the *Principles*, Marshall presents a concept of competition as a struggle for survival among entrepreneurs which tends to level profits and abandons the idea of representing a complex phenomenon like industrial competition in a general mathematical way. Marshall's book, Edgeworth (1891) writes, makes it unnecessary to discuss the equilibrium of industrial competition mathematically. He concludes his critique of the Walrasian ideal entrepreneur by maintaining that "this entrepreneur who makes neither a profit nor a loss is by now a figure out of place".

The essence of Edgeworth's criticism lies in the statement that a different conception of economic equilibrium that can grasp the essentials of the real economic world is needed—"Economic theory…does require the recognition of…industrial competition", Edgeworth claimed (Edgeworth 1925, p. 311). Edgeworth is interested in understanding the role that mathematics can play in improving theoretical reasoning in economics, but he is concerned that mathematical treatment can oversimplify the theoretical structure to the point where it is unable to interpret the real world. Walras's theory of exchange does not satisfy Edgeworth's conditions because of its use of extreme abstraction.

Walras's tâtonnement *Versus Edgeworth's Re-contracting*

In the *Eléments*, Walras poses the problem of the relation between the scientific (or theoretical) solution of exchange and the market solution—"which is solved in practice in the market by the mechanism of free competition". He establishes the identity of the two solutions by showing that

"the upward and downward movement of market prices in conjunction with the effective flow of entrepreneurs from enterprises showing a loss to enterprises showing a profit is purely and simply a method of groping [*tâtonnement*] towards a solution of the equations involved in these problems" (Walras 1889, p. 44). Walras sees the general market as an auction market and introduces an auctioneer who continues to change prices until supply and demand imbalances in all commodities disappear. As originally formulated (in the first three editions of the *Eléments*), *tâtonnement* is the abstract model of an ideal auction market's operation. It is an ideal abstraction of the spontaneous mechanism of competitive markets from which all the minor disturbances obscuring the generality of the analysis are deleted. For Walras, *tâtonnement* is how the mechanism of free competition solves his system of equations. Edgeworth interprets Walras's theory as an attempt to develop a theory of the equilibrating behavior of real competitive markets. He writes that "what the author professes to demonstrate is the course which the higgling of the market takes—the path, as it were, by which the economic system works down to equilibrium".

Conflicting interpretations have been offered of Walras's writings on *tâtonnement*. The Edgeworthian interpretation of *tâtonnement* as a description of the dynamic path of real markets has been shared by many economists: first by Pareto (1896–1897), and then, for a long period, by the leading authority on Walras, William Jaffé (1967). In the 1980s, however, Jaffé modified his interpretation radically (Jaffé 1981), maintaining that Walras's model of *tâtonnement* is purely static and is not an attempt to understand the behavior of real markets. In Jaffé's interpretation, the adjustment toward the Walrasian general equilibrium ought to be considered as taking place instantaneously, that is, in logical time. In all the editions of the *Eléments*, Walras writes that, after defining the conditions of general equilibrium of exchange mathematically, he proceeds to show how the equilibrium solution emerges in practice (*pratiquement or empiriquement*) by virtue of the forces at work within the competitive market mechanism. However, in the last editions—when Walras became aware of the problem of exchange at disequilibrium prices—this statement must be considered a survival of the position expressed in the first editions. In fact, Walras's viewpoint about the meaning and role of the

tâtonnement hypothesis changed substantially over time. For Walras, *tâtonnement* is not a device of analytical simplification (see Ingrao and Israel 1990). It is an ideal simulation of the mechanism working in actual markets if free competition were to prevail, even though his position shifts gradually (albeit unacknowledgedly) into a neo-Walrasian stance where the term *tâtonnement* designates the mathematical technique of iteration used by theorists to find a solution to the general equilibrium system of simultaneous equations. Walras follows a model of scientific inquiry (that of classical physics) where scientific abstraction and empirical evidence are strictly related. Edgeworth's interpretation of Walras's theory, rather than Jaffé's, seems to be correct. As Edgeworth writes in his *Review*, Walras's theory of *tâtonnement* was "not a very good idea" because Walras had analyzed a process of dynamic adjustment toward equilibrium with a model of static equations. According to Edgeworth, the equations of exchange are of a static, not dynamic, character. Hence, they could provide no information as to the path by which equilibrium is reached: "Prof. Walras's laboured lessons indicate *a* way, not *the* way of descent to equilibrium" (ibid., p. 435), the economic behavior underlying the dynamic path. The determination of prices cannot be brought under one rule.

