

THE ENTREPRENEUR ACCORDING TO THE AUSTRIAN SCHOOL

by

EUGENIO COSME ANDRIEU

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SUPERVISOR: PIET-HEIN VAN EEGHEN

CO-SUPERVISOR: PROF JC LOTTER

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"I declare that "The entrepreneur according to the Austrian school" is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references".

Eugenio C. Andrieu

To Noreen,
the best friend I could ever find.

SUMMARY

This thesis explores the concept of entrepreneurship. It aims at answering the question: does the Austrian view provide a comprehensive framework for the analysis of entrepreneurship? For this purpose the problem is separated into three main objectives: to trace its development, to describe its foundations and to explain its principal features.

In order to achieve these objectives, the study is divided into six chapters. Chapter 1 outlines the historical origins of the Austrian School. Chapter 2 describes the uniqueness of the individual as the foundation of Austrian economic theory. Chapter 3 explains how individuals act in a society. Chapter 4 covers the idea of the market as a process. Chapter 5 analyzes the role of the entrepreneur. Finally chapter 6 presents some case studies from the IT industry.

The thesis concludes that the Austrian school provides a fully comprehensive framework for the development of the concept of entrepreneurship.

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INTRODUCTION

This thesis explores an economic idea that emerged within the Austrian school: the concept of entrepreneurship. It aims at answering the question: does the Austrian view provide a comprehensive framework for the analysis of entrepreneurship? For this purpose the problem is divided into three main objectives: to trace its development and historical roots, to describe the main ideas within Austrian economic theory that prompted its appearance, and to explain its principal features.

In order to achieve these objectives, the study is divided into six chapters. Chapter 1 presents a brief description of the historical origins of the Austrian school and its development, with particular emphasis on the aspects that characterize entrepreneurship. Chapter 2 describes the uniqueness of the individual as the foundation of Austrian economic theory. Chapter 3 explains how individuals act in a society and reveals that the fundamental problem of economics is one of knowledge. Chapter 4 covers the idea of the market as a process, which in turn defines the framework for the existence of the entrepreneur. Chapter 5 is the core of this thesis. It treats the concept and role of the entrepreneur, giving emphasis to the evolution of its meaning within the Austrian school. Finally chapter 6 presents some case studies from the IT industry. Each case makes an interesting story, as each contains a different approach to the essentials that defined entrepreneurial success.

The thesis concludes that the Austrian school provides a fully comprehensive framework for the development of the concept of entrepreneurship and its different roles. This framework, which is based on the individual, includes a model of society, the market and of entrepreneurship in its different scales. For this reason, the Austrian model has produced a lasting contribution that should be included in mainstream economics.

METHODOLOGY

In order to find an answer to the question “Does the Austrian view provide a comprehensive framework for the analysis of entrepreneurship?” this research is approached as a literature study limited to Austrian school sources.

As this school of thought is mainly based on the seminal works of some few authors, the thesis is structured around their views. These selected economists are Menger, the founder of the Austrian school; Mises who developed this view to larger extends; Hayek the father of some key Austrian ideas such as self-emerging societies and the social mind; and finally Schumpeter and Kirzner who at different periods of time developed the foundations of entrepreneurship. Lachmann who contributed in the area of expectations is also considered.

Complementing the explanation of these influential contributions are the views of some contemporary researchers such as High, Baumol, Boettke, Butos, Koppl, Garrison, Hodgson, Holcombe, Hoppe, Horwitz and Rothbard. Their research is important in that they have not only added criticism and debate but also in that they have extended Austrian ideas to further realms. For example, it is central to mention the work of Baumol in the area of productive and unproductive entrepreneurship, and the research of High which extends entrepreneurship to the formation of institutions.

The thesis ends with some case studies from the computer industry. Their importance results from the fact that they show that Austrian thought, and particularly the concept of entrepreneurship, have useful application in the study of economic reality.

CHAPTER 1

HISTORICAL ORIGINS

“Historically, liberalism was the first political movement that aimed at promoting the welfare of all, not that of special groups” (Mises 1927: 7).

1.1 INTRODUCTION

This chapter deals with the first objective for this thesis: to identify the historical roots of Austrian economic theory and describe its development as a school of thought. It begins by describing the work of the Franciscan theologians, the Spanish scholastics and the French physiocrats, whose theoretical work in economics laid the foundations of modern capitalism. Then, it looks at liberalism and its main characteristics. It ends with a brief overview of the Austrian school: its historical setting and the lives and achievements of its main contributors. These achievements are important in that they highlight the main concepts that lay the foundations of entrepreneurship.

1.2 PRECURSORS

From the thirteenth century onwards, many writers began to identify some of the concepts that were later developed into an integrated theory by the Austrian school. The discovery of these concepts can be grouped into five main schools of thought. Two of them are from catholic roots: the Franciscan theologians and the Spanish scholastics. The other three are the French physiocrats, the early French liberals and the liberals from Holland and England.

1.2.1 The Franciscan theologians

During the thirteenth and fourteenth centuries the disciples of Saint Francis were in the cities and in contact with the predominant mercantile middle class. In their search for an integration of city life values and Christian ethics they developed an economic theory that was centred on the individual and defined many aspects of capitalism. The

main authors of this era are John Duns Scots, Pietro di Giovanni Olivi and San Bernardino of Siena (Weglarz 2008: 12).

John Duns Scots (c 1266 – 1308) was a member of the Franciscan Order and taught in Oxford, Paris and Cologne (where he died). He was beatified by Pope John Paul II in 1993. He embraced Aristotelian philosophy and founded the branch of Scholasticism later called Scotism. He defined human usefulness as forming part of the economic value of an asset, which, as will later be seen, plays a central role in Menger's theory of value.

Pietro di Giovanni Olivi (1248 – 1298) was the initiator of the concept of capital, and mentioned the importance of integrating monetary loans into the production cycle. He also created a subjective theory of value that differentiated between the natural or objective value of an asset and its use or subjective value. His theory was later taken over by Saint Bernardino of Siena (Rothbard 1995: 82 – 83).

Saint Bernardino of Siena (1380 – 1444) expanded Olivi's ideas and explained the role and necessary qualifications of the entrepreneur. According to him there are three types of entrepreneurs: first, the importer-exporter whose function is to transport commodities; second, the person who stores goods; and third, the one who transform raw materials into finished products. He lists four essential characteristics for the successful entrepreneur: efficiency, responsibility, labour and the assumption of risk. By efficiency he means the capacity to be well informed about prices, costs and qualities of the products, and to assess risk and profit opportunities. He explains that very few people have these skills. Therefore, the entrepreneur deserves to earn enough to keep him in business and to compensate for the labour, expenses and risk he undertakes (Rothbard 1995: 81 – 82; Weglarz 2008: 5 - 10).

These ideas were passed on to later writers by protestant authors such as Grotius and Pufendorf (Chafuen 1997: 3).

1.2.2 The Spanish scholastics

By the end of the fifteenth century, even though capitalism was not completely developed yet, most of the phenomena that are associated with capitalism had already appeared. What was unprecedented was the importance attached to these phenomena since the concept of capitalism as a theory had emerged for the first time (Schumpeter 1954: 78). From this new reality, emerged a distinct group of thinkers: the Spanish scholastics.

They were mainly Dominicans and Jesuit scholars, most of them teaching morals and theology at the University of Salamanca in Spain during the sixteenth century. Their school did not elaborate a complete doctrine of economics, but it established the first modern economic theories that addressed the new economic problems that had arisen with the demise of the medieval order. Amongst the most important scholars and their contributions were:

- Diego de Covarrubias y Leyva (1515 - 1577) talked about the subjectivity of value;
- Juan de Lugo (1583 – 1660) explained the dynamic nature of the market and the impossibility of modelling equilibrium;
- Castillo de Bodavilla and Luis de Molina (1535–1600) conceived competition as a dynamic process of rivalry among sellers and;
- Juan de Mariana (1536 – 1624) wrote on subjectivity of value, inflation and the impossibility of organizing a society by coercive commands due to lack of information (Huerta de Soto 1999: 2 – 4).

The economic ideas of the School of Salamanca are thought to be in many ways similar to those of the liberals of the eighteenth and nineteenth century (Schumpeter 1954: 96). Murray Rothbard (1995: xi) referred to them as proto-Austrians and Huerta de Soto (1999: 5) says that the Austrian school is truly a Spanish school and gives Menger the merit to rediscover it. He traces the influence of Spanish scholastics back to Charles V King of Spain, who sent his brother, Ferdinand I to be King of Austria.

1.2.3 The French physiocrats

The French Physiocrats (usually translated as “rule of the nature”) were a group of scholars that wrote against the policies of the mercantilist Jean Baptiste Colbert (1619 - 1683), who was a minister at the court of Louis XIV (Reynolds 2000: 1). They were the first organized group of economists (Backhouse 2002: 100). The Physiocrats tried to create a system based on natural order, property rights and law that would result in harmony and improvement of human action. They saw agriculture as the only productive sector and advocated laissez-faire policies. The French Revolution (1789–1799) was influenced by their ideas (Higgs 2001: 8, 18). Amongst the main contributors were Francois Quesnay and Anne-Robert-Jacques Turgot.

Francois Quesnay (1694 - 1774), did the first analysis on capitalism and arrived at theories of free market and economic individualism by studying the emergence of a national market in England. He created a model that put entrepreneurs as creators of wealth, demonstrating that mere subsisting farming does not produce wealth. Thus, he transformed economics from the role it had occupied from Aristotle to Rousseau as the management of the social household (city and then state) into the science of wealth.

“Anne Robert Jacques Turgot’s career in economics was brief but brilliant, and in every way remarkable” (Rothbard 1999a: 29). Turgot (1727 – 1781) was a French economist and statesman. His best known work is *Réflexions sur la formation et la distribution des richesses* (*Reflections on the Formation and Distribution of Wealth*). Written in 1766, it appeared in 1769–1770. In it, Turgot develops Quesnay's theory that the land is the only source of wealth, and divides society into three classes: the productive or agricultural, the salaried or artisan class, and the land-owning class. In it, also, Turgot worked out almost completely the Austrian theory of capital and interest a century before it was set forth in definitive form by Eugen von Böhm-Bawerk. In addition he advocated for the complete freedom of commerce and industry.

In addition, the Physiocrats developed several concepts such as the market as a dynamic process, free-market evolution of money, subjective value theory and, the

futility of price controls and of government intervention. More important, they realized that the “laws of nature provided constraints on what the state could undertake without undermining the prosperity on which it depended” (Backhouse 2002: 104). Thus, they are considered as precursors of Austrian ideas.

