

THE AUSTRIAN SCHOOL OF ECONOMICSⁱ

Juan C. Cachanosky

1. Introduction

Insights from the Austrian School of Economics have entered the academic world only recently. From the three schools that produced the marginal revolution, the Austrian School is the least well-known. Maybe this is, in part because of the lesser spoken German language in which they wrote, and in part because of the Nazi persecution that forced their leading figures to abandon Vienna in the mid-1930s, producing a dispersion of the school's members.

As Joan Robinson's (1960, p. vii) passage reflects; the dominance of the Cambridge School towards the end of the 19th century and the beginning of the 20th century was quite clear:

When I came up to Cambridge, in 1922, and started reading economics, Marshall's *Principles* was the Bible, and we knew little beyond it. Jevons, Cournot, even Ricardo, were figures in the footnotes. We heard of 'Pareto's Law', but nothing of the general equilibrium system. Sweden was represented by Cassel, America by Irving Fisher, Austria and Germany were scarcely known. Marshall was economics.

Even though today the Austrian School is better known, it is still evident from university references that there is a clear dominance of points of view of Cambridge and Lausanne. Microeconomic and macroeconomic, principles of economics textbooks, and books on price theory show that that is the case.

Perhaps the worst mistake that can be made in this regard is to believe that the differences between the Austrians and Cambridge-Lausanne are in the way they present their theories of marginal utility and prices (cf. Stigler, 1965, p. 84; Spiegel, 1971, pp. 514–515), when in reality there are fundamental differences between them. This paper does not pretend to offer anything novel, especially for those trained in the Austrian tradition, but it does try to call attention to those fundamental differences.

Austrian *economists*, especially the most recent generations, have a significant advantage over their colleagues. Going through their college education, they had to make the effort of studying economic theory from the Cambridge-Lausanne point of view. They had to read books, papers, and listen to professors from these schools of thought for five or more years. This exercise is very helpful in opening the student's mind to the analysis of different arguments. Furthermore, according to Ludwig von Mises' recommendation to his students:

Read what [your] professor [asks you] to read. 'But read not only that, [...] read more. Read everything about the subject from every point of view, be it socialist-Marxist, liberal, libertarian. Read with an open mind. Learn to think. Only when you know your subject from all sides can you decide what is right and what is wrong. Only then are you ready for a discussion because you can answer all the questions, even those your opponents will throw at you.' (M. von Mises, 1976, p. 173)

Most economic programs today do not feature Austrian oriented professors and/or "Austrian" readings. If students do not themselves get in touch with Austrian thought, they will finish their college or graduate educations with an amputated view of economic science. The objective of this paper is to contribute to dissemination of the history and theory of the Austrian School of Economics.

2. The Birth of the Austro-Hungarian Empire

In 1805, Austria suffered military defeats against Napoleon's army. Francis II resigned his title as Emperor of Rome to become Francis I, Emperor of Austria.¹ Despite the military failures, Austria was still considered the leading German-speaking-country against Napoleon. An 1809 military defeat for Austria culminated in the Peace Treaty of Schönbrunn. This defeat brought to the forefront a critical person in Austrian history: Klemens W. von Metternich. Metternich replaced Johann von Stadion in the Ministry of Foreign Relations due to his failed foreign policy.

Up until 1848 Francis I and Metternich followed a policy that fairly descriptably as a despotic government. The thinking of the monarch is well summarized in a famous passage: "The people? What is the meaning of that? I only know of subjects" (May, 1963, p. 304).ⁱⁱ Metternich's fame is due to his foreign policy, which includes the arrangement of Napoleon's wedding with María Luisa, he had very little influence over domestic issues. Nonetheless, since he had to send forces to repress popular rebellions many times, he was also seen as a despotic leader. Freedom was so suppressed that it was illegal for newspapers even to print the word "constitutions."

Ferdinand I succeeded Francis I after his passing in 1835 who, due to an illness, was in no condition to rule. Therefore, a regency was put in charge of the government, of which Metternich was part. The demands for liberty were increasing.

A revolution in 1848 demanding more civil liberties had an immediate effect in Vienna, Bohemia, and Hungary. The liberty revolution reached Austria in March. Demands included written constitutions, representative bodies, universal suffrage, limits to the use of police force, freedom of the press, and the abolition of slavery (which still existed). Using a costume as a disguise, Metternich escaped to England, and a group of representatives prepared a constitution and abolished censorship and slavery (May, 1963, p. 304).

The revolutionaries, however, were not very strong, and a counterrevolution that started in June lasted until December. On the second of that month, Emperor Ferdinand I was forced to abdicate and was replaced by his nephew Joseph Ferdinand I. Hungary offered the strongest resistance to the counterrevolution. Joseph Ferdinand I had to ask Zar Nicholas of Russia for help to beat the Hungarian resistance.

Prince Schwarzenberg, a strong personality, became the chief of minister of the new regime. He was very influential and opposed to any type of popular expression other than that of the government (Palmer & Colton, 1950, p. 145).

The new government put forward a disastrous foreign policy that led Austria into a series of wars that would ultimately produce its own downfall – as follows. Russia, who had helped Austria fight against the Hungarian resistance, fell betrayed when Austria remained neutral during the Crimean War (1854-1856) and was even close to becoming an enemy. In 1859, Austria got into a war against Cerdanya and France, and was defeated. In 1864 it joined Prussia against Denmark, but then it got into a dispute with its ally on the repartition of Denmark's conquered territory, which led to an armed conflict with Prussia won by Prussia in the battle of Sadowa or Könnggrätz (June 3rd, 1866).

These wars produced significant economic costs and great embarrassment for the government. The Emperor had, once again, to grant new constitutional reforms. A new liberal movement won a victory in the the provinces and were allowed to elect representatives to the Imperial Parliament.

A significant event took place in 1867. A new treatise known as the *Ausgleuch* (commitment) by Austrian and Hungary created an unprecedented dual monarchy in Europe: the Austro-Hungarian Empire. Each one had its own constitution and parliament. Neither could intervene in the domestic issues of the other. The common factors were the following: The Habsburg Emperor was the Emperor-King of the empire, delegates from both

¹ Leland B. Yeager (p. xvi) in the introduction to Mises' (1919) *Nation, State and Economy*.

parliaments would alternate their meetings between Vienna and Budapest. Lastly, there were joint ministers for finance, foreign policy, and war.

The Austro-Hungarian Empire got dissolved towards the end of 1918 with the culmination of World War I. Its last emperor was Carlos I (1916-1918).

3. The Academic Environment

In the days in which Menger taught at the University of Vienna, the Austrian cabinet was dominated by members of the (classical) liberal party who supported civil liberties, equality under the law, sound money, and free trade (L. von Mises, 1969, p. 2). The liberal dominance ended in the late 1870s when the Church, the Princes, the Counts of the Czech and Polish aristocracy, and the nationalist parties formed a coalition against the liberal party. The alliance supported the opposite ideals to those of the liberals. Despite their differences, the constitutions that the liberals had forced the Emperor to accept in 1886 and the complementary fundamental laws remained in place until the dissolution of the Empire (L. von Mises, 1969, p. 2).

The legal environment created the appropriate environment for the development of a free intellectual life. Vienna became probably the most important scientific and cultural center of Europe. "With the exception of Bolzano," Mises says, "no Austrian before the second part of the nineteenth century contributed anything of importance to the philosophical or the historical sciences. But when the Liberals had removed the fetters that had prevented any intellectual effort, when they had abolished censorship and had denounced the concordat, eminent minds began to converge toward Vienna" (L. von Mises, 1969, p. 2).

Popper (1974, p. 5) describes a similar situation: "[...] before 1914 there was an atmosphere of liberalism in Europe west of Czarist Russia; an atmosphere which also pervaded Austria and which was destroyed, forever it now seems, by the First World War. The University of Vienna, with its many teachers of real eminence, had a great degree of freedom and autonomy. So had the theatres, which were important in the life of Vienna – almost as important as music. The Emperor kept aloof from all political parties and did not identify himself with any of his governments."

Among the most famous names of the time are Franz Brentano, who started a new line of thought that culminated in Husserl's phenomenology, Ernst Mach, Moritz Schlick, and Rudolph Carnap, inaugurators of logical positivism. In psychology, Sigmund Freud and Alfred Adler started new schools of thought as well.

The government had three limitations in terms of intervening in universities' curricula. In the first place, it was not allowed to intervene in the doctrinal content of courses. Faculty enjoyed plenty of academic freedom to organize their lectures, programs, and readings. In the second place, the Minister was obligated to appoint only faculty recommended by university authorities. Lastly, there was the *Privat-Dozen* institution, which allowed any person with a doctoral degree and had published a scientific book, to solicit to the university authorities for their admission as an *ad honorem* professor in their discipline (L. von Mises, 1969, p. 3).

In the area of economic science, the Classical School had reached its peak in England with John Stuart Mill. Their flawed theory of price would cause some issues, but their authority was practically undisputed. In German-speaking countries, on the contrary, Historicism was the predominant school of thought, which would play a crucial role in the life of the Austrian School.

The precursors of Historical School were Adam Müller (1779-1829) and Friedrich List (1789-1804). Their most relevant and well-known representatives, known as the Older Historical School, were Wilhelm G. F. Roscher (1817-1894), Bruno Hildebrand (1812-1878), and Karl Knies (1821-1898).