Bortkiewicz (1890) does not regard Walras's *tâtonnement* as an essentially static and timeless adjustment process. He maintains that Walras did not treat 'dynamics' if the word 'dynamics' is to be understood in the way that Jevons used it—that is, in order to mean the analysis of a system undergoing changes in asset holding and preferences. Bortkiewicz maintains that Walras's model is not a purely static or mathematical device. He notes that Walras analyzed the 'dynamic' question of the solution of equations of exchange by the raising and lowering of the price. He thinks that Walrasian *tâtonnement* actually corresponds to "the real process, effectively employed on the market" (Bortkiewicz 1890, p. 85). He observes that Edgeworth was right when he said that there could be more than one method for solving a system of equations. However, what was under consideration, Bortkiewicz writes, was not "a problem of algebra" but "a question of showing what is the real procedure, actually used in the market, that constitutes the manner of solution of the given equations".

They agree that *tâtonnement* is an ideal representation of a real process but disagree as to the empirical relevance of the Walrasian description. Bortkiewicz disagrees with Edgeworth's view that Walras's account of *tâtonnement* was unrealistic and lacked sufficient generality. Edgeworth (1891) rebuts that the exchange equations were static and not dynamic and so "the game of all this higgling by which market prices are determined, the direction which the system follows in order to arrive at the position of equilibrium, does not belong to the sphere of science". This issue, Edgeworth writes, can be discussed in an abstract form, offering a stylized description of the real market process. However, the problem is to present "a conception appropriate for a certain kind of facts" (p. 13). There are other more appropriate ways, Edgeworth writes, to determine market prices besides Walras's. For example, there are Cournot's way and Edgeworth's own way, which he presented in his *Mathematical Physics*.

Edgeworth refers to his own re-contracting process as a general case of Walras's special competitive market approach. In other words, Edgeworth sees his re-contracting hypothesis as not only an alternative mechanism, but more general than Walras's *tâtonnement*, whose validity is narrowly restricted to competitive markets. In his 1925 *Papers Relating to Political Economy*, Edgeworth reformulates his 1891 critique:

> [Walras] describes a way rather than the way by which economic equilibrium is reached. For we have no dynamical theory determining the path of the economic system from any point assigned at random to a position of equilibrium. We only know the statical properties of the position.… Walras's laboured description of prices set up or 'cried' in the market is calculated to divert attention from a sort of higgling which may be regarded as more fundamental than his conception, the process of recontract…. It is believed to be a more elementary manifestation of the propensity to truck than even the effort to buy in the cheapest and sell in the dearest. The proposition that there is only one price in a perfect market may be regarded as deducible from the more axiomatic principle of recontract. (Edgeworth 1925, II, pp. 311–312)

The debate implies the opposition of two different technologies of exchange that reflect two very different conceptions of the core of the

theory of exchange—Walras's competitive market and Edgeworth's fields of competition. As mentioned earlier, Walras substantially abandoned the realistic interpretation of the mechanism of *tâtonnement* of the first editions of the *Eléments*. This change stems from theoretical problems easily grasped by modern economists: allowing disequilibrium trade prompts endowment and path-dependency effects. These problems do not make Edgeworth's critique vain, as Jaffé maintained, but strengthen it.

Concluding Remarks

The controversy between Edgeworth and Walras reveals the clash of two different methodological requirements. On the one hand, Walras called for the rigor and simplicity achieved by reducing economics to mathematical treatment. He considered his simple model of free competition to be the general case and the Edgeworthian approach wrong because it subordinated the general case to particular cases. By contrast, Edgeworth required the model to be more realistic and, consequently, rejected the Walrasian level of abstraction as a representation of the general case. According to him, the Walrasian case was acceptable only as an extreme simplification. For Edgeworth, the problem was one of dealing correctly and rigorously (not necessary in mathematical terms) with issues considered "complex". In essence, the controversy can be traced back to the issue of the role of abstract reasoning and the use of mathematics in economics and, ultimately, to the two authors' difference about what economics is.

These economists considered mathematics, the "sovereign science" as Edgeworth called it, to be the guarantee of scientific quality because it made it possible to adopt rigorously deductive reasoning. Likewise, they made extensive use of classical physics' mechanical analogy. This helped make mathematical language the natural expression of an economic reasoning that seemed clearer and more precise than the language Ricardo or Mill used. Mathematical calculus seemed the most effective tool for describing and understanding the general quantitative relations of the hypotheses underlying theory. On the analytical level, this new approach led to noteworthy achievements in consumer theory and in the theory of