1.2.4 Early French liberals

During the eighteenth and nineteenth centuries a group of liberal economists emerged in France. Their ideas greatly influenced Austrian thought. The leading figures were Richard Cantillon, Antoine Louis Claude Destutt, Frédéric Bastiat and Jean-Baptiste Say.

Richard Cantillon (1680 -1734) is amongst the best known precursors of the Austrian school. Although Belgian born, he lived in France most of his life. His *Essai sur la nature du commerce en general (Essay on the nature of trade in general)*, which was published in 1775, 21 years after his death, widely influenced the Physiocrats. He was the first to define long-run equilibrium as the balance of flows of income, thus setting the foundations both for Physiocracy as well as classical political economy. He developed a two-sector general equilibrium system from which he obtained a theory of price (determined by costs of production) and a theory of output (determined by factor inputs and technology). His work is quoted by Adam Smith in his *Wealth of Nations* (Hayek 1931: 217 - 218).

Antoine Louis Claude Destutt, Comte de Tracy (1754 -1836), was a French aristocrat who advanced the use of deduction in social theory and saw economics in terms of actions and exchanges. He presented his basic ideas in his *Elements of Ideology* that appeared in 1815 and dealt, amongst other topics, with political economy. He proposed a liberal social and economic philosophy which provided the foundations for a defence of private property, individual liberty, the free market, and constitutional limits to the power of the state.

Claude Frédéric Bastiat (1801 – 1850) was a French thinker that spent most of his life farming and studying. His main work was *The law*, first published in 1850. In it,

Bastiat defines a system of laws and then demonstrates how this system facilitates a free society. He also explains that economic truths should be arrived at by observing, not only the immediate consequences of an economic decision, but also their long-term consequences on all people and all industries in the society as a whole. In addition, he was one of the first to distinguish between wealth and money (Formaini 1998: 3).

Jean-Baptiste Say (1767 – 1832) was a French author responsible for introducing much of Adam Smith's work to Europe. He presented what he considered to be the laws of economics in his book *A treatise on political economy*, first published in 1803. He was among the first to introduce the concepts of utility, services and entrepreneurship into economics (Formaini 2006: 4). He is also well known for an idea which Keynes (1936) later referred to as Say's law: the absence of significant general gluts and supply creates its own demand.

1.2.5 Early liberalism

Usually ideas develop first in the realm of religion, later they translate into philosophy and once they reach the necessary maturity, become part of science (Russell 1946: 1). From this point of view, liberalism is essentially a product of Dutch and English Protestantism and was based on the developments in commerce and science that these peoples had already achieved (Russell 1946: 545).

Most great civilizations are subject to a certain kind of historical cycle. In general, it commences with a rigid system that maintains strong social cohesion, mainly through superstition. Later, their intellectuals begin to rebel against this type of social organization and a period of relaxation follows, which allows for human creativity. Moral traditions tend to disappear and individualism to reign. The ensuing state of anarchy eventually gives rise to a new system, probably under the domination of a less civilized nation but with more social cohesion. The new synthesis is secured by a new system of enforced dogma. Liberalism is an attempt to escape from this cycle. It seeks to secure social order with minimum restraints on the individual (Russell 1946: 6).

Historically liberalism was meant as an end to the theological and political strife that had taken place in Europe and developed as a political movement aimed at promoting the welfare of all (Mises 1927: 7). Its main characteristics were: it valued commerce and industry, it favoured the rising middle class, it proclaimed respects for property rights, it rejected the idea of the divine right of the kings, it maintained that every community has the right to choose its own form of government and, it supported individualism although vaguely defined (Russell 1946: 545).

These ideas dominated eighteenth century England and shaped the American Constitution. They penetrated philosophy and found their integrated expression in Locke, who described mankind as originating from a state governed by natural law, and organized through a social contract in the form of a government, which separated the judiciary from the executive (Russell 1946: 548). The base of all was the acknowledgement of the importance of property rights and the need to find a way to preserve them.

The importance of these schools of thought resides in that they lay a foundation for the emergence of a line of thought that is called Austrian economics.

1.3 THE AUSTRIAN SCHOOL

Austrian economics is the result of a split from mainstream economics that happened at the end of the nineteenth century. This new group of thinkers was referred to as “Austrian economists” to differentiate them from the dominant German Historical School (Humphreys 2007: 17).

Referring to them, Böhm-Bawerk said that “the province of the Austrian economists is theory in the strict sense of the word.” (1891: 1). Although the history of the development of this theory is a continuous and interrelated chain of events, it can be subdivided into three different periods: the first, second and third generation of economists respectively.

1.3.1 The first generation

The first generation includes Carl Menger, the founder of the Austrian school, and his disciples Eugen Böhm-Bawerk and Friedrich von Wieser.

Carl Menger (1840 - 1921), together with Stanley Jevons and Leon Walras, was one of the originators of the Marginalist revolution (Salerno 1999: 80). During his life he held different positions such as that of journalist, member of the Austrian cabinet, university professor and tutor of Crown Prince Rudolf von Habsburg of Austria-Hungary (Mises 1969: 2).

It was while holding these positions that he realized that classical economics did not correspond much with reality. In 1871 he published *Principles of Economics* wherein he introduces the subjective aspects of consumption demand, which in turn determines the demand for factors of production. This concept is central to Austrian entrepreneurship in that it lays the foundations for a causing human being. This publication was followed in 1883 by his *Investigations into the method of the social sciences with special reference to economics* where he also explains the methodology that was going to be the base of the future Austrian school. This last publication was mainly a polemic against the methodology of the German Historical School led by Gustav (Menger 1883: 4). The conflict between the Austrian and German schools of thought came to be known as the “methodenstreit” or “battle of the methods”.

What differentiates Menger’s work from other Marginalists such as Jevons and Walras is his approach, which takes the human mind together with its limitations as the fundamental premise (Lachmann 1994: 215). However, according to Streissie (cited by Özel 1998: 50) the German economics of Menger’s time already had a subjective value theory. Menger’s contribution was rather to develop a new variant of subjective value which is founded on methodological individualism, to be described in the next chapter.

His work was later continued by his disciples in Vienna: Eugen Böhm-Bawerk (1851 – 1914) and Friedrich von Wieser (1851 – 1926). Böhm-Bawerk introduced time as a variable, with wants considered in an orderly future. He is well known for this capital

theory in which he gave three reasons why interest rates are positive. First, people's marginal utility of income will fall over time because they expect higher income in the future. Second, for psychological reasons the marginal utility of a good declines with time. And third, the technical superiority of present over future goods. The first two reasons imply that people are willing to pay positive interest rates to get access to resources in the present, and they will require being paid interest if they are to give up such access. The explanation of the third point is based on the fact that production is roundabout (that is, consumes time) and it uses capital. Roundabout production methods mean that the same amount of input can yield a greater output. As increased investment in capital can result in increased roundaboutness (longer production period); Böhm-Bawerk concluded that it will lead to positive interest rates even if the first two reasons do not hold. Böhm-Bawerk's approach helped to pave the way for modern interest theory. Menger's other disciple von Wieser introduced the term *marginal utility* and expanded Menger's supply side economics with the concept of opportunity cost (Garrison 2008: 4).

1.3.2 The second generation

The second generation of scholars includes Joseph Schumpeter (1883 – 1950) and Ludwig von Mises (1881 – 1973).

Joseph Alois Schumpeter (1883 – 1950) was born in the Austro-Hungarian Empire, in what is now the Czech Republic. He studied at the University of Vienna under the direction of Böhm-Bawerk, where he obtained a PhD. In 1911, his doctoral dissertation became a book titled *The theory of economic development*. In it he explained that the central problem of economics is not equilibrium but structural change. During World War I he realized that the war had brought about the monetarization (money and credit, rather than goods and services, had become the main components of the “real economy”) of the economies of all countries involved (Drucker 1983: 3, 4). In 1919, he became the Austrian Minister of Finance, presiding over a period of hyperinflation. He was dismissed the same year. This experience taught him that policies have to take into account short and long term factors (Drucker 1983: 6).

In 1921 Schumpeter migrated to the private sector and became the president of a small Viennese bank, which collapsed in 1924. Then he moved back into academia and later left Europe because of the rise of Nazism. He went to America and lectured at Harvard from 1932 until 1950 (Cox 2001: 1). Some of his notable students include the economist James Tobin and former Federal Reserve Bank Chairman Alan Greenspan. Amongst his most important works are *The history of economic analysis* (published posthumously in 1954), which shows his erudition, and *Business Cycles* (published in 1939). His ideas influenced the thinking and questions of subsequent economic thought and provided an explanation for profit. Probably his most celebrated idea is that “innovation is the very essence of economics” (Drucker 1983: 1 - 3).

Ludwig von Mises (1881 – 1973) was born in the city of Lemberg, Austria-Hungary, (now Lviv in the Ukraine). In 1900, he attended the University of Vienna, where he was influenced by the works of Carl Menger. In 1906 he was awarded his doctorate. Mises taught at the University of Vienna from 1913 to 1934, while also serving as an economic adviser to the Austrian government. In 1934 he left for Geneva, Switzerland, where he became a professor at the Graduate Institute of International Studies until 1940. That year, he emigrated to New York City where he was a visiting professor at New York University from 1945 until retirement in 1969. During this time he didn't receive a salary from the university, but earned his living from funding by businessmen (Formaini 2001a: 1 - 4). His main work was *Human Action*, published in 1949, which according to Kirzner (2001: 62) “constituted the most significant advance in the economics of the Austrian tradition”. Mises died at the age of 92 at St Vincent's hospital in New York (Rothbard 1999b: 123 - 166).

Mises was a prolific writer. He dedicated his life to economics, trying to find a system which wouldn't allow for a dictator or an absolute government. Thus, his aim was to find an approach to economics that would recognize the uniqueness of man. He based his work on the belief that society is governed by laws “which operate regardless of the will of rulers” (Kirzner 2001: 72), and therefore, that there is a possible better state for humankind than the current one. In order to achieve this, he sought to create a logical economic model called Praxeology, based on the axiom of human action. In his work, he explained that the market acts as a process and that in order to attain

political freedom the individual must also attain economic freedom (Machlup 1982: 40 – 42). His importance for entrepreneurship studies resides mainly in his definition of entrepreneurship and in describing the possibility of a priori knowledge.

1.3.3 The third generation

In this generation we find the names of Friedrich von Hayek (1899 – 1992), Israel Kirzner (1930 -) and Ludwig Lachmann (1906 – 1990).