In his book *Die Nationalökonomie der Gegenwart und Zukunft* (1848) (Economics of the Present and the Future), Hildebrand criticizes classical economics by denying the existence of natural laws and asserts that there are laws of historical evolution. On the other hand, Knies denied the absolute validity of laws of evolution; his thesis is in his *Die Politische Ökonomie vom Geschichtlichen Standpunkte* (1853) (Political Economy from the

Standpoint of the Historical Method). Lastly, Roscher was sympathetic to classical thought but called for the historical method of investigation.

Founded by Gustav von Schmoller, the Modern Historical School arises in the early 1870s. Among their most distinguished members were L. Brentano, K. Büscher, and G. F. Knapp. This school was characterized by its denial of the validity of universal laws in social sciences and for opposing to the liberalism of the classical economists. Schmoller was a founder of the *Verein für Socialpolitik* (German Economic Association) in 1872. The school was known as *Kathedersozialist* (Socialist of the Chair). The ideas of the Modern Historical School were the predominant ideas in the German-speaking world when the beginning the Austrian School began. The main discrepancies between these two schools were epistemological. The next generations of the Austrian school devoted a lot of attention to this issue.

4. Carl Menger (1840 – 1951)

Carl Menger is the founder of the Austrian School of economics and, before him, there were no famous economists in Austria (Bloch, 1940). Given the prestige of Classical School in England and the Modern Historical School in Germany and Austria, Menger was, at the beginning, a lone fighter. There was no Austrian School until the end of the 1870s: It was only Carl Menger (L. von Mises, 1969, p. 1).

Menger's first book, *Grundsätze der Volkswirtschaftslehre* (1871) (Principles of Economics), was an attack on both the Modern Historical School and classical economists. Regarding the former, Menger's book implied the existence of universal and atemporal economic laws something that was denied by the historicists. Regarding the classical economists, Menger's book represented a Copernic turn to their price theory. For Menger, it was not production costs that determined the price of final goods (value of exchange) as the classics would have it; it was just the opposite.

As expected, given the dominance of historicist thought, the *Grundsätze* had no significant impact.² The book had only a few readers, among whom were Eugen von Böhm-Bawerk, Friedrich von Wieser, and Alfred Marshall. As we will see later, only Böhm-Bawerk continued with renewed energy the ideas in the *Grundsätze*.

There were only four academic journals in Germany in the 1870s dedicated to economic issues.³ The *Grundsätze* was reviewed in three of them. The review in the *Zeitschrift* misses the main idea of the book. The one in *Vierteljahrschrift* is a little better. However, the *Jahrbücher*, founded by historicist Bruno Hildebrand, regrets the brevity of the book and that a young person wrote it.⁴ The *Schmoller Jahrbuch* did not publish any review.⁵

Menger immediately noticed that the cause of the failure of his first book was the dominance of the historicist method and decided to interrupt his teaching activities to write his second book, *Untersuchungen über die Methode der Socialwissenschaften und der Politischen Ökonomie Insbesondere* (1883) (Investigations into the Method of the Social Sciences with Special Reference to Economics). This treatise criticizes the position of the Modern Historical School explicitly and defends the possibility of a universal and atemporal economic theory.

Predictably, the *Untersuchungen* received a negative reception. Schmoller, who remained silent with respect to his first book, now reacted with strong criticism in an offensive tone in his *Jahrbuch* (Hayek, 1981, p. 24). Menger responded in a series of 16 letters, which would later be published with as *Die Irrthümer des Historismus in der Deutsche Nationalökonomie* (1884) (The Errors of Historicism in German Economics). They were very controversial, and some of them were insulting towards Schmoller. Menger justified the low academic level of his comments and the *ad hominem* attacks against Schmoller, arguing that when academics

² A reprint was done fifty years later, and the English translation seventy-nine years later.

³ (1) *Jahrbücher für Nationalökonomie und Statistiks*, (2) *Vierteljahrschrift für Volkswirtschaft und Kulturgeschichte*, (3) *Zeitschrift für die Gesammte Staatswissenschaft*, and (4) *Jahrbuch für Gesetzgebung, Verhaltung und Volkswirtschaft*, known as *Schmoller Jahrbuch*.

⁴ Menger was 31 years old when the *Grundsätze* was published.

⁵ See Bostaph (1978, p. 5). The original information on the *Grundsätze* can be found in Howey (1960).

are attacked by an “ignorant,” they should seize the opportunity to address the general public at an accessible level (Bostaph, 1978, p. 4).

Schmoller closed the debate by refusing to comment on the *Irrthümer* and returning the copy that Menger has sent him with a not very friendly letter. In this dispute, known as the *Methodenstreit*, Schmoller and Menger were not the only participants. Disciples from both sides joined the discussion.

The name of the Austrian School originated in connection to the *Methodenstreit*. After the Prussian victory over the Austrians in the battle of Königsgrätz, to label someone as “Austrian” in Germany had a pejorative connotation. Schmoller and his disciples began to refer to those who adhered to the position of the Vienna economics group as “Austrians” (L. von Mises, 1969, p. 19). This is the origin of the name of *Die Österreichische Schule* (The Austrian School) to identify Menger and his disciples.

Most of the comments over this debate agree that the dispute did not produce any scientific advancement. According to L. von Mises (1969, p. 12)

The *Methodenstreit* contributed but little to the clarification of the problems involved. Menger was too much under the sway of John Stuart Mill’s empiricism to carry his own point of view to its full logical consequences. Schmoller and his disciples, committed to defend an untenable position, did not even realize what the controversy was about.

Menger’s last relevant contribution was a work on money, where he describes the historical evolution of money and develops a theory to explain its value. This work would eventually become foundational to the monetary works of Wieser, L. von Mises, and Weiss (Hayek, 1968).

Menger was a tall man with an imposing personality. One of his *hobbies* was to collect books; he built a personal library of more than 20.000 volumes. Concerning his performance in the classroom, it is interesting to cite the following passage from H. R. Seager (1893, p. 255), an American economist who attended his lectures:

Professor Menger carries his fifty-three years lightly enough. In lecturing, he rarely uses his notes except to verify a quotation or a date. His ideas seem to come to him as he speaks and are expressed in language so clear and simple, and emphasized with gestures so appropriate, that is a pleasure to follow him. The student feels that he is being led instead of driven, and when a conclusion is reached it comes into his mind not as something from without, but as the obvious consequence of his own mental processes. It is said that those who attend Professor’s Menger’s lectures regularly need no other preparation for their final examination in political economy, and I can readily believe it. I have seldom, if ever, heard a lecturer who possessed the same talent for combining clearness and simplicity of statement with philosophical breadth of view. His lectures are seldom ‘over the heads’ of his dullest students, and yet always contain instruction for the brightest.

Lastly, Menger’s position regarding academic freedom must be mentioned. While Schmoller publicly stated that members of the “abstract” school should not teach in German universities and his influence allowed him to put his ideals into practice (Hayek, 1981, p. 25), Menger thought that there “is no better means to disclose the absurdity of a mode of a reasoning than to let it pursue its full course to the end” (L. von Mises, 1969, p. 17).

5. Eugen von Böhm-Bawerk (1851 – 1914)

As we saw, the central ideas of the *Grundsätze* were forced off stage because of the occurrence of the *Methodenstreit*. However, some economists who read the book promoted its ideas. Between 1884 and 1889, a series of publications put its views center stage. Two direct Menger students published their books on entrepreneurial profits. Victor Mataja published *Der Unternehmervergewinn* (1884) (Entrepreneurial Profit), and

G. Gross published *Lehre vom Unternehmergeinn* (1884) (Principles of Entrepreneurial Profit). Another Menger student, Emil Sax, published a book on economic methodology, *Das Wesen und die Aufgaben der Nationalökonomie* (1883) (The Essence and Tasks of National Economics), and three years later another, titled *Grundlegung der theoretischen Staatswirtschaft* (Foundations of the Theory of the State Economy).

Other distinguished names during these first years of the Austrian School include Johann von Komorzynski, Hans Mayer, Robert Meyer, and Eugen Philippovich von Philippsberg. However, the names that reach the most fame were Friedrich von Wieser and Eugene von Böhm-Bawerk, even though none of them were direct students of Menger. Their influence came through their study of the *Grundätze*.

In 1884, almost simultaneously, the first part of Böhm-Bawerks book *Geschichte und Kritik der Kapitalzins Theories* (Capital and Interest: A Critical History of Economic Theory) and Wieser's work on the theory of value, *Über den Ursprung und die Hauptgesetze des wirtschaftlichen Werthes* (On the Origin and the Main Laws of Economic Value) appeared.

Wieser's work was the more influential. However, a couple of years later, Böhm-Bawerk published a series of articles under the title of *Grünzug der Theorie des Wirtschaftlichen Güterwerter* (Foundations of the Economic Theory of Value).⁶ According to Hayek (1981, p. 25), even though this article did not add much to what had been said by Menger and Wieser, its outstanding clarity and argumentative force made it, probably, the article that helped the most to disseminate the marginal theory of value.