exchange, starting from a limited number of abstract premises and went on to show high generality and simplicity. Nevertheless, what role does mathematics have, and what is the extent of its use in economics? On this question, Edgeworth's and Walras's opinions diverged sharply. Walras had a boundless admiration for the solid edifice of classical mechanics, which he regarded as a model of scientific knowledge. Walras considered economics a physical-mathematical science like mechanics and thus saw mathematical method and language as the natural expression of reasoning in political economy. All of theory had to be mathematical, and theory's mathematical expression was considered a condition of intelligibility. By contrast, Edgeworth (and Marshall) did not accept Walras's rational mechanics reductionism. They emphasized that mathematics has an instrumental but limited use in economics. They agreed with Walras that mathematics is necessary for deductive reasoning, but they restricted its use to simple cases. This common position was not due to a different knowledge or a different image of mathematics, but to a different idea of economics as a science. In the *Principles*, Marshall maintains that economics must never lose sight of the real issues of life, and these are affected more or less by motives that are not measurable. He emphasizes the complexity of human and social subjects, which implies that 'economic laws' have some limitations as to exactness, certitude, and precision.

In his *Opening Address*, Edgeworth assumes a substantially Marshallian position regarding the role of mathematics in economics. He states that Marshall, of all mathematical economists, "has best complied with his own maxim that the economist, while he employs 'systematic reasoning as to the quantities of measurable motives…must never lose sight of the real issues of life'" (Edgeworth 1890, p. 362). This is what he wrote in his *Review* of the first edition of Marshall's *Principles of Economics* published in *Nature*, where he emphasized that Marshall established the mathematical method in its *proper* position.

The different concepts of the nature of economics as a science that separate Walras, Marshall, and Edgeworth explain the differences in their attitude toward the use of abstraction and the extent of mathematics in economics. With their more realist hypotheses and models, Marshall and Edgeworth considered Walrasian theories excessively abstract. Conversely,

Walras considered Marshallian and Edgeworthian claims for realism a proof that their approach was scientifically inadequate.

Economists and Scientists on Mathematical Economics, 1901–1914

By the end of the 1890s, the achievements of mathematical economics had begun to draw favorable attention, beyond the narrow confines of its origins (see Marchionatti 2004).

This was especially true in France, where attitudes had been particularly negative. In 1901, Emile Bouvier (1862–1930), Professor of Public Finance at Lyon University School of Law, wrote a long essay entitled "La méthode mathématique en économie politique" (The mathematical method in political economy) for the *Revue d'Économie Politique*. Here, Bouvier notes that the new generation of economists had warmly received the new approaches to research offered by Walrasian and Paretian mathematical economics. Bouvier examines the statement that "the application of the algebraic signs and geometrical representations in political economy is possible and often necessary" (Bouvier 1901, p. 820) and rebuts the critiques of this statement. The first part of the essay examines whether it is possible to use the mathematical method in economics. Numerous French economists, such as Maurice Block and Paul Leroy-Beaulieu, held that the uncertainty and complexity of economic phenomenon prevent us from using mathematical reasoning in economics. Bouvier responds by tracing the line of thought of the advocates of mathematical method in economics. Economics uses the method of exact sciences. It reduces a complex real phenomenon into its component basic parts. It then translates the problems into equations and, consequently, draws clear deductions. Even though mathematical economics only partially solves the problem of dealing with complexity, this is not a reason for abandoning the mathematical method, Bouvier maintains. On the contrary, it is a reason for improving it. The second part of the essay examines whether the mathematical method is necessary in economics. Bouvier maintains that mathematics has become as important in economics as foreign languages are in other sciences. He admits that it is

possible to construct theories without the help of mathematical tools, as in the case of Menger's theory of marginal utility. Nevertheless, the role of mathematical method seemed to have become more and more important as a way to explain theories and also to make theoretical discoveries. Lastly, Bouvier believed that it was necessary to support the efforts of the mathematical school of economics in order to verify its potential achievements.

In the same years, the scientific community showed a greater interest in applying mathematics to economics than in the past.

In Italy, the great mathematician Vito Volterra (1860–1940), referring to Walras's and Pareto's works, enthusiastically recognized the influence of mechanics on economics. In his inaugural lecture for the 1901 academic year at the University of Rome, entitled "Sui tentativi di applicazione delle matematiche alle scienze biologiche e sociali" (On the attempts at applying mathematics to the biological and social sciences) and later published in the *Giornale degli Economisti*, Volterra (1901) says that political economy had recently been molded by mechanics, the soundest and most well-established part of human knowledge. In his lecture, Volterra asked his audience to imagine the impressions of a student of rational mechanics when first faced with the new economic theories. Such a student sees a familiar concept in the *homo oeconomicus*. In fact, the student of mechanics is used to idealizing surfaces and considering them as frictionless. He is used to idealizing solid bodies and considering them non-deformable. He is used to substituting natural fluids with perfect fluids and gases. He can understand that in mechanics and economics alike, everything comes down to a play of tendencies and constraints. Constraints limit the action of tendencies and cause reactions that induce tensions. From this, statics and dynamics arise. Volterra then emphasizes another similarity between mechanics and economics. In mechanics, the concept of force once belonged to the field of metaphysics. Now it belongs to the field of measurable phenomena. Likewise, in economics the concepts of utility and ophelimity have been replaced by purely quantitative concepts, where Volterra cites the indifference curves in Pareto's *Sunto* as an example.