Hayek was born in Vienna into an aristocratic family of intellectuals, was decorated for bravery in World War I and earned doctorates in law (1921) and political science (1923) (Formaini 1999: 1). He was a student of Mises and von Wieser. In 1932 he joined the London School of Economics where a debate with the Keynesian school arose (Klein 1999: 181 - 183). In 1950 he left for America and worked as a lecturer at the University of Chicago where he held an unpaid position. From 1962 until his retirement in 1968 he was a professor at the University of Freiburg, West Germany (Garrison and Kirzner 1987: 609; Formaini 1999: 3). In 1974 he shared the Nobel Prize in Economics with Gunnar Myrdal for “their pioneering work in the theory of money and economic fluctuations and for their penetrating analysis of the interdependence of economic, social and institutional phenomena” (Bank of Sweden 1974: 1). This prize helped the revival of the Austrian school’s ideas.

Hayek’s work ranks amongst the most important within the Austrian school. His work ranges from a model of the human mind in his book *The sensory order* (1952) to the problem of knowledge in society in his publication “The use of knowledge in society” (1945b). Both of them are of key importance to this thesis because they describe the uniqueness of the mind and, introduce a model for society and the market in which the entrepreneur functions. He also wrote more political books such as *The road to serfdom* (1944) and made contributions in the field of jurisprudence.

Israel Meir Kirzner (1930 -) is the son of a well-known rabbi and Talmudist. He was born in London, England. After studying at the University of Cape Town, South Africa in 1947-48 and at the University of London (External Programme) in 1950-51, he received his B.A. in the USA, *summa cum laude* from Brooklyn College in 1954.

He later obtained his MBA in 1955 and his Ph.D. in 1957 from New York University (studying under Ludwig von Mises). Kirzner is also an ordained Haredi rabbi and Talmud scholar, and serves as the rabbi of the congregation once headed by his father in Brooklyn, New York.

In Kirzner's work we find at least three main contributions, all three of importance for the study of entrepreneurship: the entrepreneurial function within the market, the institutional prerequisites for economic development and the examination of distributive justice. His main works are *Competition and Entrepreneurship* (1973), *Perception, Opportunity and Profit* (1979), *Discovery and the Capitalist Process* (1985), and *The Meaning of Market Process* (1992). He is currently a Professor of Economics at New York University (Kirzner 2008).

Ludwig Lachmann (1906 – 1990) was a German economist. He was educated at the University of Berlin, Germany, where in 1933 he obtained his doctorate. He became interested in Austrian economics during a stay at the University of Zurich in 1926. In 1933 he settled in England, where he spent some time at the London School of Economics. It was during those years that his central ideas were formed.

In 1948 he moved to South Africa where he became professor at the University of the Witwatersrand. After retiring he spent a semester each year teaching at New York University. He published three books and numerous articles. Although he was widely known during his lifetime, he was not considered to be an influential economist (Lewin 1996: 1 – 2).

Lachmann extended Austrian ideas on subjectivity into expectations and explained that, as the expectations of many different individuals can diverge, economic events can not be forecasted but only interpreted. This difference is of great importance as the entrepreneur is someone who performs this interpretative function and takes action based on it.

1.4 CONCLUSION

Austrian ideas are rooted not only in Protestantism but also in Catholicism. They emerged as a result of a new order that appeared after the middle ages.

As an integrated theory, it was developed by three generations of economists. Amongst the most prominent are Carl Menger, Ludwig von Mises, Friedrich von Hayek, Israel Kirzner and Ludwig Lachmann.

Although Austrian economic theory has not always been wholly accepted, in recent decades mainstream economics has begun to consider several Austrian ideas such as entrepreneurship, expectations, uncertainty, knowledge, dynamic change and innovation (Lachmann 1986: 147; Humphreys 2007, 19). Amongst these concepts, the entrepreneur is the central subject of this thesis.

As history shows, this concept was the result of the evolution of other foundational aspects, such as individualism, subjectivism, a sensory order, a knowledge-based society and market as a process. These are the subjects of the succeeding chapters.

CHAPTER TWO

THE INDIVIDUAL: METHODOLOGICAL FOUNDATIONS

“And it is probably no exaggeration to say that every important advance in economic theory during the last hundred years was a further step in the consistent application of subjectivism.” (Hayek 1955: 31)

2.1 INTRODUCTION

After having placed in the previous chapter the Austrian school within its historical context; this chapter deals with the individual and its role in defining a working methodology in Austrian economic theory. It begins by describing the concepts of individualism and subjectivism, and presenting Hayek’s model of the human mind. With the aid of these fundamentals, it explains the Austrian view on economic science. Finally, it analyses some criticisms and new developments and concludes that the importance of Austrian methodological individualism resides in it being the foundation for the concept of the entrepreneur.

2.2 EARLIER STUDIES

Throughout the Middle Ages science was circumscribed by religious thought. As people felt closely tied to God and “committed to the maintenance of external security offered by community living”, they were less concerned about man’s inner nature (Jordaan and Jordaan 1985: 6 – 7). It was not until the Renaissance period that René Descartes (1596 – 1650) defined the agenda for studies of the mind for the next centuries. He introduced the individual into philosophy by proclaiming *cogito ergo sum* (“I think, therefore I am”). From that moment, man was considered as the holder of knowledge and learning, a being with choice.

Later Kant (1724 – 1804) realized that the empirical approach could not solve the problem of how data that reaches the mind of man through his senses got unified into a coherent whole. His solution was to consider a mind that organizes information with the help of a set of categories – free, universal and necessary – that give structure to

our experiences and an observational reality that must conform to our mind. In this manner, knowledge is structurally constrained. In his book *Critique of pure reason*, Kant explains that propositions can be classified as analytic or synthetic, based on the ability or inability of formal logic to determine its truth or falsehood. In addition, propositions can be a posteriori or a priori depending on the need to base their truth or falsehood on observations or not. The logical implications of a priori, synthetic propositions are called theorems and are considered to be true due to modus ponens (rule logic inference, which states that if premise "if P, then Q" and premise "P" are both true, then statement Q is true) and therefore have no need for empirical testing. Within this framework Kant's great contribution was to claim that a priori synthetic propositions exist (Batemarco 1985: 35).

Later, these two concepts: the individual and the existence of a priori knowledge became the foundations of Austrian economic thought.

2.3 AUSTRIAN STUDIES

2.3.1 Methodology: the person as the foundation of economic science

The Austrian economic model is based on the individual. This section explains three important concepts related to the Austrian view of the person: individualism, which focuses on the importance of the individual to explain society; subjectivism, which considers that things have value only if people desire them; and finally Hayek's model of the mind that lays the foundations for a neurological understanding of subjective diversity.

2.3.1.1 *Individualism*

The concept of individualism has been used in many contexts and is often vaguely defined. In this thesis, it is used in the sense that the stress is on the importance of the individual above society.

This concept was introduced, as a methodological principle for the social sciences, by Max Weber in his *Economy and society* (published posthumously in 1922). Weber's

idea was that in social sciences the collective must be treated as the result of the particular acts of its constituent individuals. The importance of action is that it is the result of an intentional mental state and therefore it can be interpreted. As only individuals can possess intentional states, a methodology that emphasizes action must start with individuals.

For the Austrian school, individualism is a general principle of social organization (Hayek 1945a: 2). It searches for a moral philosophy and a method. Its meaning lies between two more radical interpretations of the concept.

On the one side there is a false individualism represented by the Cartesian radicalism as developed by Rousseau and the Physiocrats. Its origin lies in Descartes' identification of human essence with reason, which is embodied in each individual and independent of the external world. In this manner, the individual's reason is able to design a rational social order, which is the result of utopian visions and leads to practical collectivism.

On the other extreme there exists the more irrational English individualism, which regards man as quite irrational and a fallible being, whose individual actions are corrected by the social processes and in this manner creates things better than he could have done alone. Therefore, social outcomes cannot be engineered by the human being. The influence of this view in England is due to Bernard Mandeville, who was the first to establish the idea in economics (Hayek 1945a: 9).

According to Hayek (1945a: 8) true individualism holds the middle ground between the French and English positions, and is represented by the ideas of John Locke, David Hume and Adam Smith (Birner 1995: 9).

Adam Smith's great discovery was to realize that each individual searches for his own happiness, and in doing so, does things that are of social benefit. Within this organization, human beings achieve more frequently what human reason dreams of. Adam Smith assumed that the human beings were morally weak and had to act in an economic manner in order to adapt their means to their ends and that within this framework society obtains the best results (Hayek 1976a: 90). The great achievement

of individualism is that it is a system that minimizes the damage caused by dishonest people and that it does not depend on the existence of honest people to obtain good social outcomes. In this manner, it makes use of the whole of society, and partial failures are compensated with successes.

According to this version, the individual's actions are defined only partially by reason because human reason is limited and imperfect. Thus, true individualism is a theory of societies, which says that in order to understand social phenomena, it is necessary first to understand individual actions directed towards other people.

These human actions are partially unforeseeable and result in a spontaneous social order. However, the individual can be allowed to act only within a clearly delimited sphere of responsibility. This delimitation of the sphere of responsibility is possible only if the individuals subordinate themselves to a set of formal rules that determine the way in which people with different aims can peacefully co-exist (Pavlik 2001: 5). These rules are based on the concept of private property.

In this manner, Hayek's (1942: 286) methodological individualism starts with the concepts which guide individuals in their actions and not from the results of theorizing about their actions. His individualism is aimed at emphasizing the limitations of the individual. This limitation is not only in the human capacity to process information but also in the information individuals receive. Thus, once economic processes are seen through their eyes, it is possible to understand the benefits of decentralized market coordination. Besides, the problem of ignoring the individual's perspective, is that it can lead to overestimation of the benefits of planning and control and thus lead to the oppression that results from "rationalistic" social engineering.

2.3.1.2 *Subjectivism*

Subjectivism is the principle that says that things do not have inherent value, but have value only because people desire them. Value is therefore a feature of the appraiser. In social science it means that explanations are based on "subjective mental states of social actors" (Koppl and Butos 2006: 19).

Menger established the paradigm by describing the subjectivity of wants. The idea was taken as a framework and further developed by Mises (subjectivity of means and ends) and Lachmann (subjectivity of expectations).

For Menger, the satisfaction of human needs is dependant on the availability of goods. Thus, these goods attain for us “the significance we call value” (1871: 115). Value is, therefore, not a property inherent in the goods, but the importance that we attribute to them for the satisfaction of our needs. As a consequence of their scarcity only economic goods have value to us.

Thus, “the measure of value is entirely subjective in nature”. Value is determined only by individuals, according to the principle that “the value an economizing individual attributes to a good is equal to the importance of the particular satisfaction that depends on his command of the good” (Menger 1871: 146).

Value is therefore a consequence of human knowledge: that the satisfaction of our needs depends on the availability of certain goods. When this good-need relationship changes; the value of the good involved changes accordingly. Similarly, the differences in value of different goods can be found in the difference in importance that we assign to them in the satisfaction of our needs (Menger 1871: 120,122). Therefore the concept of scarcity is subjective, because it arises from the relation between individuals and goods. As a consequence an increase in the amount of the good does not mean a change in scarcity (Rizzello 1999: 6).