Of these two great economists, only Böhm-Bawerk continued with the Mengerian line of thought. Wieser continued along his own path and eventually got closer to the Lausanne School's point of view. His book, *Grundriss der Socialökonomie* (1914) (Foundations of Social Economics), is the only systematic treatise of economic theory that the first group produced. Still, it contains ideas that make it doubtful that Wieser can be considered a member of the Austrian School.⁷

It is Böhm-Bawerk, then, who adhered to a Mengerian theory of value. In 1889 he published the second volume of his book under the title *Positive Theorie des Kapitaless* (The Positive Theory of Capital). He developed a new exposition of the theory of value and prices. He returned to this issue in 1898 with the publication of his famous *Zum Abschluss des Marxschen Systems* (Karl Marx and the Close of his System). In his first volume of *Das Kapital* (1867),

Marx (1867, p. 335) commits some significant contradictions in his theory of exploitation, which he had to admit: "This law [that surplus-value originates in variable capital] clearly contradicts all experience based on appearance." Marx (1867, p. 335) promised a solution in succeeding volumes, but his later work contain no such promised explanation. The second volume of *Das Kapital* was published in 1885 by his friend Friedrich Engels, causing some disappointment among his followers. In 1894 Engels published the third volume that should have contained (but did not) the awaited solution. In his critical work, Böhm-Bawerk develops a detailed analysis of the fallacies and contradictions in the Marxist system in its final version.⁸

Böhm-Bawerk is best known for his theory of interest. This is somewhat unfortunate since his treatment involved some apparent contradictions pointed out by Menger: "[T]he time will come when people will realize that Böhm-Bawerk's theory is one of the greatest errors ever committed" (Schumpeter, 1954, p. 847).⁹ Böhm-Bawerk starts his book with an excellent critique of existing theories of interest and demonstrates that the difference between the values of present and future goods is what determines the interest rate. He claims the validity of his own theory over the theory based on the concept of capital productivity. Later, Ludwig von Mises (1949, Chapters XVIII, XIX) and Frank Fetter (1977) resumed Böhm-Bawerk's contributions and outlined a theory of interest based exclusively on the subjective relative valuation of present and future goods.

⁶ Originally published in (1886) *Jahrbücher für Nationalökonomie und Statistik*, Vol. XIII, pp. 1-66, 477-543.

⁷ See Hayek (1974a, pp. 753-754) and L. von Mises (L. von Mises, 1978, pp. 35-36).

⁸ For a more detailed discussion see the editor's preface to Böhm-Bawerk (1962).

⁹ Also see L. von Mises (1949, pp. 527-528) and Fetter (1977, pp. 172-191).

Böhm-Bawerk was a professor at the University of Innsbruck, where an unfavorable academic environment induced him to leave when he was offered a position in the Ministry of Finance of Vienna. Later, after leaving the public service, he rejected an attractive retirement opportunity in order to accept an offer to become the director of a seminar at the University of Vienna. The topic of his first seminar was the theory of value (L. von Mises, 1978, p. 39). Meetings took place every Friday at five in the afternoon and lasted approximately an hour and a half. The seminar had an audience of fifty or sixty attendees and had a library for its members (Seager, 1893, p. 258). The works presented at the seminar had a secondary role. Their objective was to introduce a topic and not become a center of debate (Seager, 1893, p. 259).

Almost all members of the seminar were old Menger students or of Böhm-Bawerk himself. As the seminar unfolded, Böhm-Bawerk would not assume the role of the professor, but that of a coordinator that would occasionally participate in the discussion. The great freedom of speech that the seminar members enjoyed sometimes lead to abuse; in particular, according to Mises, Otto Neurath's fervor and fanaticism was notable (L. von Mises, 1978, p. 40).

Among the most important members of the seminar were Otto Bauer, Joseph Alois Schumpeter, who, just like Wieser, later became closer to the Lausanne School, and Ludwig von Mises, who was to become the most prominent member of the Mengerian tradition. One year before the passing of Böhm-Bawerk, the topic of discussion in the seminar was L. von Mises's *Theorie des Geldes und der Umlaufsmittel* (1912) (The Theory of Money and Credit) (L. von Mises, 1978, p. 40).

6. Ludwig von Mises (1881 – 1973)

Mises obtained his doctorate in 1906 and became a *Privat-Dozent* (ad honorem professor) at the University of Vienna. Even though his calling was teaching, he knew that “as a classical liberal a full professorship at a university in German-speaking countries would always be denied” (L. von Mises, 1978, p. 93).

The level of instruction at the university has significantly dropped. “I remember,” L. von Mises (1978, p. 96) says, “that I had a hard time persuading the committee to flunk a candidate who believed that Marx had lived during the eighteenth century.” This situation led him to start, in 1920, a biweekly *Privat-Seminar* at the Chamber of Commerce. From this seminar, internationally renowned scientists emerged, such as Gottfried von Haberler, Felix Kaufmann, Fritz Machlup, Oskar Morgenstern, and Richard von Strigl.¹⁰ However, one seminar member who followed a more “orthodox” Austrian thought was Friedrich Hayek.

The period between 1918 and Hitler's occupation was terrible for Austria: the aftermath of the war, very high inflation rates, and civil wars (Haberler in L. von Mises, 1952, pp. 192–193). Even though intellectual life was exhilarating, this came to an end with the rise of Nazism in the mid-1930s. In the face of these changes, Mises advised the members of his seminar to abandon Vienna while it was still possible. In 1934, Mises received an offer for a faculty position at the *Institut Universitaire des Hautes Études Internationales* in Geneva. He accepted the offer and kept the position until 1940 when, owing to the threat of Nazi invasion, he emigrated to the United States. On the other hand, Hayek went to London, Machlup to the University of Buffalo, and Haberler to Harvard (Machlup, 1974, p. 13).

Starting in 1948, until 1969, Mises conducted a seminar at New York University. The most *orthodox* American followers of Mengerian thought came from this seminar. In this way, the Austrian School shut off in Austria and regained momentum in the United States at New York University. Mises, just like Menger, is a clear example of the multiplier effect that one individual can produce in the dissemination of a school of thought. Even though only four students obtained a Ph.D degree under Mises' supervision, the number of important disciples is much larger. Not only in the United States, but around the world as well. In chronological order, those who obtained their doctorate were Hans Sennholz, Louis Spadaro, Israel M. Kirzner, and George Reisman.

¹⁰ A full list of the seminar participant is reproduced at the end of this paper.

Mises can be considered as the economist who extracted the more logical implications from the thought structure of Menger and Böhm-Bawerk.¹¹ Also, since Weiser's book *Theorie des Gesellschaftlichen Wirtschaft* is not representative of the Austrian School, Mises was the first to publish a systematic treatise on Austrian Economics, *Human Action*.

Among Mises' contributions are: (1) the business cycle theory, where he unifies purely monetary theories with purely structural theories; (2) the demonstration of the impossibility of economic calculation, and therefore of economic efficiency, under socialism; (3) the discovery that economics is part of a more general science, praxeology, or the science of action; and (4) the demonstration that economic theory, like mathematics and logic, is aprioristic rather than hypothetical-deductive as natural sciences are.

Even though all these contributions are quite significant, the one with the largest impact in the international arena was the impossibility of economic calculation in a socialist society. Mises was not the first to raise this issue, since others had pointed to this problem before.¹² Also, approximately at the same time that Mises published his article, two other authors came out with similar conclusions. One by the German Max Weber (1956, Chapter 2.12) and the other one by the Russian Boris Brutzkus (1921). However, as socialist economist Oskar Lange (1938, p. 57) says:

And although Professor Mises was not the first to raise it, and although not all socialists were completely unaware of the problem as is frequently held, it is true, nevertheless, that, particularly on the European Continent (outside of Italy), the merit of having caused the socialists to approach this problem systematically belongs entirely to Professor Mises.

Mises' article and his book *Gemeinwirtschaft* (Socialism), which appeared two years later, were the starting point of the debate about the possibility of economic calculation under socialism. Mises responded immediately on two occasions to the socialist critics, and his last comments on this topic appeared in *Human Action*. It was Hayek who responded with more patience to the critics. Chapters II and IX of his *Individualism and Economic Order* offer a detailed reply to the proposed solutions by the socialists.

One of Mises' main personal characteristics was his intransigence. When he would reach a conclusion following a rigorous logical analysis, he would doggedly defend it even at the cost of unpopularity and isolation. On this matter, Hayek (1974b, p. 4) says that: "[Mises] had more courage to defend his convictions than anyone I've met, a courage that would reach the extreme of preferring to be unpopular with his friends and colleagues. When he considered something as correct, he would pursue his point of view with persistence even if he looked ridiculous, was seen as an enemy, or hated."ⁱⁱⁱ

The level of knowledge he demanded from an economist would also occasionally produce complaints from his students. He considered that no one could be a good economist unless he is versed in mathematics, physics, biology, history, and jurisprudence. When an economics student complained that no one could force him to study all those subjects, Mises' (1962, p. 4) reaction was that "[n]obody asks or forces you to become an economist." He would make similar demands about language literacy. On many occasions, at New York University, he would read passages in French and German. When someone complained that he did not speak neither French nor German, his answer was "[l]earn it, you are engaged in scholarly activities" (M. von Mises, 1976, p. 136).