In France, skepticism about the use of mathematics in economics had been strong. However, the great French mathematician Henri Poincaré

(1854–1912) conducted a short but important correspondence with Walras on the question of the measurement of utility, writing that he was "not hostile to the application of *mathematics to the economic sciences*" (see later). Another important French mathematician, Emile Picard (1856–1941), declared himself in favor of such applications in his *La science moderne et son état actuel* (*Modern science and its present state*, 1908). By contrast, the mathematician Paul Painlevé (1863–1933), in his 'avant-propos' to the French translation of Jevons's *Theory* (Painlevé 1909), was more skeptical, and disputed the possibility of mechanical reductionism in economics. Painlevé expresses strong reservations about the potential for using mathematics in economics profitably. His main argument boils down to the question: how can mathematical economists reason quantitatively about things that are not quantities and therefore not measurable? More precisely, Painlevé reproaches Jevons and Walras because they did not build theories in view of numerical applications. What they did do, however, was lead political economy astray. Painlevé maintains that the only quantitative form that political economy can take is statistics.

In the same year as Painlevé's review, Walras wrote his last paper, *Economique et Mécanique* (*Economics and Mechanics*), which was presented at a meeting of the mathematical section of the Lausanne Société Vaudoise des Sciences Naturelles on April 7, 1909, and published in the society's bulletin, and reprinted later as a pamphlet together with the important 1901 letter from Henri Poincaré quoted earlier (Walras 1909). In his text, Walras deals with the problem of what type of science economics is, what its method should be, and what its relationship with the other sciences is, in order to answer the criticisms raised against the use of mathematics in economics. Walras's aim is to show that the economist deals with economic quantities in the same way that the mathematician deals with the physical quantities in mechanics and astronomy—that is, he emphasizes the methodological analogy between the two sciences. On the other hand, Walras points out what he considered to be the fundamental difference between economics and mechanics. Rational mechanics and astronomy belong to the category of physico-mathematical sciences, which study external or physical facts and measure them objectively; economics belongs to the "psycho-mathematical" sciences, which study the "psychic" facts and evaluate them subjectively. Walras then

draws an analogy between the equilibrium of a lever and equilibrium in exchange, and between the theory of general equilibrium and the theory of equilibrium in celestial mechanics. With regard to the issue of the measurability of utility, Walras maintains that utility is not cardinally measurable. This late position was influenced by some suggestions made by Poincaré in their correspondence in 1901. In a letter to Walras dated September 30, 1901, the French mathematician points out the limits of the utility function used by Walras. He asserts that satisfaction is not a measurable quantity, though it can be examined mathematically. He introduces the notion of preference as fundamental to that of utility:

> I can say that one pleasure is greater than another, because I prefer one to the other. But I cannot say that one pleasure is twice or three times as much as another one. This has no meaning. Only an arbitrary convention could give it meaning.

Later, Poincaré states that satisfaction can be defined by means of an arbitrary mathematical function. This is an ordinal function, inasmuch as the numbers that we can, arbitrarily, associate with it are only representative of the individual's order of preference. In Poincaré's second letter, published as an appendix to *Economique et Méchanique*, he sets out the fundamental proposition that satisfaction—which is a magnitude, but not a measurable magnitude—can be defined by an arbitrary function.

An important milestone on mathematical economics' road to acceptance by the scientific community was marked by Pareto's work and, in particular, by the publication of the *Manuale* and its French translation, which drew positive comments from several mathematicians in Europe and the United States. The first review was Vito Volterra's "L'Economia Matematica e il Nuovo Manuale del Prof. Pareto" (Mathematical economics and Prof. Pareto's new Manual) published in the *Giornale degli Economisti* in 1906. The Italian mathematician reviews the *Manuale* "from the mathematical point of view, presenting the impressions that a student of analysis receives in reading the treatise". Volterra does not deal only with the 'Mathematical Appendix', because, as he himself writes, the concepts and the demonstrative and logical processes are what forms the essence of the mathematical method. Volterra deals with the concept of indifference

lines and then the problem of integrability. He notes that "the passage from the case of two goods alone to the case of three or more goods…would merit a closer examination than that contained in the *Manuale*". This is because, while a differential expression with two terms always admits an infinite number of integrating factors, an expression with three or more terms may not admit any integrating factors. Pareto accepted Volterra's critique and answered him that same year in "L'ofelimità nei cicli non chiusi" (*Ophelimity in non-closed cycles*) (Pareto 1906) as well as in the 'Mathematical Appendix' to the French edition of the *Manuale*.