Value is thus not inherent in goods, not a property of them. It is a judgment that people make and therefore it exists only in their consciousness. This subjectivity of values defines a subjectivity of wants: different men have different wants that are based on those different value sets. In addition, this value mechanism prompts man to act in order to satisfy his wants. Thus, human actions are based on a natural impulse that assigns value to goods, according to the satisfaction they receive by possessing them. Choice is not optimizing but satisfying (Rizello 1999: 8).

Actions are realized in an uncertain environment, they are affected by errors and have unintended consequences. This is because human knowledge of the degrees of importance is subject to error, especially in estimating the quantities of the goods available to them and their qualities. Moreover, there are other factors that add to the fluctuations of value, such as changes in the quantities available, or in the physical properties of the goods (Menger 1871: 148).

The second important development of the concept of subjectivity is due to Mises. He commenced from the idea that judgments of value are personal and therefore subjective and dependent on the individual who produces them. Thus, “value is not intrinsic. It is not in the things and conditions but in the valuing subject” (Mises 1957: 22).

Values of judgment are mental acts, based on feelings, tastes and preferences. They must be distinguished from the sentences by means of which a person tries to explain them to other people, because in his explanation, an individual can lie about them. They are the origin of human actions, which are intended to better the perceived situation of the individual, and thus, of all economic activity. There is no standard to judge them as wrong or false. For example a Buddhist may seek satisfaction in other things than a Christian or a Muslim would (Mises 1957: 22).

The end of action is the satisfaction of some desires of the action man. Therefore ends are personal and cannot be judged by anyone else. Consequently, according to Mises (1949: 18 – 21), there exists a subjectivity of ends.

Similarly, the means chosen to obtain those ends are the outcomes of choice that is of a judgment of value. This choice is rational because it is purposeful. The fact that man can commit an error in choosing does not mean that his judgment is irrational. Thus, human action is always rational and there is a subjectivity of means (Mises 1949: 18 - 21).

The third key development on the concept of subjectivity is due to Lachmann. He takes Mises’ idea of human plans as his starting point. These plans define the framework where means, actions and ends are interpreted and revised according to

new circumstances, and where experience is acquired by the actors. Choice is only within the scope of actions and acts, between available courses of action, and is based on expectations (Shackle 1983: 4). This acquired experience has to be interpreted and different men will interpret an experience in different personal ways. Interpretation of experience is thus a subjective matter (Lachmann 1986: 4).

We live in a kaleidic society. That is, in our society, unexpected change disturbs existing patterns (Lachmann 1976a: 54). The result is a change of direction towards a new equilibrium. In order to understand these market dynamics, we must study the market in the long and short term (Wood 2005: 26). In it, expectations are formed based on interpretations of experience as an attempt to understand the unknown and through them each person captures a different picture of this unknown. Therefore, there is a subjectivity of expectations. Besides, these expectations are embedded in plans, which are the links between the actor's mind and his observable action. As plans are made in a kaleidic world of uncertainty there are also expectations.

Kirzner mentions that “one of the areas in which disagreement among Austrian economists may seem to be nonexistent is that of methodology” and he adds that it “is well known, that Austrian economists are subjectivists” (1976a: 30). However, different Austrian economists have used subjectivism in different degrees: from Menger who emphasized the subjectivism of value to Lachmann who emphasized the subjectivism of expectations and that has been labelled radical subjectivism (Eabrasu 2006: 1 - 2).

Based on this, Yeager (Yeager 1987) classifies subjectivists in three categories: non-subjectivists (mainstream neo-classical or orthodox school), moderate subjectivists and ultra- or extreme subjectivists. Block (1988: 201) proposes to expand the third category into: Austrian subjectivists (i.e. Rothbard, Kirzner) and ultra-subjectivists (i.e. Lachmann).

2.3.1.3 *Individual knowledge: the sensory order*

It is in this context that Hayek (1952) proposed a model of the mind in his classic *The Sensory Order*. There he lays the foundations for a neurological understanding of

subjective diversity and provides “a scientific underpinning for traditional Austrian subjectivity”. Hayek’s model “is essentially a theory of learning”, where the mind is represented “as a relational order” (Horwitz 2008: 1, 8; 2009: 2).

He describes a mind as a large repertoire of patterns (Dempsey 1996: 7), constructed through previous sensory events. He calls this system of sensory experiences the “sensory order” (Hayek 1952: 19).

These patterns define a set of relations that humans use when encountering a new problem to resolve. Two different types of mental orders result from human experience. One is based on sensory properties and another on the result of combining different events (Hayek 1952: 3; Birner 1995: 1). Through them, mental order results in “a gradual approximation to the order in which the external world exists” (Hayek 1952: 107; Dempsey 1996: 3).

As both orders are based on personal sensory experiences, no two people can think equally. “There are no absolute qualities of sensations” (Smith 1997: 6). Therefore objects possess no properties but aspects, which are discovered and interpreted by the individual mind. This personal mind order is not always identical to the physical order (Hayek 1952: 39). Since this model, formed in the human mind, classifies impulses as according to their strength, we can talk more of a process of evaluation than of classification.

This sensory order is evolutionary: it may re-order based on experience, searching for a gradual approximation to the order that exists in the external world. In this manner it gives a selective advantage to those who have it.

Therefore the mind is ordered by a process that cannot be accessed or explained. It is a classificatory device that has the main characteristics of a complex system. These characteristics are sensitivity to initial conditions, iteration and irreducibility¹. As a

¹ Iteration refers to the process of repeating a set of instructions. The irreducibility of a concept refers to its inability to be brought to a simpler or reduced form.

classificatory system it is more complex than any object it classifies. Consequently, if the mind wants to explain itself it must simplify and we can only fully explain phenomena that are simpler than humans. This limitation of the mind to explain itself implies that there must always exist a mental process that cannot be fully explained, which is the basis for the existence of tacit knowledge (Koppl and Butos 2006: 15 - 16). Besides, this imperfection is nothing but a survival strategy in a changing world. With his model, Hayek was one of the first economists who explained the limits of the mind in a similar manner as it was explained by Gödel's theorems on the incompleteness and the impossibility limits of calculation (Markose 2003: 8; Koppl 2006: 6).

In this manner *The sensory order* gives recognition to every man's own views and tastes and to the idea that men should develop their own individual traits even though their value scales may be different and inconsistent with those of others. Individualism thus becomes an attitude of humility before the social process and of tolerance to others opinions (Hayek 1944: 170).

2.3.2 Economic science

The notion of individualism and its extension of subjectivism are the pillars from where Austrian authors developed their ideas on economic science. Here we explain the ideas of three of them. First, Menger whose insight was that, for economics to be a science, it needed exact laws that should derive from the subjective premise. Second, Mises who extended Kant's ideas into economics and explained that, in order to develop an economic theory, it is necessary to commence it from a priori concepts. And finally, Hayek who viewed the social sciences as a collection of schemes that can be used to create models.

2.3.2.1 Menger: the essence of economic science

Menger wrote his *Investigations* with the idea of challenging the prevailing methodological views of the German Historical School. He thought progress in economics was blocked due to both a wrong methodology and the isolation that German economists were facing, which prevented them from being challenged.

Subjectivism defines a framework for economics. Menger called it the *composite method*. It was described in his book *Principles of Economics*, which appeared in 1871, and confirmed him as one of the discoverers of utility analysis. Later Schumpeter named it *methodological individualism* in his “On the concept of social value” (1909).

Menger’s work is Aristotelian, in that it separates form (theory) from matter (history). His is a quest for the essence of economics, a science whose prime task it is to formulate exact laws (Lachmann 1994: 213), that is, laws that are valid without exceptions.

Menger understood that economics cannot proceed from facts alone and that the use of theory is unavoidable. All empirical work requires the use of concepts, such as units of measure, and taxonomies require a prior classificatory schema (Hodgson 2005a: 334, 341). Therefore, Menger insisted that economics as a science cannot exist without exact laws (Zuniga 1998: 159). The existence of exact laws is a consequence of the subjectivity paradigm. According to Zuniga (1998: 158) in the concept of subjectivity there are two aspects: first, the evaluation of the object perceived. Second, the subject-dependent status of the object in its role as an economic good. In an economic judgment, the individual must perceive that the object may satisfy his needs and that he perceives it as scarce. Since an economic judgment is subjective, its truth or falsity cannot be settled by an objective appeal to facts observed by a third party or by the person who made the judgment. This has an important consequence: an error in judgment does not modify the object, in the sense that the object becomes what the individual wants. This consequence was key for Menger in his search for exact laws, because if instances of our errors do not modify objects or categories such as money or education, they can be described by exact laws. In addition, as scientific knowledge is based on this paradigm, there is no room for the use of a formalized approach, as for example mathematical models. The centre of economics becomes the investigation of the general nature of economic phenomena. Furthermore, Menger realized that, similarly to the fact that the laws of pure physics do not correspond exactly with actual object movements, the theorems of pure economics do not

necessarily need to strictly correspond with the observed behaviour of economic agents.

Menger realized that the economic phenomena of private property, of money, of credit, etc. had existed for millennia, but their present form is different from the ones of previous times. For example, in earlier times money appeared in the form of cows, precious metals, etc. Thus, the laws of money of yesterday do not necessarily apply today and today's laws may not apply in the future. Therefore, real phenomena exhibit "a development which is presented on the one hand as one of individual phenomena, on the other as one of empirical forms" (Menger 1883: 107). These facts should be considered in a theory of development.

Menger also realized that within all objects there are things, such as money, which are economic objects even though they may not be material objects. The main characteristics of an economic good are (Zuniga 1998: 162): it is perceived as scarce, it is evaluated in relation to an end, there is a perceived casual connection between the object and a need and, the person believes that he has sufficient control over it. Thus, the economic character of a thing cannot be divorced from a judging mind but at the same time, economic goods allow for exact economic laws.

Thus, Menger's target was to define a science that would reflect reality. In order to attain this, he set himself the task of defining the goals and methods of economics (or political economy as it was named at that time) and its nature and subdivisions. He then realized that because of these subdivisions, there was a need for several methods in economics (Menger 1883: 23).

For him, the definition of a science has three elements: the designation of the science, the object of its research and the point of view used to research it (Menger 1883: 197). Besides, knowledge can aim at concrete phenomena, referring to a certain position in time and space and the corresponding relationships. Also knowledge can be general, aimed at general factors and relationships. The first type is called individual knowledge, and relates to history and statistics. In the field of economics, the second type is known as theoretical economics.