Even without the animosity of trying to upset this generation of economists, the lack of knowledge in history and the nature of economics itself affects, to some degree, the development of economic science. Today, it seems that a good economist is thought to be one who has mastered the necessary mathematical tools. However, the application of mathematics to economists is limited to the use of mathematical algorithms, that is, to the *mechanical* steps needed to solve a problem, such as obtaining a derivative or solving a system of

¹¹ Some refer to Mises as the founder of his own school of thought. See Schumpeter (1954, p. 1086) and Hayek's preface to Mises' *Socialism* (1922, p. xxii).

¹² H. H. Gossen, E. Cannan, N. G. Pierson, E. Barone, and V. Pareto had already suggested similar ideas. For a more detailed analysis see Hayek (1948, Chapter VII).

equations. But mathematics is much more than this, and Mises knew it. This is the reason why he did not fall into the same errors as mathematical economists have. The cloister of *building models* because this is what is believed to be the “scientific” way to proceed, ignoring the implied epistemological issues, overlooks significant implied epistemological problems that have led to many errors in economic theory.

7. Friedrich A. von Hayek (1899 -)

Professor Hayek is one of the most distinguished Mises’ disciples. His initial formation, however, does not come from the *orthodox* line of the Austrian School. Hayek studied with Wieser, and as he says, he could never totally abandon that influence. Like Wieser, or maybe because of his influence, Hayek would sympathize with the ideals of Fabian socialism (Butler, 1983, p. 2).

A few years after his graduation, Mises needed a lawyer with knowledge of economics. This is how, with a recommendation letter from Wieser, Hayek got in touch with Mises, leading to the meeting of a Fabian socialist and an intransigent liberal. Even though Wieser introduced Hayek as a lawyer with good knowledge of economics, Mises did not hesitate to point out to Hayek that he had not seen him in his seminar (Butler, 1983, p. 3).

Despite this, Hayek gained Mises’ acceptance. “During these ten years,” Hayek said, “[Mises] had more influence on my economic points of view than anyone else [...] It was his second great work, *Socialism* (1922) [...] what convinced me of his point of view.”^{iv}

Hayek was a member of Mises’ *Private-Seminar* at the Austrian Chamber of Commerce until 1931, when the London School of Economics hired him, and where he remained until 1960. From there, he went to the University of Chicago until 1962. Between 1962 and 1969, he taught at the University of Freiburg, from where he finally returned to Austria, where he still teaches as a Visiting Professor at the University of Salzburg.

Hayek’s contributions to social sciences can be divided into different stages. At first, his attention was devoted to economic issues and, in particular, on two specific points. One is the explanation of market coordination given that individuals have imperfect knowledge of the relevant information and, therefore, will have diverse expectations and commit errors. This point is interesting because it highlights the theoretical differences between the Austrian School and the Cambridge and Lausanne Schools. His ideas are brilliantly laid out in his book *Individualism and Economic Order*, where Hayek also contributes additional ideas to consolidate Mises’ thoughts on the impossibility of economic calculation under socialism. “Mises’s arguments,” Hayek explains, “were not always easily apprehended. Sometimes personal contact and discussion were required to understand them fully.”¹³

It is important to point out that the Austrian theory of the market process incorporated uncertainty systemically and coherently in its analysis before any other school had done so. Only recently, mathematical economists believe they have produced a revolution by adding stochastic variables to their models. In this sense, we can argue that mathematical economics has progressed much more slowly than the traditional logical deductive narrative. We will see why below.

The second economics issue for which Hayek is most known for is the relation between money and business cycles. Most of his contributions can be found in three books: *Prices and Production* (1931), *Monetary Theory and the Trade Cycle* (1933), and *Profits, Interest and Investment* (1939). These books, mostly because of the years in which they were written, are a reply to Keynesian theory, even though Keynes was the one who prevailed. Still, it is convenient to remember that the world did not become Keynesian because of the publication of *The General Theory*. What Keynes actually did was give theoretical support to what governments have already been doing for a few years.

¹³ Hayek’s foreword (p. xxii) in Mises (1922).

The Keynesian thesis maintains that a monetary expansion when there are idle resources puts these resources to work, and this produces a fall in unemployment and a rise in real income. According to Keynes, this monetary expansion is not inflationary because the increase in production neutralizes the inflationary effect of money creation. On the contrary, Hayek's thesis claims that a monetary and credit expansion distorts relative prices, leading to an inefficient allocation of resources. Hayek shows that this misallocation of resources, which is a reaction to false signals, cannot be sustained unless monetary expansion continues at an increasing pace. Even so, the only thing that would be achieved is to postpone the problem rather than solve it. Therefore, even if the "level" of prices remains stable, or even if it falls, the monetary expansion advocated by Keynes carries the seed of a future recession or the destruction of the monetary system if the artificial boom is prolonged long enough.

Hayek does not apply his theory of the division of knowledge strictly only to economics; he also takes it to the field of social institutions. In his two books, *The Constitution of Liberty* (1960) and the three volumes of *Law, Legislation and Liberty* (1973, 1976, 1979), he shows how society is a complex phenomenon that no individual mind can capture in all of its details. Only personal freedom achieves a social order where individuals can satisfy a large number of particular needs. In these books, Hayek also analyzes the required institutions and legal system for a free society.

Lastly, Hayek also researched epistemology and psychology. In his book *The Counter-Revolution of Science* (1952), he shows historically and theoretically how the methods of the natural sciences was introduced into social sciences without paying attention to the fact that the nature of the social science problems is different from natural science problems. He concludes that social scientists, by overlooking the differences, "copied like monkeys" (aping) what natural scientists were doing.¹⁴

His contributions to psychology are included in his book *The Sensory Order* (1952). As Hayek (1952, p. vii) himself says, the book refers to the theoretical foundations of psychology, making it look more like a book on philosophy than psychology. The main idea is that a sensory perception is an act of classification. And this classification is not the result of having captured a pre-existing order; on the contrary, it is the mind doing an *a priori* classification of objects. The qualities that men attribute to objects are not their (the objects') properties, they are the product of relations existing in the nervous system. As Heinrich Klüver argues in the introduction to the book, Hayek's theory can be framed in Goethe's famous maxims: "all that is factual is already theory" (p. xviii). The only thing that experience can do is induce us to change a theory, that up until then, has been accepted.

If his intransigence characterized Mises to the point of solitude, Hayek is characterized by his impeccable treatment towards his academic opponents. Because of this, Schumpeter (1946, p. 269) accused Hayek of "politeness to a fault." But maybe it is this polite behavior that allowed him to reach more people. His popularity increased significantly when he was awarded the Nobel Prize in Economics (together with Gunnar Myrdal) in 1974, less than a year after Mises' passing.

Like Menger, Böhm-Bawerk, and Mises, Hayek believed that to establish a free society, ideas triumph over force. Also, he thinks that the right arena to achieve a change of ideas is in academics, not politics. After reading *The Road to Serfdom* (1944), Anthony Fisher approached Hayek to ask him if he should enter politics to resist the advance of socialism, but Hayek advised him to avoid politics and to focus on the realm of ideas.¹⁵

Hayek's success in advancing the ideas of liberalism has been remarkable. His mentor and friend Ludwig von Mises pointed out his success:

Many people are kind enough to call me one of the fathers of the renaissance of classical nineteenth century ideas of freedom. I wonder whether they are right. But there is no doubt that Professor Hayek with his *Road to Serfdom* paved the way for an international organization

¹⁴ This point was highlighted by Karl R. Popper (1969, p. 190).

¹⁵ Anthony Fisher was the founder of the Institute for Economic Affairs (1956). See Butler (1983, p. 12).

of the friends of freedom. It was his initiative that led in 1947 to the establishment of the Mont Pelerin Society in which eminent libertarian from all countries this side of the Iron Curtain cooperate. (M. von Mises, 1976, p. 185)

8. The Economic Thought of the Austrians

Since the argumentation method of Austrian economics is not homogeneous, it is inaccurate to talk about the economic thought of *the Austrians* - and a violation of the methodological individualism that its members advocate. However, the conclusions that they individually reach are very similar. The following reflection by Hayek (in L. von Mises, 1922, p. xxiii) offers an example:

I must admit, [...] how many of [Mises's] arguments, which I initially had only half accepted or regarded as exaggerated and one-sided, have since proven remarkably true. I still do not agree with all of it, nor do I believe that Mises would. He certainly was not one to expect that his followers receive his conclusions uncritically and not progress beyond them. In all, though, I find that I differ rather less than I expected.

Keeping always in mind these types of differences, this section is limited to highlighting some fundamental characteristics of the Austrian School that provide distinctive departures from what can be called the prevailing economic theory.

The great hiatus that separates the Austrian School from the rest originates in the theory of value. The views of Jevons, Walras, and Menger have much more profound differences than the ones usually mentioned in history of economic thought textbooks. As Mises (1949, p. 3) explains, the passage from the classic theory of value to the theory of subjective value implied much more than replacing an unsatisfactory theory with a better one. This change had important consequences for both market theory and the method of economics.