In the United States, the mathematician Edwin Bidwell Wilson of Massachusetts Institute of Technology (MIT) reviewed Pareto's book in the June 1912 issue of the *Bulletin of the American Mathematical Society* and showed a sympathetic attitude toward his approach. Wilson (1912) dealt with the discussion of the existence of the integral of utility, emphasizing Pareto's careful treatment of this point. Edgeworth also testified to the scientific modernity of Pareto's thought. In an article entitled "Recent Contributions to Mathematical Economics" (Edgeworth 1915), which reported on the progress made in mathematical economics in 1913–1914, Edgeworth acknowledged that Pareto's approach in the *Manual* concurs with the prevailing views of mathematicians, as does Poincaré's position in his letter to Walras cited earlier.

8.3 The Debate on Marx's *Das Kapital*, 1894–1904[3]

Prologue

The third book of *Das Kapital* was published in 1894 (Marx 1894), twenty-seven years after the first volume and eleven years after the death of Karl Marx. The publication immediately generated an expansive debate between economists and philosophers in Europe (see Howard and King 1989). The debate originated in Germany and then extended to

[3] The chapter is partly based on Marchionatti (1998).

France, Italy, and the United States. The most famous contribution was Böhm-Bawerk's 1896 essay (translated into English in 1898), thenceforth considered the critique of Marx *par excellence*. It was followed by many articles, some sympathetic to Böhm-Bawerk's criticism, others challenging it. The core of the discussion was the issue of the transformation of values into prices of production.[4]

The issue of transformation had already been raised by several authors in the 1880s as part of a debate begun by Engels in 1885, when the second book of *Das Kapital* was published. In his preface, Engels launched what Böhm-Bawerk termed "a regular prize-essay competition" on the relationship between the average rate of profit and the law of value:

> If [the economists] show how an average rate of profit can and must come about, not only without violating the law of value, but precisely on the basis of this law, then we shall have to continue our discussion. (Engels 1991 [1885], p. 102)

Many authors set themselves to the task. They included the German economist and statistician Wilhelm Lexis (1837–1914), the German Marxist Conrad Schmidt (1863–1932) and the little-known Russian—but naturalized American—Peter Fireman, all mentioned by Engels in his preface to the third book as having approximated Marx's solution. These authors tried to harmonize market price with the law of labor-value and the average rate of profit, acknowledging Marx's solution in the equality of aggregate prices with aggregate values and total profits with total surplus-value. Lexis (1885) proposed the following solution: the value of the commodities produced in any one year is measured by the quantity of labor embodied in them and is proportional to the actual price of the total mass. Capitalists appropriate a portion of the sum of values which has been exclusively created by the laborers: the total value

[4] Another issue that was widely discussed, but chiefly in socialist and Marxist circles, was the law of the falling rate of profit and the breakdown of capitalism. The theoretical controversy on whether a breakdown of the system is inherent in the dynamics of capitalist accumulation involved many Marxist scholars and economists, from Eduard Bernstein to Karl Kautsky, Tugan-Baranovsky, Hilferding, Otto Bauer, and Rosa Luxemburg. Luxemburg's *Die Akkumulation des Kapitals. Ein Beitrag zur ökonomischen Erklärung des Imperialismus* (*The Accumulation of Capital. A Contribution to an Economic Explanation of Imperialism*) (1913) was probably the best product of this debate.

is thus divided between the labor contained in the commodities that go to wages and the labor embodied in the commodities that go to the capitalist class, that is, the surplus value. Thus the values which appear in the actual prices of the total mass of wage commodities and the total mass of profits commodities would be proportional to the quantities of labor contained in the two. Therefore, what may not be true of the individual capitalist in relation to his single operations would still be true of the capitalists as a class in relation to the laborers as a class. Fireman (1892) explained the differences between individual prices and values as simply disturbance caused by competition. Incongruence was not a refutation of the theory of value because "in the last instance" it disappeared: the prices of some commodities rose above their values in the same degree that others fell below theirs, thus the total sum of prices equaled the total sum of values. Schmidt (1889) adopted a similar position.