Based on these concepts Menger proceeded to divide the science of political economy into three:

1. Historical sciences, which investigate the “individual nature and the individual connection of economic phenomena” (Menger 1883: 38 - 39). They have two main orientations namely, historical and statistical. Here, an important aspect is that historical understanding has a place in economics but it is not the only way in which economic research can be done. An example of this is the description of the state and development of the economy of a specific nation or institution at a specific time (Menger 1883: 42 - 44).

2. Theoretical economics, which is “the science of the general nature (the empirical forms) and the general connection (the laws) of economy” (Menger 1883: 119). It presents two orientations: the exact and the empirical-realistic.

The exact orientation reduces “real phenomena to their simplest elements ... and attempts to determine their strictly typical relationships” (Menger 1883: 112) in space and time, that is, their laws of nature. Only when considering the totality of sciences we can obtain a complete picture of phenomena. When considering only the exact part related to the field of economics, the view obtained will present irregularities and exceptions (Menger 1883: 77). Therefore due to the actual relationship that the world of real phenomena offers, it is not possible to test exact theory (Menger 1883: 70). Thus, there are natural sciences that are not exact sciences (e.g. physiology) and there are exact sciences that are not natural sciences (e.g. pure economics) (Özel 1998: 53).

In a different way, the empirical-realistic orientation searches not for exact laws, but for regularities that can hold exceptions. An example is the rule that establishes that an increase in need creates an increase in real prices. This rule holds true for all times and nations, but it allows exceptions and the relations applicable to each different country can vary.

In addition, the most fundamental factors in economics are goods and a desire for the most complete and possible satisfaction of needs (Menger 1883: 63). However,

Menger explains, man's actions are not only determined by self-interest but also by public spirit, love, customs, need for justice and other similar factors; eliminating the possibility of a rigorous economic theory (Menger 1883: 84). Besides, as in the case of exact theory, only the totality of empirical-realistic theories offers a complete picture of phenomena.

Both orientations are useful. In the less complicated phenomena the exact orientation is easily applicable. As phenomena get more complicated the empirical-realistic orientation prevails (Menger 1883: 69). Furthermore, theoretical economy is related to historical sciences when applied to understand concrete phenomena by recognizing it to be a special case of a specific regularity.

3. The practical sciences of technology, which study the principles for action in the national economy (Menger 1883: 39). They relate to economic policy and finance and try to find ways to advance a national economy with finance searching for the soundest ways.

Economics or political economy is therefore a theoretical-practical science.

2.3.2.2 Mises: the laws of economics, praxeology

After Menger, Mises developed a more strict view of apriorism. His search was for an alternative to the model of Walras and Jevons, who had proposed the mathematization of economics. Besides, his objection to historicism concerned more with the Marxian view, which had tried to interpret history to prove its ideas (Lagueux 1996: 2-7).

Lagueux (1996: 20) argues that Menger and Mises, in order to provide a foundation for economics, tried to create a middle way between historicism and naturalism. Historicism proposes the idea that social phenomena depends on the characteristics of the era in which those phenomena occurred (Lagueux 1996: 6). On the other side, naturalism explains that we can have a more mechanical-based representation of social phenomena. The foundation for this anti-naturalism and anti-historicism was the idea that economic laws are a priori.

In order to understand the laws of economics, Mises proposed a theory of human choice called praxeology, which literally means “action logic” (Garrison 2008: 4). This theory begins from a unique axiom that says that human beings act, that is, they engage in actions which are conscious and directed towards chosen goals (Rothbard 1999b: 158). In order to reach these future ends, men use means which exist in the present. Choice, therefore, is made in the present and involves future objects. The result is a plan that will be revised over time as circumstances change. Means and ends have meaning within the concept of plan, because objects may provide the means for different plans (Lachmann 1994: 218).

Several consequences arise from this proposition: firstly, human actions are purposeful as they are directed towards specific goals. Secondly, acting implies that the person has consciously chosen certain means to achieve his goals. Thirdly, these chosen goals are valuable to the individual, who, therefore, has a set of values. Fourthly, as action is purposeful, human behaviour is rational (directed to improve the individual’s well-being). Fifthly, action means that the means are scarce (at least time is scarce). And finally, as action takes place through time, the individual faces uncertainty due to the lack of perfect knowledge about the future.

Therefore, action is based on choice, which implies both taking (doing) and renunciation (omission to do). These choices are based on incentives: man’s purposeful behaviour is aimed at removing some uneasiness, together with the image of a more satisfactory potential future state and the expectation that through action he has the capability to remove or at least alleviate this feeling of uneasiness.

This uneasiness is established by each individual, through judgment and will. Therefore, no other human being can establish what should make other fellow human beings happier. Economics is thus a science that deals with unique choices made by distinct individuals.

Man can act, because he is capable of discovering casual relationships. Acting is therefore possible because we live in a world governed by cause and effect laws. These laws however are not based on invariables or constant relationships of nature,

as in physics (Mises 1949: 118). Therefore economics has no conservation laws that can be uniquely identified and expressed in mathematical equations².

Neither can the science of probability define economic laws. Although probability deals with statements valid when our knowledge of events is deficient, they require that those events pertain to a known class of phenomena (Mises 1949: 107). Based on the knowledge we have about this class, we can predict based on repeatability. Thus, the fact that even though we know little about the specific event, other than that it belongs to a class, allows for mathematical treatment. Both, conservation and probability laws would deny the uniqueness of every human act.

There is another type of probability, named case probability, where we know some of the factors which determine the outcome of an event, but there are other determining factors that are unknown to us (Mises 1949: 110). These events are ruled by teleology and are unique³. This type of probability can be applied to the field of human action (Mises 1949: 107).

It is within this context that praxeology uses rational methods, because its laws refer to people acting purposefully (Selgin 1990: 24); and that subjectivism allows for an objective economics, because it takes value judgments out. However, it is impossible to provide conclusive evidence for this theory and only a pragmatist can understand that its propositions work in practice. Scientific enquiry will never attain full knowledge of economics. These leave us only with the capacity to understand (“verstehen”) the laws of economics, based on an incomplete knowledge (Mises 1949: 112). Economics is thus based more on verbal than on mathematical logic.

Mises considered his own epistemological investigations as the continuation of the work of rationalistic philosophers (Hoppe 1995: 24). In this way he stays in the line of

² A conservation law is rule which states that in a certain isolated system, a quantity is constant and it does not change, no matter what happens to the system (Feynman 1992: 59 - 60).

³ Teleology is the study of design or purpose in natural phenomena.

Leibniz and Kant as opposed to Locke and Hume. According to Mises, praxeological laws are a priori because experience concerning human action presupposes the category of human action, and all theorems derive from this axiom. But for Mises these categories are not innate. From this point of view, Mises draws his ideas from Kant who explained that the human mind grasps the world through its own categories.

Mises' approach to social science is thus Neo-Kantian, in that he assumes an a priori truth and empirical meaning for his fundamental axiom (Caldwell 1984: 365). Although Mises was not very concerned with how categories are created, he basically assumed that they are determined by the logical structure of thought (Plauche 2006: 7-8). Hoppe (1995: 9, 25) proposed that Mises not only subscribes to this idea but that he also expands it by answering the question on how to find them. In this context, Mises' insight is that these necessary truths are not only categories of our mind, but also that our mind is one of acting people, thus, these propositions are ultimately categories of action. As categories of action, they are both, mental things and characteristics of reality. Therefore Mises' contribution was to bridge the gap between the mental and physical world and to systematize economics by explaining that economic propositions are a priori, like those of logic and mathematics. In this, he also recognized that the process of validation or of discovering the truth of a proposition is different according to the field of inquiry (Hoppe 1995: 6).

Moreover, a static equilibrium model does not address the problem of adjusting over time to changing conditions. Therefore expectations are not considered. Mises considered this to be the main problem of classical economics and his analysis addresses change as a distinguishing aspect of economics (Murrell 1983: 101). In a world with diverse sources of new information, costs are subjective because they are based on expectations. In addition, financial markets are important to define the process of transforming, extending and dissolving business enterprises. As Stiglitz explained "the basic character of how we ought to view the competitive economy is altered if we take seriously imperfections of information" (quoted by Murrell 1983: 103). Mises emphasized in his work the role of new information, but his contemporaries were not willing to consider it. Today economists have realized its importance, bringing to relevance what Mises had noted decades before.

Rothbard (1976: 29 - 30) also worked on the subject of praxeology. His approach to praxeology was more Aristotelian – Thomist. He didn't consider of importance to determine if laws are a priori or empirical because the laws of human action are self-evident. For him more than laws of thought, praxeological insights are laws of reality (Plauche 2006: 12-13). In addition, he says that praxeology is linked with other scientific disciplines, all of them concerned with human action, such as technology, which describes how to achieve ends by the adoption of means; psychology, which studies why people adopt certain ends; ethics, which researches what ends or values people should adopt; and history, which investigates ends adopted in the past.

2.3.2.3 Hayek: the aim of social sciences

Social sciences are concerned with things such as the market, language, etc. The role of experience in these fields is different from that which it plays in the natural sciences (Hayek 1976b: 57), because while we observe the natural world from the outside, we look at society from the inside.

The main aspect of social scientists is that they are concerned with the way in which men behave towards the environment, that is towards other men and things. From these elements, social sciences construct a pattern of relationships between men.

Things such as medicine and words need three things to be defined, namely a purpose, a person who holds that purpose and the thing that serves that purpose (Hayek 1976b: 59 -60). Therefore the person that analyses the behaviour of the acting man cannot have a better understanding of the motives of the action than the man who performs the action. Things and actions are thus defined in terms of opinions people have about them. Thus, for example, money is money because someone thinks it is. This fact is somehow hidden because most people have similar knowledge.

This interpretation of other people's actions is based on analogies we have in our mind. We project the classification we have into the other person's mind. This procedure works in most cases, but it has the shortfall that we can never be sure. With it, we can understand all what is already in our mind and we may use processes of thought which we don't know yet.

Summarizing, we classify human behaviour and we use this classification to construct models that attempt to reproduce the patterns of social relationships of the world around us. Therefore, historical facts are simply schemes that we have constructed in our minds.

Some of the things we need to model are very complex and we need the help of a technique to create the scheme. This is the aim of social sciences, to provide schemes of structural relationships, which we can use to create our models, that is to provide techniques that “assist us in connecting individual facts” (Hayek 1976b: 73). This has two main consequences: first, the theories of social sciences don’t consist of laws as empirical rules about the behaviour of objects definable in physical terms. Second, as social sciences don’t explain facts, they are not verifiable by reference to those facts. Besides, men's opinions are sometimes determined by interpretations and written sources. Thus in the formation of opinions, myths have played a role almost as important as historical facts (Hayek 1968b: 1).