What we will try to see, then, is that the Austrian revolution concerning the concept of value was more profound than the ones that occurred in the Cambridge and Lausanne schools. And, from there, we will see the consequences that follow for market theory and the method of economics. The treatment of these subjects does not pretend to be exhaustive, but merely to point out some examples of where and why there are differences.

Before delving further into the topic of value it is convenient to make a few clarifications around ambiguities and errors that have led to much confusion. One of these is suggesting that the classical economists were responsible for a mistake that in fact they did not commit. We should remember that the classical economists distinguished between the *value in use* and the *value in exchange* and, even though they did not worry much about where the former comes from, they did not ignore its importance.¹⁶

But what is important is that these economists put all their emphasis on explaining value in exchange, that is, prices. Therefore, it is inappropriate to contrast a theory of value in exchange with a theory of value in use, as is the case of marginal utility. What is right is to contrast different theories of value in exchange (price). To avoid ambiguities, I will use the term "value in exchange" as synonymous with "price" and simply "value" as synonymous with "value in use" or "utility."

¹⁶ According to Ricardo (1817, p. 11 italics added): "Utility then is not the measure of exchangeable value, although it is absolutely essential to it. If a commodity were in no way useful, - in other words, if it could in no way contribute to our gratification, - it would be destitute of exchangeable value, however scarce it may be, or whatever quantity of labour might be necessary to produce it."

The classical economists maintained that a good's cost of production determined its value in exchange.¹⁷ Neither Jevons, nor Marshall, nor Walras, wholly abandoned this theory.¹⁸ In fact, Marshall and Walras imply some backtracking with respect to Jevons. It is clear that they use the theory of marginal utility to *complete*, rather than to *refute* the cost-theory of price. For them, it is as much of an error to think that only subjective valuation determines value in exchange than to believe that only the cost of production does so. *Both* elements are involved.

This point of view of how value in exchange is determined is explicit in Marshall's (1890, p. 182) known scissors example.¹⁹ In another paragraph of his book, he maintains the following (p. 349):

the shorter the period which we are considering, the greater must be the share of our attention which is given to the influence of demand on value; and the longer the period, the more important will be the influence of cost of production on value [of exchange].

In the case of Walras, the idea that *both* cost and utility determine value in exchange is seen by pondering a system of simultaneous equations where, just like Marshall, demand functions include the subjective factor while a production function comprises the objective side. Gustav Cassel (1932, pp. 145–146), an important follower of Walras, says

There has been a great deal of discussion as to what are the factors determining price. This question can now be answered. The determining factors of price are different given coefficients of our equations. These coefficients may be classified in two main groups, which we may call the objective and the subjective factors determining price [...] An "objective" or "subjective" theory of value, in the sense of a theory that would attribute the settlement of prices to objective or subjective factors alone, is therefore absurd.

As can be appreciated from the above passages, economists from the Cambridge and Lausanne schools considered that the classics had an incomplete theory of value of exchange. They had seen only one side of the problem, that of the costs; the theory of marginal utility serves to *complete* the classical theory.

The conclusions of the Austrians were different. For them, the theory of marginal utility was not the missing complement to the classics, but a Copernican turn with respect to the classic theory of value of exchange. Starting from the theory of marginal utility, the Austrians concluded that costs do not determine prices (value in exchange), but, on the contrary, it is the price of final goods that determine the prices of the factors of production, that is, costs. Even though in the long run, prices and costs tend to equal each other, for the Austrians, the causal direction is the opposite to that maintained by the classics.

No entrepreneur can pay for intermediate goods a price greater than what consumers are willing to pay for the final good. Intermediate goods have value because consumers value final goods. The entrepreneur is willing to pay the price for intermediate goods because someone is willing to pay a price for a final good. The price of intermediate goods is determined by the push coming from demands to produce alternative final goods.

¹⁷ It is also not true that the classical school held a labor-theory of value as is usually maintained. In the case of Adam Smith, the falseness of this thesis is manifest in chapter 6 of *The Wealth of Nations*, where the Scottish economist talks about the three components of value in exchange: labor, capital, and land. Even though Ricardo causes quite some confusion, it is clear when looking at the context of his discussion that for him the components of value in exchange were labor and capital. Ricardo (1951, p. 347) defends himself from those who accuse him of advocating a labor-theory of value. In a letter to Malthus, he says: "When you say that my great mistake is in considering commodities are made up of labour alone, and not of labour and profits I think the error is yours, not mine, for that is precisely what you do[,] you measure commodities, by labour alone, which have both labour and profits in them."

¹⁸ Actually, Jevons's approach (1871, p. 1) constitutes major progress over Marshall and Walras' by maintaining that "*value depends entirely upon utility.*" But he then turns around by putting labor and the cost of production as indirect determinants of the value of exchange. In page 2, he maintains that labor "is found often to determine value, but only in an indirect manner, by varying the degree of utility of the commodity through an increase or limitation of the supply." A lengthier argument can be found in page 165, where Jevons includes the cost of production as an indirect determinant of value in exchange.

¹⁹ In addition, it is worth pointing out that this paragraph is included in Appendix I of the book with the title *Ricardo's Theory of Value* and where he attempts to rescue the Ricardian theory of value.

Costs are not a variable that determines the price of a final good; the determination of the final price is independent of the costs. Costs are the result of the existence of expected prices.

Subjective factors *alone* enter into the determination of prices, meaning specifically the marginal utilities of the parties involved in the exchange. Each one of them enters into an exchange because he values what he receives more than what he gives up and has no interest in whether the other party had high or low costs. Menger (1871, p. 146) explained it in the following way:

Whether a diamond was found accidentally or was obtained from a diamond pit with the employment of a thousand days of labor is completely irrelevant for its value. In general, no one in practical life asks for the history of the origin of a good in estimating its value, but considers solely the services that the good will render him and which he would have to forgo if he did not have it at his command.

Marshall's error, considering the cost as one of the determinants of prices, was also pointed out by Böhm-Bawerk (1894). However, Cambridge's and Lausanne's point of view is the one that has prevailed up to the present day. Modern microeconomic textbooks derive the supply curve from marginal costs and the demand curve from the marginal utility. The intersection of both curves determines the price. In this way, Marshall's and Walras' error has survived.

In summary, while in the Cambridge-Lausanne tradition, value in exchange is determined by the intersection of marginal utilities and costs, for Austrians, only the former is involved. The costs are the consequence of the price of final goods. This difference has led the Austrians to a different approach in economic theory. Let us see some examples.

If subjective valuations exclusively determine prices, then it is easier to understand that their fluctuations reflect changes in individuals' preferences. Given that the economic problem consists of allocating productive resources to the production of the most important goods and services, prices become essential information in order to achieve this objective. And, from these prices, the need for intermediate (production) goods will determine their respective prices, whose maximum limit will be the present value of the marginal final good to be produced, and the minimum will be the present value of the submarginal final good produced.

Austrians consider prices and costs as a synthesis of a great quantity of dispersed information necessary to achieve an efficient allocation of resources (in particular see, Hayek, 1948, Chapter IV). Furthermore, given that this information is in constant change rather than static, Austrians have put more emphasis on explaining the market *process*, that is, the mechanism by which the allocation of resources adapts to changes in the information reflected in changing prices.

The Cambridge and Lausanne economists, however, apply most of their efforts to analyzing *equilibrium* conditions.²⁰ For them, prices are the variables that *clear* the market, making supply and demand equal to each other. This condition is quite evident in the use of mathematics because the parameters of the equations reflect a static information structure for which there is a group of prices that equilibrates all markets.²¹

Maybe it is in the issue of inflation where the consequences of following each point of view is seen most clearly. For Austrians, the central problem of inflation is the distortion of relative prices, that prices are different from their free-market values. When this happens, prices do not transmit precise information anymore, and the result is a misallocation of resources.

²⁰ This does not mean that the informative role of prices was unknown to these economists. See, for instance, Friedman (1962b, pp. 8–11) and Stigler (1949, pp. 14–16). Nonetheless, in the theoretical development emphasis falls on *equilibrium* analysis rather than on the *process* of price determination.

²¹ A good explanation of this subject, *equilibrium versus process*, can be found in Kirzner (1973, Chapter 1, 1974) and Lachmann (1977, pt. 3).

The cause of this distortion is monetary policy. For Austrians, the optimal quantity of money is set in the market just as the optimal quantity of any good is set: by demand and supply. Changes in demand affect the purchasing power of money and, therefore, its production will increase or decrease up to the point where the price of money would be equal to its cost of production. When the government coercively fixes the quantity of money above its free-market value, it is producing inflation, that is, distorting relative prices.²²

Note that what happens to the price *level* is inconsequential. It is possible for there to be a case where the government creates money at the same time as there is an increase in productivity such that the price *level* remains *stable*, or maybe goes down and, still, there will be inflation because the government is distorting relative prices leading to a misallocation of resources.²³

Compare this point of view with Friedman's, who seems to pay no attention at all to changes in relative prices and focuses his attention on the "level" of prices. This economist maintains that²⁴

The immediate cause of inflation is always and everywhere the same: a too fast increment of the quantity of money in circulation with respect to output (Friedman, 1977, p. 64)^v

As we can see, Friedman compares the growth of the quantity of money with the growth of output and not with the quantity of money that would prevail in a market free of government interference. This is because his main preoccupation is what happens to the *level* of prices and not to the structure of relative prices.²⁵ But, as we have already seen, what is relevant for economic efficiency is the latter, not the former.