From a formal point of view, Marx's solution was analogous to that proposed by Lexis. Indeed, Lexis remarked on this similarity at the beginning of a long and detailed review of Marx's work in the *Quarterly Journal of Economics* (1895). He related Marx's ideas to those of Ricardo and Quesnay: Marx resembled Ricardo in method and Quesnay in the "modes of conceiving economic phenomena" in the *Tableau économique*. With regard to the problem of transformation, Lexis noted that Marx was aware that, in the actual world, commodities were not exchanged in proportion to the quantity of labor embedded in them. The problem to be solved was how a uniform rate of profit would appear in consonance with the law of value. Lexis remarked that from a mathematical point of view it was possible to determine a general average rate of profit, but he maintained that "how this is carried out in the actual world Marx explains in a manner far from satisfactory" (Lexis 1895, p. 10) because Marx simply referred to the forces of competition. And Lexis emphasized that the problem was not historical—he rejected the idea of a historical dimension of the transformation problem—but theoretical. As he put it:

> Value, as conceived by Marx, is thus a purely theoretical conception. The thing is never to be found in reality, neither in the normal exchanges of commodities nor in the consciousness of the individuals who take part in these exchanges…. The empirical derivation of his definition which Marx

> gave in the first volume thus disappears. He has simply decreed *a priori* that the quantity of socially necessary labour embodied in a commodity shall be for him the measure of its value. He admits that the actual prices…of individual commodities do not conform to this law of value. Yet he wishes to preserve the validity of that law for the total of commodities produced. (Lexis 1895, pp. 11–12)

Marx showed that his hypothetical law could be reconciled with economic experience, provided that it is applied not to individual commodities, but to the total of commodities. According to Lexis, Marx's hypothetical notion of value could be considered "a convenient introduction for his analysis of capitalistic production" (ibid., p. 32). Lexis's interpretation of value as a purely theoretical concept that is useful in giving order to the analysis was supported by Werner Sombart (1894) and Conrad Schmidt (1895). Moreover, Sombart considered the main characteristic of Marx's approach to be its 'extreme objectivism', as opposed to the subjectivism of marginalist economics. Engels reacted strongly to Sombart-Schmidt interpretation of the law of value: in an 'addendum' dated from May 1895 (Engels 1991 [1895], vol. III), he wrote that, with regard to the logical status of the concept of value, "what is involved is not just a logical process, but a historical one" (ibid., p. 1033). He upheld the historical dimension of the transformation of value into prices, asserting that "the law of value has prevailed during a period of from five to seven thousand years" (ibid., p. 1037), up to the beginning of the nineteenth century. However, he implicitly agreed with the central point of the critiques, viz. the unreality of the law of value when commodities are produced under capitalism, thereby confining the law's application to pre-capitalistic conditions.

Böhm-Bawerk's Criticism

In 1896, Eugen von Böhm-Bawerk published a lengthy critique entitled *Zum Abschluss des Marxschen System* (*Karl Marx and the Close of His System*). He had already criticized Marx in *Geschichte und Kritik der Kapitalzins-Theorien* (1884), the first volume of *Kapital und Kapitalzins*.

In the *Abschluss*, Böhm-Bawerk contends that Marx tried to prove the thesis that the value of all goods is founded on labor by providing a "purely logical proof", a "dialectic deduction" based on the essential nature of exchange. Following Aristotle, Marx represented the exchange of two commodities by an equation, inferred that there is a common factor of the same amount in the two things exchanged (and thereby equated), and then proceeds to search for this common factor to which these two equated things must be reducible, as exchange values. Marx's procedure in the search for this common factor was described as a process of elimination, reviewing commodities' different qualities, discarding those qualities that failed the test, until only one was left, that of being a product of labor. Böhm-Bawerk notes that Marx puts in the 'logical sieve' only those exchangeable things which also possessed the quality that he ultimately intended to sift out as the common factor, excluding all others. In other words, he restricted the scope of his search for the essence of exchange value to commodities, the product of labor, and excluded the gifts of nature. If exchange really means an equalization, which assumes the existence of a common factor, then this common factor must necessarily be sought and found in every species of goods brought into exchange, not only in products of labor but also in gifts of nature, that is, natural resources. This, Böhm-Bawerk concludes, was a "gross fallacy of method" on Marx's part. A further critical point concerns the relationship between theory and empirical experience: was Marx's argument supported by evidence? Böhm-Bawerk's answer was negative because there were many exceptions in violation of the labor principle—first of all rare goods.