Many political philosophers received their knowledge from historians. The presence of myth in history is in part responsible for the socialistic interpretation of history in the twentieth century, where rejection of capitalism is based on the beliefs that it created a reduction in the quality of life of the poorer parts of society. The influence has been so vast that even authors of the importance, like Bertrand Russell mention the misery created by the industrial revolution (Hayek 1968b: 4 - 5).

However history and statistics show a different picture. In reality, the emergence of capital increased the productivity of labour, which allowed many people, whose parents couldn't give them the necessary means of production, the possibility of survival. In addition, statistics show that sanitary conditions in England improved rather than worsened during the industrial revolution (Hayek 1968b: 7).

2.4 LATER STUDIES

2.4.1 Criticisms and other comments

Several authors have expressed their disagreement with the Austrian perspective. Özel (1998: 48) explains that there is a contradiction between the two main tenets of the Austrian school, namely methodological individualism and unintended consequences of human behaviour. This is due to the fact that the concept of unintended consequences requires a holistic or organic approach that describes the rules that constrain and enable men to pursue their own ends. In contrast, methodological individualism is a bottom-up approach, aimed at describing economics from basic elements.

Some economists from the institutionalist school have also attacked individualism. Institutionalism “studies the society and its economy as part of an entire organized pattern of social behaviour” (Canterbury 2002: 331). Institutions in this framework are things like customs, social habits, ways of living and thinking. Veblen established the framework when he tried to answer the question of how an economy gets to its present state and where it is going. His emphasis was on change. While trying to answer these questions, Veblen explained that as the modern corporation grew so big because of technological advances, it became so complex that a new organizational entity appeared. The result was the rise of the producer sovereignty, which he called dependency effect, in which a corporate plan defines consumer wants limiting individual choice. Furthermore, firms end up managed by technocrats, with the subsequent disappearance of the entrepreneur or risk taker (Canterbury 2002: 339).

Similar ideas were expanded by J.K. Galbraith in his book *The affluent society* (1958). According to him values and choices are influenced by others and “the market is subject to skilled and comprehensive management” (Galbraith 2004: 10) with the result that economic theory, which says that demand determines production, is invalid (Rothbard 1976: 30). He adds that values and choices are artificial and illegitimate. Hayek responded in his article “The ‘non sequitur’ of the dependency effect” (1961) by saying that this critique was meaningless, as the same argument could be used to demonstrate the lack of value of literature or any other form of art. Rothbard (1976:

31) adds to this that economic theory is not based on the idea that choices are immune to influence.

In the same line, methodological individualism is attacked as a methodology by Hodgson (1986), who says that trying to explain social phenomena solely on the basis of purposeful action is not sufficient. He questions how institutions are explained only as an aggregate of purposes of the individuals that compose them. He also finds unanswered the question of economics considering the explanation of action. Is the answer in Hayek's idea that economics is not involved in the explanation of conscious action? Or is it, as Lachmann proposes, that motives are dictated by psychic processes but purposes and plans are spontaneous and thus can't respond to "anything pre-existent" (Hodgson 1986: 216 - 218)? Hodgson concludes that through this methodology we can't explain intent in collectives such as institutions or social groups (Hodgson 1986: 215) and therefore the influence of those collectives - such as the family, the firm and the culture - on the individual is left out (Hodgson 1986: 221). This, he says, is the fallacy of composition proposed by the Austrians. Thus, the solution is not to propose as the basic element the abstract individual, but the social individual (Hodgson 1986: 222), who is constructed and who constructs through society. In this model not only human actions have an effect on the environment, but the socio-economic and institutional environment also affects human preferences, cognition and information available, and thus human behaviour.

Hodgson (2007a) also regards the concept of methodological individualism as ambiguous. He explains that in some instances the concept requires that social phenomena be fully explained in terms of individuals alone, while in other versions it asks that they be explained in terms of individuals and other factors, including interactions between individuals. In other cases, such as Lachmann's use of the concept, the definition is so broad that it is almost impossible to disagree with it. Furthermore, full explanations in terms of individuals alone have never been achieved, particularly, the concept of individual choice is impossible to be explained without a framework that includes interactions and institutions. Moreover, if social structures are equivalent to relations between individuals, then methodological individualism is equivalent to saying that "social phenomena should be explained in terms of individuals and social structures. "Therefore, "there is no good reason

why” the method “should be described as methodological individualism” (Hodgson 2007a: 4, 8, 10; 2007b: 97 - 98).

Another objection to methodological individualism is that it fails to account for culture and traditions (Moss 1994: 33 – 49). Many instances of human behaviour have to be explained on these grounds. Expanding on this idea, Basu (2005: 3) explains that the intentional man is someone defined between the homo economicus of classical economics and the homo sociologicus defined in contextualism. The intentional man is someone who cannot only choose and decide individually but also has a sense of social norms and psychology. Basu mentions that the idea of contextualism was introduced by Bhargava arguing that the social aspect of the intentional man is valid only within the context of a society where events occur. Therefore, according to him, the homo sociologicus is closer to reality than the Austrian intentional man. For example, Mwenda (2000: 8) explains that the context should be considered in the case of “the traditional African society, whose value system is still notable in the contemporary modern African society, was not developed on capitalist laissez-faire values of aggression and individualism “.

These cultural differences were also explained in the work of Markus and Kitayama (1991). According to them, most North Americans and Europeans have an independent view of the self as an entity that is distinct, autonomous, self-contained, and endowed with unique dispositions. Yet in much of Asia, Africa and Latin America, people hold an interdependent view of the self as part of a larger social network that includes one’s family, co-workers and others to whom we are socially connected. Consequently, Markus and Kitayama report, Americans are more likely to express jealousy, pride, and other ego-focused emotions that affirm the self as an autonomous entity, whereas non-westerners are more likely to experience other focused emotions that promote social harmony.

Chandler (2001) also mentions that the USA was prepared for the information age through a culture and infrastructure developed during the previous decades. He mentions that the industrial age in the USA had created a culture based on the combination and coordination of technological knowledge, product development, manufacturing, marketing and distribution, together with the development of a

multidivisional organizational structure. In this manner, the organization was the repository of knowledge and could survive while individuals would come and go (2001: xiii – xiv, 2).

Koppl (2003: 6) answers that regarding the influence of culture, Austrian economics emphasizes the role of culture in determining how the same institutions may function differently in different contexts and that these institutions decide things like whether entrepreneurship produces economic growth or not. This researcher agrees with this view. Hayek's self-organising model of societies allows for an in depth analysis of institutions and culture, because it can consider factors that are unique to a specific society.

Yeager (1987) criticizes Austrian subjectivism on the ground that the concept is used in a disproportionate manner and therefore it results in invalid contributions to economics. For example, he first points out that Buchanan's explanation that costs exist only in the mind of the decision maker is flawed, because even everyday business decisions have objective aspects; and second that costs (even if only estimates) are useful in conveying information. Likewise, Lachmann's imponderability of the future eliminates even predictions of the if-this-then-that type. He concludes that subjective and objective factors have a role in economics and therefore important implications for policy. Besides this, he also acknowledges that Austrian economics has important contributions to make. This researcher fully agrees with this comment.

Mirowski (1984: 371) explains that Menger was unfamiliar with the mathematical analysis and the physics of his time. However, he wrote on "exact science". In addition, in his criticisms of empirical methods, he never mentioned any specific practice to which he objected. This researcher agrees with this comment. Mathematics is a wide science and comprises many different tools. To consider them all inappropriate for their use in economic science, without knowing much about them is not a statement that can be easily said.

Moss (1994) says that Menger's account of the origin of money is flawed because spontaneous evolution can not be considered for the origin of those institutions which

are needed to help maintain the quality of money (such as counterfeits, etc.). Besides, this account reaches a final end-state equilibrium, because at some point the money commodity has been chosen by the community. Moss concludes that Menger offered only a pseudo-biological analysis, which is bad economics.

Batemarco (1985: 35) mentions that praxeology presents two problems: firstly, a priori deductions do not provide a line of demarcation between science and non-science, as Popper proposes in his critical rationalism. Popper's criterion is that theory testability is the criterion for distinguishing science from non science (Caldwell 1984: 370). This testability is based on the falsifiability notion, which says that for an assertion to be falsifiable it must be logically possible to make an observation or do a physical experiment that would show the assertion to be false. However falsifiable does not mean false. Secondly, it is based on a single axiom and therefore in order to make deductions extra axioms have to be added, axioms which may not hold for all situations. Examples of these added axioms are the use of categories of causality and teleology (Caldwell 1984: 364). Mises responded to the first point by saying that Popper's ideas do not hold for human action because of its formal nature. Praxeologists solved the second problem by stating that the value of empirical studies lies in delimiting the degree of applicability of theories based on those added axioms (Batemarco 1985: 35).

Furthermore Hutchison and others (Caldwell 1984: 366-7) warn that Mises' a priorism may lead to dogmatism, as it may serve to support attitudes that are authoritarian and anti-liberal and whose holders consider their ideas as infallible dogma.

Hayek's sensory order has also been criticized. But according to Koppl and Butos (2006: 18 – 24) the problem is not in the theory itself but in its misinterpretation. For example, they mention that Caldwell has complained that the *The sensory order* is not subjectivist and involved a movement from methodological individualism towards complexity theory. Koppl and Butos (2006) responded that if the mind is in itself a self-organizing complex phenomenon, theories of social phenomena can not reduce subjective descriptions of human actions to objective descriptions, because it would imply that humans are automatons whose subjective states can be represented by

algorithms. In fact, they say, Hayek's complexity model is a scientific defence of methodological dualism.

Another misinterpretation is to say that *The Sensory order* violates methodological individualism. Their response is that although mental activity is produced by the same physical principles that explain the physical world, it can never be fully explained by physical laws. In addition, the structure of mental life is the result of both phyllogenetic and ontogenetic development and it does not neglect phyllogenetic aspects⁴.

According to Hodgson (2006: 4) Hayek's use of the concept of rule neglects the ontology of rules and the mechanisms involved in their action and replication. This is because his notion of a rule was extremely broad as for Hayek, "a rule is any behavioural disposition, including instincts and habits, which can lead to "a regularity of the conduct of individuals".

Although not a criticism, Garrison (1993) explains that the Austrian vision can be complementary to the use of mathematics in economics noting that the problem is not whether mathematics should or should not be used in economics, but where the scope of its utilization should begin or end. According to him, mathematics can be used to describe equilibrium situations. As he quotes from Samuelson, "mathematics is a language" and as such it can be used to describe relationships between factors but not cause and effect. For example, under many circumstances real wage and real interest rates are inversely related. This relationship can be mathematically described but the resulting equation will not say if a change in real wages causes a variation in interest rates or vice versa. Historically, under the influence of Paul Samuelson and other economists, economics changed from "its pre-1930s verbal and diagrammatic mode of analysis to the quantitative mathematical style and methods of reasoning"

⁴ Phyllogenetic refers to factors the sequence of events involved in the evolutionary development of a species or taxonomic group of organisms. Ontogenetic refers to factors that consider the entire sequence of events involved in the development of an individual organism.