We can cite the entrepreneurial function to give a final example of how general equilibrium theorists (Cambridge-Lausanne) and market process theorists (Austrians) reach different conclusions. Schumpeter, a good representative of the former, concluded that when innovating, an entrepreneur breaks the existing equilibrium in the market and produces an economic cycle; this way, he is a disequilibrating force in the market. On the contrary, for Austrians, because they start in a world of uncertainty, the entrepreneur is the one who tries to predict where there will be, or where there are, market disequilibria, and directs production towards those sectors. In this way, he tries to anticipate changes that, by producing a disequilibrium, will create losses and profits. He will try to avoid the former and achieve the latter. By proceeding this way, he becomes an equilibrating force because, with his action, he is making final goods' prices equal costs of production, that is, the market moves towards equilibrium.

General equilibrium theorists have based their theories on the assumption that economic agents have perfect information. Only in recent years have they started to add *stochastic variables*. By avoiding this assumption, Austrians focus their attention on the *process* of adjustment and, as we have seen, this took them to different theoretical conclusions.

One of the main differences between the Austrian School and Cambridge and Lausanne is their epistemologies. The theory of value, as developed by the Austrians, led them to an important distinction between the natural and social sciences. What characterizes the former is that their elements depict a

²² In the case where the government fixes a quantity of money below its free market value it is also distorting relative prices, but in this case we call it deflation.

²³ Hayek (1931, pt. I) is the one who has most insisted on this point. Hayek (1933, p. 123) maintains: "[...] general price changes are no essential feature of a monetary theory of the Trade Cycle; they are not only unessential, but they would be completely irrelevant if only they were completely 'general' - that is, if they affected all prices at the same time and in the same proportion. The point of real interest to Trade Cycle theory is the existence of certain deviations in individual price-relations occurring because changes in the volume of money appear at certain individual points [...]."

²⁴ Friedman and Friedman (1980) argue that inflation "occurs when the quantity of money grows significantly faster than production and, the faster the growth of money per unit of output, the higher the inflation rate."

TN: My translation. Page number and original English version were unavailable.

²⁵ Friedman has changed his position regarding what monetary policy the government should follow. In his *Essays on Positive Economics* (1953), he proposes a counter-cyclical policy operating automatically through fiscal deficits [and surpluses]. In times of monetary expansion, tax revenues increase, the deficit shrinks, and less money is issued. And in times of recession tax revenues fall, deficit grows, and more money is issued. In 1962 Friedman abandons this Keynesian position: "My choice at the moment would be a legislated rule instructing the monetary authority to achieve a specific rate of growth in the stock of money" (Friedman, 1962a, p. 54).

deterministic relationship.²⁶ That is, they do not make decisions when facing stimuli. To the extent that the scientist knows the totality of the *independent* variables, he will be able to predict with a great degree of precision what will occur to the *dependent* variable.²⁷ If he does not know the totality of the *independent* variables, he will have only a probabilistic knowledge about the behavior of the *dependent* variable, as happens for instance, in meteorology.

In social sciences, on the contrary, the behavior of the individual is not predetermined. He can decide about his response only when confronted with stimuli. Even if the totality of the variables that affect an individual where known, a condition that in the natural science would allow for a point prediction, the decision of the individual in front of these stimuli remains unknown. In social sciences, not only is the quantity of variables massive, but there is also individual freedom, that is, there is purposeful rather than deterministic behavior.

This difference means that the statistical data in each these two types of science is of a different nature. In the natural sciences, in the face of identical circumstances, the response of the elements is always the same. This regularity is why a hypothesis can be subject to a test using historical data and results can be accurately forecast. Because of determinism, the observed elements will depict the same behavior as in the past.

In social science, statistics are of a different nature because data reflects exclusively a particular situation that depends on specific conditions of time and place, in response to which individuals choose specific responses. This data cannot be projected because the circumstances, the individuals, and the valuations about the circumstances are constantly changing (L. von Mises, 1949, Chapter II). And this leaves out consideration of the errors of collecting statistical information in social sciences. Econometrics has evolved by ignoring these problems. In reality, econometrics has been used to see who obtains the highest R^2 , without realizing that this tool is not superior to what the housewife does to know by how much the cost of living has risen or how a successful entrepreneur without a college degree makes his predictions. In social sciences, prediction consists of anticipating future changes, for which past data is of secondary importance.

The nature of social science makes it impossible to subject theories to a testing because statistics are only useful for a particular historical period and do not have the requirement of atemporal validity that they do in natural science. This situation raises the question of the scientific character of social phenomena. In my judgement, Mises has satisfactorily resolved this issue. According to this economist, economics is, like logic and mathematics, an aprioristic science. That is, it has the advantage of starting its scientific deductive process with a foundation whose truth is obvious *a priori*. Therefore, the conclusions obtained following logical deduction are *necessarily* true, and empirical observation can neither refute nor confirm them. Even though Hayek has some differences with Mises' epistemological position, his conclusions regarding economic theory are basically the same.²⁸

Mimicking the natural sciences, in general, economists from other schools of thought adopted the hypothetical-deductive method that basically consists of the elaboration of mathematical *models* that are then subject to empirical verification through an econometric application. But, the nature of statistics in social sciences prevents this type of verification.

The Austrian economists do not reject the mathematical method due to their ignorance of this tool. It is the opposite. Because they have not limited themselves to the algorithmic surface but have gone into the

²⁶ Physics suffered a fundamental crisis during the first decades of the twentieth-century because there was no way to establish the mechanism that would determine the behavior of atoms, especially in the case of radioactive disintegration (see Eisberg, 1974, pp. 158–166, 594–605; Holton, 1952, p. 724). Now, this does not imply indeterminism in natural sciences. As Holton and Bush (1952) maintain: “[...] statistical methods are introduced for convenience: it seems impossible to measure all the positions and velocities of 10^{22} molecules and use that information even if it were available. The ‘probability’ refers to the method of description used by the scientist and does not affect the idea that the properties of an individual molecule are considered to be exactly determined.” See also L. von Mises (1962, pp. 23–24).

TN: Holton and Bush's original citation was unavailable. This is my translation from the Spanish translation cited in the original paper.

²⁷ Obviously subject to a certain deviations owing to measurement errors.

²⁸ Besides his *The Counter-Revolution of Science: Studies on the Abuse of Reason*, Hayek offers a good critique of empirical studies with theoretical objectives in chapter I of *Monetary Theory and the Trade Cycle*.

epistemological foundations of natural science and statistics, they are aware of the error of resorting to *models*. Surprisingly, it was Keynes, a renowned mathematician, who pointed out the errors of mathematical economics.²⁹

The classical economists did not clearly connected value in use with value in exchange, and this caused them serious theoretical problems, among them having inverted the causal relationship between cost and final prices. But, despite this shortcoming, they intuitively followed a method of analysis in which it was implicit that their main preoccupation was the *process* of market adjustment. The rise of marginal analysis, as was developed by the Cambridge and Lausanne Schools, has implied to some extent a setback with respect to the advances of the classics. Firstly, because they do not entirely abandon the theory of cost as a determinant of value in exchange. Secondly, because by introducing mathematical methods to explain how the market works, they led economic science in the wrong direction. This mathematical turn resulted in period of obscurantism that led to a great deal of confusion.

It was the Austrian School that introduced the new theory of value into economics in a way that strengthened the conclusions of the classics (albeit that they were based on an erroneous theory of value in exchange). The liberalism of Smith and Ricard gets renewed strength in the Austrian School. The models of perfect competition and equilibrium have been used to weaken the fundamentals of a free economy. They are based on the superstition of the superiority of the mathematical method. Sooner or later, this error will be abandoned, but as L. von Mises (1949, p. 706) says, “superstitions die hard.”

9. Appendix

Main Figures of the Austrian School

First Generation

Carl Menger

Eugen von Böhm-Bawerk

Friedrich von Wieser

Eugen Philippovich von Phillipsberg

Second Generation

Emil Sax

Robert Zuckerkandl

Johann von Komorzynski

Robert Meyer

Third Generation

Ludwig von Mises

Richard von Strigl

Edwald Schams

Leo Schöfield (later known as Leo Illy)

²⁹ Keynes (1936, pp. 148–149): “It is a great fault of symbolic pseudo-mathematical methods of formalising a system of economic analysis [...] that they expressly assume strict independence between the factors involved and lose all their cogency and authority if this hypothesis is disallowed; whereas, in ordinary discourse, where we are not blindly manipulating but know all the time what we are doing and what the words mean, we can keep ‘at the back of our heads’ the necessary reserves and qualifications and the adjustments which we shall have to make later on, in a way in which we cannot keep complicated partial differentials ‘at the back’ of several pages of algebra which assume that they all vanish. Too large a proportion of recent ‘mathematical’ economics are merely concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols.”

A brilliant critique of the use of mathematics in economics can be found in Leoni and Frola (1977). Also in L. von Mises (1949, pp. 350–357, 1977). Mathematician Paul Painlavé (1960) offers a good critique in his introduction to the French edition of W. S. Jevons’ *Theory of Political Economy*.