The 1896 critique was based on the claim that Marx's entire work depended on whether the labor theory of value was correct. Böhm-Bawerk believed that Marx had been aware of the contradiction between theory and the facts but postponed the solution until the third volume. He summarizes Marx's reasoning as being based on four arguments: that the total of the prices of production of the commodities produced remains equal to the sum of their values; that the law of value governs the movements of prices; that this law also governs the exchange of commodities in the primary stages; and, lastly, in the capitalist system, the law of value indirectly and in the last resort regulates the prices of production because

the total value of commodities determines the total surplus-value. Böhm-Bawerk rejected the first point saying that as one looks at all commodities as a whole and sums up the prices, one must avoid looking at the relations existing inside of this whole. With regard to the law of value controlling price movements, he wrote that prices rise and fall according to the amount of labor expended proves neither more or less than that labor is one factor in determining prices. With regard to the third argument, Böhm-Bawerk said that Marx had described how exchange would occur in primitive society *if* everything took place according to Marx's law of value, a situation considered contrary to the facts of experience. The final argument—that under capitalism labor-values indirectly determine prices via the average rate of profit, was attacked by Böhm-Bawerk on many fronts: (1) a rise in wages, when the amount of labor remains the same, "brings with it a material alteration in the originally equal prices of production", thus quantities of embedded labor were not the only determinant of the profit rate; (2) the aggregate value of the commodities did not rule the amount of total surplus-value, since wages, being a second determinant, could alter in value; and (3) surplus-labor did not regulate the average rate of profit—given a fixed total surplus-value, aggregate surplus-labor was only one influence on the rate of profit, another being the amount of existing capital. Then, adopting and developing arguments he had used against Marx twelve years earlier, Böhm-Bawerk explained what he considered the origin of Marx's error: the "great error of method" was to exclude exchangeable goods which were not products of labor from the search for the common factor that lies at the root of exchange value.

Hilferding's Reply

Böhm-Bawerk's criticism had a considerable impact on the economic profession both inside and outside Germany. It gave rise to a lively debate in Vienna, and with the Austro-Marxists in particular. Among the latter, Rudolf Hilferding (1904) made the most systematic reply to Böhm-Bawerk. According to Hilferding, political economy was a social science and for this reason should not be concerned with the individual

relationship between a thing—a commodity—and a person, but with the relationships between people. And people could have economic relationships only if they worked for each other. In this sense, labor was the basis and the connecting link of human society. As the constituent element in human society, the "social bond uniting an atomized society" and not just the most technically relevant factor as Sombart had argued, labor was the principle of value. Hilferding maintained that labor-value theory applied only when the production of commodities was developed because only in this situation did exchange mean that members of a society entered into relations with one another. In such a society, labor expressed itself in the exchange value, and the law of labor-value was the rule which quantitatively determined the exchange value. Hilferding compared two situations: a simple production of commodities, where the theory of labor-value applied, and a capitalist production process where the law had to be modified. Hilferding's defense of the empirical validity of the transformation process was analogous to that of Engels, though without adequate awareness of the difficulties involved in the transformation problem. The challenge launched by Böhm-Bawerk to the Marxists—to show that an objective theory of prices was possible—was taken up some years later by Ladislaus von Bortkiewicz (see Chap. 5).

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9

The Great War and the End of an Era

The picture that emerges from the previous chapters' narrative of the evolution of economic theory in the golden age of capitalism shows a highly diversified map, far from the conventional view of a largely homogeneous body of economic theory, resulting from the marginalist revolution and its systematization. By the end of the 1890s, marginalist and neoclassical thought had entered the international mainstream, and Marshall and the old Cambridge school had taken the lead—though we must not underestimate the role played by Pareto's, economics in methodological and analytical terms and by Austrian economics, mainly in Böhm-Bawerk's version—on a scene marked by controversies inside and outside the mainstream and lively interchanges of ideas.

As Hutchison (1955) wrote, the end of the 1890s was the high point in the cosmopolitan interchange and development of economic ideas, when the predominance of Marshall and his school, and the centrality of Cambridge, was challenged by ideas and refinements advanced by the other centers of Lausanne, Vienna, and Berlin as well as the peripheries. However, different views—some content to accept past ideas, some radically new—continued to have a relatively important role and be influential in many cultural areas. In other words, the level of agreement and

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theoretical unification that had been achieved coexisted with different positions and approaches concerning questions about the nature and method of economics.