(Garrison 1993: 102) abandoning the concept of cause and effect in favour of mutual determination. Their goal was “a formal unification of economic theory”. On the other side, in mainstream economics, Hicks was aiming at “substantive unification” based on the theory of value. With time, adherents to both paradigms “came to see the theory of value as being economics”. The result has been theories that artificially try to represent reality and an emphasis on econometrics (Kohn 2004: 303 - 306). This disadvantage was Mises’ concern, because it diverted economics from its real problems. For him, cause and effect appear through the analysis of human action and its consequences. Garrison concludes that instead of defining the scope of economics according to mathematics or statistics, we should accept them as languages and use them where they can be applied and expand economics science with the use of verbal logic as Mises and the Austrians proposed. This researcher agrees with Garrison’s view: mathematics and verbal logic should be used in a complementary manner.

Regarding theory and forecasting, the system of patterns identified by social sciences may allow for predictions, which must be based on extensive empirical data. But even if the data is insufficient, the theory, that is, the knowledge of the pattern is still useful (Steele 2002: 140 - 141). Thus, the predictions that can be made are pattern predictions and economic theory has a practical role (Batemarco 1985: 34).

Holcombe (2009) is of the opinion that Austrian economics provides better insights because its behavioural foundations are closer to reality. The reason lies behind the findings of behavioural economics, which is the area of economic science that looks at the psychological foundations of individual behaviour. Its results are more consistent with Austrian insights. This is owing to the fact even though Austrian theory is based on axiomatic utility maximization, its assumptions that individuals act in order to improve their well-being and that when faced with choice they will choose the option they most prefer are weaker than the classical proposition that states that individuals behave according to diminishing marginal rates of substitution.

2.4.2 Other Austrian models: theory of expectations

Koppl and Butos (2006: 29) explain that the Austrian model provides the elements for a theory of expectations. This theory has four central points. First, expectations are

created in a context of ignorance, because the human representation of the external world is incomplete. Secondly, expectations are the result of a knowledge-generating classificatory mind. Third, they are based on adaptation and therefore wrong ones induce revision and self-correction. And fourth, expectations are formed endogenously. According to them, expectations and plans will generate varying degrees of coordination depending on the context. When the context is competitive, and participants are constrained by stable rules, coordination can emerge. Alternatively when the context is dominated by big players, coordination is less likely to emerge (Buros and Koppl 1997: 40 – 41).

Koppl (1999) explains that the standard theories of expectations, namely: rational, adaptive and static are based on an artificial picture of human action and therefore, he continues, it is necessary to create a theory that is falsifiable, predictive, and subjectivist.

In order to develop this theory, he departs from Hayek's notion of unintended consequences of human action, which create a spontaneous social order with no central direction for people's plans (Koppl 1999: 2). He further proposes to join this idea with Alfred Schutz's studies on how meaning is produced and distributed in society.

Schutz showed that human beings think in stereotypes or typifications, some of them more reliable than others. This reliability is higher, the more anonymous and less personal or concrete these typifications are. For example it is easier to predict the behaviour of a bus driver than the actions of a specific person (Koppl 1999: 10).

On the other side, according to Hayek, expectations have two meanings. Firstly, they are psychological entities or ideas about the future of dis-equilibrating nature. Secondly, they are dispositions or propensities to act in certain ways, and thus coordinative because they imply faith about the market (Koppl 1999: 6).

In order to join both ideas Koppl (1999: 18 – 20) uses the Big Players concept, which considers that market behaviour is determined by special individuals who influence the market. These individuals are non-anonymous and encourage herding and contra-

herding, that is, the market bases its beliefs on theirs, either by following the trend or by opposing to it. The result is that in this model, psychological and dispositional expectations are complementary and the model is falsifiable and subjective. Koppl finalizes his paper by giving statistical evidence in support of his ideas.

2.5 CONCLUSION

This chapter explained the foundations of Austrian theory. Menger's seminal work established the framework for what later was going to be called the Austrian school. His insight was to realize that Economics as a science cannot follow the same methods as the natural sciences. His methodology defined human wants as subjective and as the building blocks of economics as a science. As Mises explains through Menger, subjectivism became the main characteristic of economics (1976: 1)

Later Mises created an axiomatic approach called praxeology. Its value is in establishing an axiom that is a priori, that is, a tautology which requires no proof. From it, economic laws can be deduced.

Hayek's contribution is perhaps more profound. He created a more complete model of the individual that included the human mind and thus gave theoretical support to the idea of subjectivism.

The importance of these concepts in the search for a theory of entrepreneurship resides in the fact that they describe humans as unique, causing agents and capable of erring, which are indeed the main characteristics of the entrepreneur. But in order to reach this stage, the individual must first be considered in its interaction with others, that is in society and within it and in its economic interactions, that is in the market. These are the subjects of the next two chapters.

CHAPTER THREE

SOCIETY: HOW INDIVIDUALS COOPERATE

“For society is nothing but collaboration.” (Mises 1951: 281).

3.1 INTRODUCTION

After establishing the foundations of economics as based on the individual, Austrian economists explored the question of how individuals organize themselves in order to co-operate, or in other words, how societies are formed and evolve.

In order to describe society, this chapter first presents an organic model developed by Menger. It continues with Mises’ theory of social cooperation and finally it describes Hayek’s social mind model. The importance of this chapter lies in the fact that society defines the context of the market and, therefore, gives some of the fundamentals of the entrepreneurial function.

3.2 EARLIER STUDIES AND OTHER INFLUENCES

The problem of how individuals are organized has occupied the human mind for centuries. For the purpose of this thesis, there are some discoveries that preceded and influenced Austrian thought on the matter. They come from different sciences such as mathematics, philosophy and evolutionary theory, and they relate to how science evolved from explanations based mainly on exogenous factors to theories that included endogenous elements.

Οικονομικός is the Greek word that gave origin to the words “economist” and “economics”. It was the title of a book by Xenophon, written in the fourth century BC. In it the author explains how to run an agricultural estate in an efficient manner. He mentions three important factors, namely leadership, knowledge and organization, where order allows for the proper use of knowledge. He mentions the example of a

Phoenician trireme in which everything was so well placed that the leader knew where everything was and could take decisions even when he was not present⁵. At that time it was believed that good organization could double productivity. The question of how knowledge is organized is thus an ancient economic problem (Xenophon c 400 BC: 50 – 52; Backhouse, 2002: 16).

From those times, until Isaac Newton (1643 – 1727), scientists were influenced by the Biblical stories of great events such as the Flood, and it was commonly assumed that history was full of violent catastrophes (exogenous or external influences). With the advent of Newton's theories that presented a universe full of regularities, thinkers began to conceive the idea that a single process had created the whole system. This opened the path for evolutionary and more endogenous types of models (Asimov 1987: 81 -82).

Within economics Adam Smith (1723 – 1790) showed that human action has unintended consequences that may benefit society at large. Adam Smith and his school however, undertook a more pragmatic understanding of the economy, that didn't allow for the treatment of unintentionally created social structures. Burke was the first to indicate the social origin of many social structures (Menger 1883: 174). Later, in the nineteenth century, with his theory of evolution, Charles Darwin (1809 – 1882) hypothesised that complex design can arise naturally without the need of a designer.

In addition, there are several authors that, although sometimes not in a direct manner, have influenced Austrian ideas. Steele (2002: 140) mentions that Hayek was influenced by Schlick's view of scientific reality that considers the space of physics as an abstract structure, a scheme of ordering formed by interconnecting a system of signs. According to Liggio (1982: 2) Ernest Mach's (1838 – 1916) ideas influenced Austro-German thought mainly in his dissent from the Humean and Machian belief

⁵ A trireme is an ancient warship, probably with three men at each row.

that human knowledge can “be reconstructed on the basis of elementary sensory impressions.”

Karl Popper (1902 – 1994) and Hayek influenced each other in various aspects. Hayek expressed his support for Popper’s theory of methodology (Hayek 1982). Popper’s writings on evolutionary epistemology underlined the fact that the principles of classification are not composed of fixed data, because experience always forces us to reclassify. Thus, Popper discovered that interpretative principles “lose their fixed and necessary character” (Liggio 1982: 5). Under Popper’s influence Hayek favoured critical rationalism⁶. Hayek accepted Popper’s concept “that falsifiability rather than verifiability should be adopted as a criterion of demarcation between the scientific and the non-scientific” (Liggio 1982: 3 - 4).

Ludwig Wittgenstein (1899 - 1951) influenced Hayek’s thoughts in many ways. Liggio points out that Hayek’s *The Sensory Order* style parallels in many ways Wittgenstein’s *Tractatus*. In addition they shared the conviction “that the study of language is a necessary precondition of the study of human thought”, which extends to “the role of social rules in the transmission of practical knowledge” (Liggio 1982: 5).

Georg Cantor’s theory of infinite sets also had an influence in Hayek’s thought. Hayek saw the inability of the human mind to understand the rules that govern its operations as a consequence of Cantor’s theorem that states that in “any system of classification there are more classes than the things to be classified.” He also understood that this was a special case of Gödel’s theorem published in 1931, which states that in any sufficiently rich system of axioms there will be some statements that are undecidable within the system (that is statements being neither provable nor

⁶ Critical rationalism is an epistemological philosophy advanced by Karl Popper. Critical rationalists hold that scientific theories, and any other claims to knowledge, can and should be rationally criticized, and (if they have empirical content) can and should be subjected to tests which may falsify them.

refutable in a specified deductive system) (Steele 2002: 129; Liggio 1982: 7; Kac and Ulam 1979: 135).

Furthermore, according to Angner (2002: 3) Hayek was also influenced by Alexander M. Carr-Saunders and other scholars in zoology at Oxford such as Julian S. Huxley (1887 – 1975), Alister C. Hardy (1896 – 1985) and Vero C. Wynne-Edwards (1906 – 97). To prove this, he mentions that Hayek quoted Carr-Saunders's book *The Population problem* published in 1922, which includes much of Hayek's ideas on cultural evolution. Besides, they knew each other from the time they were at the London School of Economics. Through this connection, Hayek was indirectly influenced by Charles Darwin (1809 – 82) too.