Fourth Generation

Friedrich A. von Hayek
Fritz Machlup
Ludwig M. Lachmann

Fifth Generation

Hans F. Sennholz
Louis Spadaro
Israel M. Kirzner
Murray N. Rothbard

Members of Mises' Private-Seminar

Ludwig Bettelheim – Gabillon
Victor Bloch
Stephanie Braun – Browne
Friedrich Engel von Janosi
Walter Froelich
Gottfried von Haberler
Friedrich A. von Hayek
Marianne von Herzfeld
Felix Kaufman
Rudolf Klein
Helene Lieser – Berger
Rudolf Loeb
Fritz Machlup
Ilse Mintz – Schüller
Oskar Morgenstern
Elly Offenheimer – Spiro
Adolf F. Redlich – Redley
Paul N. Rosenstein – Rodan
Karol Schlesinger
Fritz Schreier
Alfred Schütz
Richard von Strigl
Erich Voegelin
Robert Waldes
Emanuel Winternitz

Main Work from Members of the Austrian School

- Böhm-Bawerk, Eugene von (1884, 1889, 1921 [1959]). *Capital and Interest*. Libertarian Press.
- Böhm-Bawerk, Eugene von (1962). *Shorter Classics of Böhm-Bawerk*. Libertarian Press.
- Hayek, Friedrich A. von (1931 [1967]). *Prices and Production*. Augustus M. Kelley Publishers.
- Hayek, Friedrich A. von (1933 [1975]). *Monetary Theory and the Trade Cycle*. Augustus M. Kelley Publishers.
- Hayek, Friedrich A. von (1935). *Collectivist Economic Planning*. George Routledge and Sons, Ltd.
- Hayek, Friedrich A. von (1937 [1971]). *Monetary Nationalism*. Augustus M. Kelley Publishers.
- Hayek, Friedrich A. von (1939 [1975]). *Profit, Interest and Investment*. Augustus M. Kelley Publishers.
- Hayek, Friedrich A. von (1941 [1975]). *The Pure Theory of Capital*. The University of Chicago Press.
- Hayek, Friedrich A. von (1944 [1972]). *The Road to Serfdom*. The University of Chicago Press.
- Hayek, Friedrich A. von (1948 [1980]). *Individualism and Economic Order*. The University of Chicago Press.
- Hayek, Friedrich A. von (1951). *John Stuart Mill and Harriet Taylor*. Augustus M. Kelley Publishers.

- Hayek, Friedrich A. von (1952 [1979]). *The Counter-Revolution of Science: Studies on the Abuse of Reason*. Liberty Press.
- Hayek, Friedrich A. von (1952 [1976]). *The Sensory Order*. The University of Chicago Press.
- Hayek, Friedrich A. von (ed.) (1954 [1974]). *Capitalism and the Historians*. The University of Chicago Press.
- Hayek, Friedrich A. von (1959 [1971]). *The Constitution of Liberty*. The University of Chicago Press.
- Hayek, Friedrich A. von (1967 [1978]). *Studies in Philosophy, Politics and Economics*. Routledge & Kegan Paul.
- Hayek, Friedrich A. von (1973, 1967, 1979). *Law, Legislation and Liberty* (3 volumes). The University of Chicago Press.
- Hayek, Friedrich A. von (1976 [1978]). *Denationalization of Money*. The Institute of Economic Affairs.
- Hayek, Friedrich A. von (1978). *New Studies in Philosophy, Politics and Economics*. The University of Chicago Press.
- Hayek, Friedrich A. von (1979). *Unemployment and Monetary Policy*. Cato Institute.
- Hayek, Friedrich A. von (1979). *A Tiger by the Tail*. Cato Institute.
- Kirzner, Israel M. (1960 [1976]). *The Economic Point of View*. Sheed and Ward, Inc.
- Kirzner, Israel M. (1963). *Market Theory and the Price System*. Van Nostrand.
- Kirzner, Israel M. (1973 [1974]). *Competition and Entrepreneurship*. The University of Chicago Press.
- Kirzner, Israel M. (1979). *Perception, Opportunity and Profit*. The University of Chicago Press
- Kirzner, Israel M. (ed.) (1982). *Method, Process and Austrian Economics: Essays in Honor of Ludwig von Mises*. Lexington Books, D. C. Heath and Co.
- Komorzynski, Johan von (1889). *Der Wert in der Isolierten Wirthschaft*. Manz.
- Lachmann, Ludwig M. (1956 [1977]). *Capital and Its Structure*. Sheed Andrews and McMeel, Inc.
- Lachmann, Ludwig M. (1977). *Capital, Expectations, and the Market Process*. Sheed Andrews and MacMeel, Inc.
- Machlup, Fritz. (1953). *The Economics of Seller's Competition*. John Hopkins Press.
- Machlup, Fritz (1963). *Essays on Economic Semantics*. Prentice-Hall.
- Machlup, Fritz (1976). *Essays on Hayek*. Hilldale College Press.
- Machlup, Fritz (1978). *Methodology of Economics and Other Social Sciences*. Academic Press.
- Meyer, Robert (1887). *Das Wesendes Einkommens: Eine Volkswirthschaftliche Untersuchung*. Hertz.
- Menger, Carl (1871 [1981]). *Principles of Economics*. New York University Press.
- Menger, Carl (1883). *Problems of Economics and Sociology*. University of Illinois Press.
- Menger, Carl (1884 – 1915 [1935]). *Kleinere Schriften zur Methode und Geschichte der Volkswirtschaftslehre*. London School of Economics.
- Menger, Carl (1889 – 1893 [1936]). *Schriften üben Geldtheorie*. London School of Economics.
- Mises, Ludwig von (1912 [1981]). *The Theory of Money and Credit*. Liberty Classics.
- Mises, Ludwig von (1919 [1983]). *Nation, State and Economy*. New York University Press.
- Mises, Ludwig von (1922 [1981]). *Socialism*. Liberty Classics.
- Mises, Ludwig von (1927 [1962]). *The Free and Prosperous Commonwealth*. Van Nostrand.
- Mises, Ludwig von (1929 [1977]). *A Critique of Interventionism*. Arlington House.
- Mises, Ludwig von (1933 [1981]). *Epistemological Problems of Economics*. New York University Press.
- Mises, Ludwig von (1944 [1969]). *Bureaucracy*. Arlington House.
- Mises, Ludwig von (1944 [1969]). *Omnipotent Government*. Arlington House.
- Mises, Ludwig von (1949 [1966]). *Human Action: A Treatise on Economics*. Contemporary Books, Inc.
- Mises, Ludwig von (1952 [1974]). *Planning for Freedom*. Libertarian Press.
- Mises, Ludwig von (1956 [1978]). *The Anti-Capitalist Mentality*. Libertarian Press.
- Mises, Ludwig von (1957 [1969]). *Theory and History*. Arlington House.
- Mises, Ludwig von (1962 [1978]). *The Ultimate Foundation of Economic Science*. Sheed Andrews and McMeel, Inc.
- Mises, Ludwig von (1978). *Notes and Recollections*. Libertarian Press.
- Mises, Ludwig von (1978). *On the Manipulation of Money and Credit*. Free Market Books.

- Mises, Ludwig von (1979). *Economic Policy: Thoughts for Today and Tomorrow*. Regnery/Gateway, Inc.
- Philippovich von Philippsberg, Eugen. (1893). *Grundriss der Politischen Ökonomie*. Mohr.
- Rothbard, Murray N. (1962). *The Panic of 1819: Reactions and Policies*. Columbia University Press.
- Rothbard, Murray N. (1962 [1970]). *Man, Economy and State*. Nash Publishing.
- Rothbard, Murray N. (1963 [1975]). *America's Great Depression*. Sheed Andrews and Ward, Inc.
- Rothbard, Murray N. (1964 [1979]). *What Has Government Done To Our Money?*. Liberty Printing.
- Rothbard, Murray N. (1970 [1977]). *Power and Market*. Sheed Andrews and McMeel, Inc.
- Rothbard, Murray N. (1973 [1978]). *For a New Liberty*. Collier Books Edition.
- Rothbard, Murray N. (1982). *The Ethics of Liberty*. Humanities Press.
- Rothbard, Murray N. (1983). *The Mystery of Banking*. Richardson & Snyder.
- Sax, Emil (1887). *Grundlegung der Theoretischen Staatwirthschaft*. Hölder.
- Schönfield, Leo (1924). *Grenznutzen und Wirthschaftsrechnung*. Manz.
- Schönfield, Leo (1948). *Das Gesetz des Grenznutzens*. Springer (published under the name of Leo Illy).
- Sennholz, Hans F. (1955). *How Can Europe Survive?* Van Nostrand Co.
- Sennholz, Hans F. (ed.) (1975). *Gold is Money*. Greenwood Press.
- Sennholz, Hans F. (1979). *Age of Inflation*. Western Islands.
- Strigl, Richard von (1923). *Die Ökonomischen Kateogirien und Organisation der Wirthschaft*. Fischer.
- Wieser, Friedrich von (1889 [1967]). *Natural Value*. Augustus M. Kelley Publishers.
- Zuckerland, Robert (1889 [1936]) *Zur Theorie des Preises mit Besonderer Berücksichtigung der Geschichtlichen Entwicklung der Lehre*. Stein

Edited Volumes

- Doland, Ediwn G. (1976). *The Foundations of Modern Austrian Economics*. Sheed & Ward, inc.
- Moss, Lawrence S. (1976). *The Economics of Ludwig von Mises: Towards a Critical Reappraisal*. Sheed & Ward, Inc.
- Rizzo, Mario J. (1979). *Time, Uncertainty and Disequilibrium*. Max, Lexington Books, Heath and Company.
- Sennholz, Mary (1956). *On Freedom and Free Enterprise*. Van Nostrand Co.
- Spadaro, Louis M. (1978). *New Directions in Austrian Economics*. Sheed Andrews and McMeel, Inc.