In addition to this diversified picture, taking a diachronic perspective not only illuminates the creative ferment in the peripheries—above all in Sweden and in the United States—but also enables us to see that economic thought entered a period of transition—as Schumpeter called it—after 1900. As the debate of the 1920s will show, instability lay at the core of Marshall's theoretical edifice. And theoretical problems smoldered in Marshall's and Pareto's works, as is clear from the evolution of the two masters' thinking. All the theoretical change in Marshall's thought was dominated by the critical and unresolved issue of increasing returns and the representative firm, while the importance of institutional analysis in Marshall's last great book, *Industry and Trade*, provides evidence of the richness as well as the perceived incompleteness of his theoretical edifice. Pareto, for his part, became aware in the first decade of the new century of the methodological limit that had hobbled his theoretical inquiry up to that point—looking back on his work in his 1917 *Discours du Jubilé*, he used the expression "a dead end"—viz. the fact that different types of social phenomena cannot be studied in isolation, and the method of successive approximations turned out to be inadequate for dealing with social complexity. Consequently, he turned to a holistic approach, adopted in his *Trattato di sociologia*, in order to deal with the entire social phenomenon in its full complexity. In this sense, we can say that Pareto, as his research drew to a close, seemed to recognize the almost partial failure of economic theory founded on the rational agent hypothesis and the associated method of inquiry.

But this dissatisfaction with the great neoclassical theoretical construction of the 1890s is also evident in other thinkers. For example, Wieser's *Social Economics*—published as part of Weber's social sciences project *Grundriss der Sozialökonomik*, which also involved Schumpeter. Schumpeter sought new ways to deal with dynamics and new methodological paths along Weberian lines, and undoubtedly undermined the attempts to construct a marginalist-neoclassical orthodoxy. Last but not least, we must mention the radical criticism of Veblen and his new evolutionary approach that spawned the institutionalist movement. Nor

should we forget that the Marxist debate was still very much alive, and they had led to the emergence of a neo-Ricardian approach. And yet, however great the changes brought by this theoretical turmoil were expected to be, they were dwarfed by an event that changed the world, at all levels, and the atmosphere where the interchange of economic ideas took place: the First World War, the Great War.

On July 28, 1914, with Austria-Hungary's declaration of war on Serbia, the First World War began, with many of the world's nations drawn up in two opposing camps, the Central Powers (Germany, Austria-Hungary, and the Ottoman Empire) and the Allied Powers (chiefly Great Britain, France, Italy, Japan, Russia, and the United States). When the war began, all the participants believed that it would be short one, lasting only a few months, as it was thought that a highly integrated world economy could not sustain a longer conflict. But the actual course of the war quickly showed this belief to be incorrect. Lasting from 1914 through 1918, the First World War was a prolonged, brutal, and expensive conflict, which killed 9 million soldiers, wounded 21 million, and left 7 million disabled. Civilian casualties numbered another 10 million. It caused the downfall of four monarchies: Germany, Turkey, Austria-Hungary, and Russia. It also changed the economic structure of the world, bringing public debt and inflation, together with increasing internal inequalities, in the weakened European countries, and increased industrial and financial power in the United States, by then the world's leading industrial power and creditor. Growth in many countries was disrupted, as was international trade. The gold standard, a central pillar of the old economic order, was irreparably weakened. And the consequences of the Versailles peace were to prove destructive.

The decades before 1913 had been a time of rapid economic growth and globalization, while the post-war years saw a globalization backlash, crisis, and de-growth. The old liberal order and its values of European and Western civilization suffered a devastating crisis. Looking back, people could appreciate the miracle in progress that the century preceding 1914 had been. In sharp contrast, the period after the war was one of an exhausted and devastated Europe. At the end of 1919, John Maynard Keynes, referring to his experience as one of the members of the British

delegation to the peace negotiations in Paris, wrote in his book *The Economic Consequences of the Peace*:

> An inefficient, unemployed, disorganized Europe faced us, torn by internal strife and international hate, fighting, starving, pillaging and lying. What warrant is there for a picture of less somber colours? (Keynes 1919, p. 233)

The First World War divided the before and the after, the end of an old and the emergence of a new epoch. The Viennese writer Stefan Zweig (1942) called the prewar world *Die Welt von Gestern*, the "world of yesterday", as he entitled his memoirs of life in the old Europe. There was an essential difference between the two worlds, before and after the war: Europeans had experienced the decades prior to 1914 as an epoch of security, based on a shared feeling of confidence in civilization and progress. But the war was experienced as a crisis of civilization and progress, the end of the time of confidence, and the rise of an epoch of uncertainty. In this new world of crisis and uncertainty, economists would have to deal with new problems and new theoretical challenges, at the same time coping with the cracks that had opened in the golden age's marginalist-neoclassical theoretical edifice.

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