10. References

- [1] **Bloch, H.-S.** (1940). Carl Menger: The Founder of the Austrian School. *Journal of Political Economy*, 48(3), 428–433. <https://doi.org/10.1086/255565>
- [2] **Böhm-Bawerk, E. von.** (1894). The Ultimate Standard of Value. *Annals of the American Academy of Political and Social Science* 1, 5, 149–208.
- [3] **Böhm-Bawerk, E. von.** (1962). *Shorter Classics of Böhm-Bawerk (Volume I)*. Libertarian Press, Inc.
- [4] **Bostaph, S.** (1978). The Methodological Debate Between Carl Menger and the German Historicists. *Atlantic Economic Journal*, September.
- [5] **Brutzkus, B.** (1921). Problems of the Social Economy under Socialism. *Ekonomist*.
- [6] **Butler, E.** (1983). *Hayek, his Contributions to the political and Economic Thought of Our Time*. Billing and sons, Ltd.
- [7] **Cassel, G.** (1932[1967]). *The Theory of Social Economy*. Augustus M. Kelley.
- [8] **Eisberg, R. M.** (1974). *Fundamentos de la Física Moderna*. Editorial Limusa.
- [9] **Fetter, F. A.** (1977). *Capital, Interest and Rent* (L. S. Moss (ed.)). Sheed Andrews and McMeel.
- [10] **Friedman, M.** (1962a). *Capitalism and Freedom* (2002nd ed.). The University of Chicago Press.
- [11] **Friedman, M.** (1962b[2017]). *Price Theory*. Routledge.
- [12] **Friedman, M.** (1977). *Paro e Inflación*. Unión Editorial.
- [13] **Friedman, M., & Friedman, R.** (1980). *Free to Choose: A Personal Statement* (1990th ed.). Harcourt, Inc.
- [14] **Hayek, F. A.** (1931[1967]). *Prices and Production*. Augustus M. Kelley.
- [15] **Hayek, F. A.** (1933). *Monetary Theory and the Trade Cycle* (N. Kaldor & H. M. Croome (trans.)). Sentry Press.
- [16] **Hayek, F. A.** (1948[1958]). *Individualism and Economic Order*. The University of Chicago Press.
- [17] **Hayek, F. A.** (1952[1976]). *The Sensory Order*. The University of Chicago Press.
- [18] **Hayek, F. A.** (1968). Menger, Carl. In *International Encyclopaedia of the Social Sciences* (Vol. 10, pp. 124–127).
- [19] **Hayek, F. A.** (1974a). Pensamiento Económico: La Escuela Austriaca. In *Enciclopedia Internacional de las Ciencias Sociales*. Editorial Aguilar.
- [20] **Hayek, F. A.** (1974b). The Courage of his Convictions. *Tribute to Mises (1881-1973)*.
- [21] **Hayek, F. A.** (1981). Carl Menger. In *Principles of Political Economy*. New York University Press.
- [22] **Holton, G. J.** (1952[1973]). *Introduction to Concepts and Theories in Physical Science*. Addison-Wesley.
- [23] **Howey, R. S.** (1960). *The Rise of the Marginal Utility School, 1870-1889* (University).
- [24] **Jevons, W. S.** (1871[1888]). *The Theory of Political Economy*. Macmillan and Co., Limited.
- [25] **Keynes, J. M.** (1936). *The General Theory of Employment, Interest, and Money*. ETH Zurich.
- [26] **Kirzner, I. M.** (1973). *Competition and Entrepreneurship*. The University of Chicago Press.
- [27] **Kirzner, I. M.** (1974). Equilibrium versus Market Process. In *The Foundations of Modern Austrian Economics* 1. Sheed & Ward, Inc.

- [28] **Lachmann, L. M.** (1977). *Capital, Expectations, and the Market Process* (W. E. Grinder (ed.)). Sheed Andrews and McMeel.
- [29] **Lange, O., & Taylor, F. M.** (1938[1948]). *On the Economic Theory of Socialism* (B. E. Lippincott (ed.)). The University of Minesota Press.
- [30] **Leoni, B., & Frola, E.** (1977). On Mathematical Thinking in Economics. *The Journal of Libertarian Studies*, 1(2), 101–109.
- [31] **Machlup, F.** (1974). Tribute to Mises (1881-1973). *Tribute to Mises (1881-1973)*.
- [32] **Marshall, A.** (1890[1946]). *Principles of Political Economy*. Macmillan and Co., Limited.
- [33] **Marx, K.** (1867[1909]). *Capital: A Critique of Political Economy (Volume I)*. Charles H. Kerr & Company.
- [34] **May, A. J.** (1963). Austria: History. In *Collier's Encyclopedia*.
- [35] **Menger, C.** (1871[2004]). *Principles of Economics*. The Ludwig von Mises Institute.
- [36] **Mises, L. von.** (1919[2006]). *Nation, State, and Economy* (B. Bien Greaves (ed.); L. B. Yeager (trans.)). Liberty Fund.
- [37] **Mises, L. von.** (1922[1962]). *Socialism* (J. Kahane (trans.)). Yale University Press.
- [38] **Mises, L. von.** (1949[1996]). *Human Action*. Fox & Wilkes and The Foundation for Economic Education.
- [39] **Mises, L. von.** (1952[1974]). *Planning for Freedom*. Liberty Press. <https://doi.org/10.2307/1054394>
- [40] **Mises, L. von.** (1962). *The Ultimate Foundation of Economic Science*. D. Van Nostrand Company, Inc.
- [41] **Mises, L. von.** (1969[2003]). *Historical Setting of the Austrian School of Economics*. Ludwig von Mises Institute.
- [42] **Mises, L. von.** (1977). Comments About the Mathematical Treatment of Economic. *The Journal of Libertarian Studies*, 1(2), 97–100.
- [43] **Mises, L. von.** (1978). *Notes and Recollections*. Libertarian Press, Inc.
- [44] **Mises, M. von.** (1976). *My Years with Ludwig von Mises*. Arlington House.
- [45] **Painlavé, P.** (1960). The Place of Mathematical Reasoning in Economics. In L. Sommer (Ed.), *Essays in European Economic Thought*. D. Van Nostrand Company, Inc.
- [46] **Palmer, R. R., & Colton, J.** (1950[1978]). *A History of the Modern World*. Alfred A. Knopf.
- [47] **Popper, K. R.** (1969). A Pluralist Approach to the Philosophy of History. In *Roads to Freedom: Essays in Honor of Friedrich A. von Hayek*. Routledge & Kegan Paul.
- [48] **Popper, K. R.** (1974[2002]). *Unended Quest: An Intellectual Autobiography*. Routledge.
- [49] **Ricardo, D.** (1817[2004]). *On the Principles of Political Economy and Taxation*. Liberty Fund.
- [50] **Ricardo, D.** (1951[2004]). *Letters (July 1821-1823)* (P. Sraffa (ed.)). Liberty Fund.
- [51] **Robinson, J. A.** (1960). *Collected Economic Papers*. Basil Blackwell.
- [52] **Schumpeter, J. A.** (1946). The Road to Serfdom . Friedrich A. Hayek. *Journal of Political Economy*, 54(3), 269–270. <https://doi.org/10.1086/256353>
- [53] **Schumpeter, J. A.** (1954[1994]). *History of Economic Analysis*. Oxford University Press.
- [54] **Seager, H. R.** (1893). Economics at Berlin and Vienna. *Journal of Political Economy*, 1(2), 236–262. <https://doi.org/10.1086/250134>
- [55] **Spiegel, H. W.** (1971[2002]). *The Growth of Economic Thought* (3rd ed.). Duke University Press.

- [56] **Stigler, G. J.** (1949[1987]). *The Theory of Price*. Macmillan Company.
- [57] **Stigler, G. J.** (1965). *Essays in the History of Economics*. The University of Chicago Press.
- [58] **Weber, M.** (1956[1978]). *Economy and Society: An Outline of Interpretative Sociology*. University of California Press.

ⁱ TN: This article was originally published in 1984, in LIBERTAS, volume 1 (October).

The translation includes some grammatical revisions for readability and clarity. The original meaning and emphasis of the text has been preserved striving to be loyal to the original text in Spanish.

I appreciate the contribution of Peter Lewin to this translation. Any misrepresentation from the original text is my own doing.

ⁱⁱ TN: My translation. Original in English was unavailable.

ⁱⁱⁱ TN: This is my own translation. The original text in English was unavailable.

^{iv} TN: Reference is missing in the original article. My translation.

^v TN: My translation. The original text in English was unavailable.