3.3 AUSTRIAN STUDIES

3.3.1 Menger's organic approach

The organic approach works from an analogy between natural organisms and social phenomena. Biological organisms are conditioned by the functions of their parts, called organs, which in turn are conditioned by the combined whole. In this manner, together as a whole entity, the parts form a higher level unit. In the organic approach, the normal function and development of a unit of an organism is conditioned by those of its parts, which are in turn conditioned by the connections amongst parts to form a higher level unit. Certain social phenomena can be described in a similar manner. For example we can see in many social institutions a “functionality with respect to the whole ... (which is not) the result of an intention aimed at this purpose” (Menger 1883: 130). This analogy was already developed in other social sciences areas. Plato and Aristotle expressed it in the political sciences, Wilhelm von Humboldt in linguistics and Dalan in the origin of social institutions (Menger 1883: 131,175, 183).

Menger suggests that this approach is the solution to the most important problems in theoretical economics (Menger 1883: 146): language, religion, law and state are among the institutions that can be modelled in an organic manner. As an example, he develops a theory of the origin of money (Menger 1883: 153-155). In it, some goods

become money by being accepted in trade even by people who have no immediate need for them but who are willing to exploit existing exchange opportunities (Menger 1892: 241). These special goods have the characteristics of being the most marketable, transportable, durable and divisible, which facilitate their exchange for any other goods.

Menger is careful to point out that this analogy, even though it applies to the most important cases in economics, is not complete. Some social phenomena are the result of intentional actions by members of society or of positive legislation. Because they are the result of human calculation, they are comparable to mechanisms and not to organisms and should be interpreted in a pragmatic way. For example, law can also appear by authority (Menger 1883: 131, 229). This fact that only some social phenomena exhibit an analogy to natural organisms indicates that there are other orientations that are also necessary to have a more complete view of economic science (Menger 1883:135). For example, the pragmatic view is not wrong but complementary to the organic one.

3.3.2 Mises' theory of social cooperation

Mises expanded his ideas into a theory of social cooperation. Human action, he explains, is always action of individuals in society. Society is antecedent to the individual, who is born in it. However, society is also the creation of men as it is a basically concerted action, that is, the product of human relations and individuals' purposeful behaviour. It defines a context which orientates the individual.

Society originates in Smith's concept of division of labour and Ricardo's law of comparative advantage. They teach us that associated labour is more productive than isolated work, as collaboration of the more talented, able and industrious with the less endowed is always of benefit for both parties. Man, thus, becomes a social being by acting for his own welfare. Man accepts renunciation not for society but for himself (Mises 1949: 159).

Furthermore the division of labour has several consequences: it intensifies occupational differentiation among human beings, as people become specialists. And

by intensifying differentiation, creates further inequality of men. In this manner, law and state acquire human origins. They are for people to attain their ends through their own accord. They are institutions erected for the preservation of peaceful and effective human relations.

3.3.3 Hayek's theory of self-organizing systems

Hayek searches for the characteristics that a model of social behaviour should have and found the answer in the concept of self-organizing system. He coined the term *catalaxy* to describe a self-organizing system of voluntary co-operation (Hayek 1966: 184). For this, he explains that society can be modelled as a complex system and defines the order of complexity of a model as the minimum number of necessary parameters in the model. In this way complexity increases from unanimated phenomena towards social phenomena (Hayek 1964: 105).

Within these two extremes, there exists mathematics and physics. Mathematics allows for the creation of abstract models. Physics has succeeded with simple phenomena but when the problems become more complex, it uses the *ceteris paribus* criterion. In the real world, as complexity increases, the degree of possible empirical verification decreases (Hayek 1964: 110).

In the case of highly complex problems, such as social phenomena, statistics cannot help. This is because it ignores how individuals organize themselves by assuming that the use of numerical frequencies is sufficient in order to obtain a single attribute. The theory of social structures is very clear in this sense by explaining that individual events depend on many circumstances (Hayek 1964: 116). Thus, it is impossible to predict or to control human actions.

The scientific method used has to consider that in highly complex systems knowledge is limited, because of the many factors that should be considered, and only a few of them have obtainable quantitative data (Hayek 1964: 123; Hayek 1974: 1). The objectives of the social sciences are thus different from other sciences that study simple phenomena. Hayek goes even further when he doubts that actually there exists any law for social phenomena and writes against the prejudice that in order to be a

scientist a person must produce laws (1964: 125, 126). The next step in Hayek's search is to understand how information is handled by society.

The fact that a single person cannot have and make use of all available data defines the problem of utilization of knowledge and with it the question of how much knowledge is needed and how it can be obtained.

Consequently it is necessary to describe people's interaction within a self-organizing system, that is the conditions under which people are likely to acquire the necessary knowledge and, what kind of knowledge is involved. The answer to these questions is the principle of division of knowledge, which is similar to the principle of division of labour and, according to Hayek, the central problem of economics. He states this principle as "how the spontaneous interaction of a number of people, each possessing only bits of knowledge, brings about a state of affairs in which prices correspond to costs, etc., and which could be brought about by deliberate direction only by somebody who possessed the combined knowledge of all those individuals" (Hayek 1936: 8). This collective use of knowledge that is the result of many people possessing only bits of knowledge and constantly interacting is what Hayek calls the *social mind*. It is a very important concept because it implies that the way people learn defines the type of market that they create (Leube 2003: 20).

Besides, as the mind must adapt to a changing world, scientific laws must reflect this reality. Therefore the objective order (science) and the sensory order should evolve "harmoniously" (Steele 2002: 137). This mutual feedback implies that behavioural traits could lead to changes in organic structures. Steele offers the example of language, which once created, facilitated the evolution of the brain in humans. In this manner, all knowledge is adaptation and all adaptation is knowledge. This knowledge is thus a "disposition towards the external world that manifests itself in action." Furthermore as "information is intelligible where it can be compared with the already familiar (Steele 2002: 138), the knowledge of different interacting individuals converges towards agreement.

This brings us to the question of how knowledge is discovered. The answer is competition. Hayek defines economic competition as "a method of discovering

particular temporary circumstances” (1968a: 11). Competition allows some people to discover ways to improve things and others to imitate. Competition is thus a procedure that human beings use to discover knowledge, the outcomes of which are unpredictable. As a result of this, it is impossible to verify the validity of this theory of competition. But, in science, true but imperfect knowledge is to be preferred to “a pretence of exact knowledge that is likely to be false” (Hayek 1974: 5).

Competition works well because data is disperse and complex. In this complex world, discovery can't be based on the premise that individuals know all possible uses of the resources available in their environment. It is a special ability to detect what and when goods are demanded or supplied (Hayek 1968a: 13). Through continuous discovery, competition helps to maintain a level of welfare in society by compensating the search efforts of individuals according to the activities they choose to involve themselves in. Competition operates through decentralized planning by the actions of many separate persons (Hayek 1945b: 2). In this changing environment, equilibrium does not apply. What is preserved, according to Hayek (1968a: 15) is some kind of order that allows for making use of and for generating more knowledge (Leube 2003: 21).

A distributed model of knowledge brings up another question: how are human actions guided? Hayek responds by explaining that “actions of a person can only be in equilibrium in so far as they can be understood as part of a plan” (1936: 2). Additionally, in equilibrium plans and expectations of different individuals must be compatible, because the data, which an individual uses to build his plan, is based on the expectations of other people,

Because all propositions of equilibrium analysis are about the relations between actions and these actions are by definition compatible in equilibrium, these propositions are tautologies. Plans interrelate actions in a successive manner. If for some reason the knowledge of a person changes and this leads to a change in his plan, the equilibrium state is disrupted. Hayek concludes that equilibrium is therefore equivalent to the case when the person's expectations are correct (Birner 1996: 4, 6). If expectations conflict, “any development of the external facts might bear out somebody's expectations and disappoint those of others” (Hayek 1936: 4) making it

impossible to decide on what to change. Thus Hayek prefers to speak of a tendency towards equilibrium rather than an equilibrium state.

3.3.4 Hayek's theory of cultural evolution

As an extension of his notion of spontaneous order Hayek explains cultural evolution. This theory was intended to explain the development of free-market capitalism and to explain why it works.

According to him, there is a difference between rules and orders. Rules are regularities in the behaviour of individuals that apply regardless whether the person is aware of them or not. Order in a group is a pattern or structure that characterises it. Its usability is "that allows an observer to make reliable predictions about unknown parts of the group" (Angner 2002: 6). This order can be artificial or spontaneous. Artificial order is consciously designed and imposed on the group. Spontaneous order is self-generating and endogenous. It is the product of the actions of many men and not the result from any human design. An example of spontaneous order is the competitive market, whose order is too complex to have been designed by man. Spontaneous order evolves in a process of cultural evolution through natural selection. In this manner, natural selection operates indirectly on rules and preserves the wisdom of ages (Birner 1996: 16). Groups with more efficient rules and orders tend to predominate because their rules are more likely to preserve the whole. The free-market is therefore equivalent to adaptation and this explains why it works better than other artificial orders such as socialism (Angner 2002: 9).

3.3.5 Consequences: the individual and society

As a consequence of living in society, the individual must be capable of abiding by conventions that he may not fully understand (Hayek 1945a: 20) and accept the opportunities that the market brings about (Hayek 1966: 197).

These conventions have evolved from the repression of two instinctual human characteristics, which are altruism and solidarity, in order to allow for the existence of a bigger society (Hayek 1981: 72). They are based on two pillars conforming the

necessary foundation for a peaceful coexistence of people with different points of view: the rule of law and private property. The rule of law implies that the coercive power of the government is subordinated to the law, and private property demands responsibility from people on the things they own and on their effects upon other people (Hayek 1945a: 18; Leube 2003: 20).

Hayek distinguishes between law and legislation. Legislation is a set of rules for the government to administer its own operations. Laws are rules that give a framework for human action, which results from “a spontaneous ordering process that runs parallel to the market” (Horwitz 2000: 34). This framework provides guidance to individuals for their future plans and allows for the market process to unfold. It should result from the many decisions taken by judges on specific cases put before them.

In addition, this individualistic approach implies that “value and merit are and ought to be two distinct qualities” and therefore “individuals should not be remunerated in accordance with any concept of justice” (Hayek 1977: 10) but on the value of the services they render to society (Hayek 1966: 194). Therefore, social justice has no meaning, because its foundation is based on individual conduct that cannot be established⁷. In the same manner in a society no state of affairs is just or unjust.

It is in this defined social order that Hayek defines the role of the government in society. Government is part of a society and must exist to provide a structure within which human collaboration is maximized. The state must protect the individual from coercion and must create a flexible set of rules. These rules should enhance the predictability of others’ behaviour. Thus competition can be made more effective by the protection of property rights and the enforcement of contracts (Hayek 1976b: 111). These rules must consider facts such as progressive income taxation, which when incorrectly done can have serious negative consequences such as impeding social mobility by making it practically impossible for the successful man to socially

⁷ Social justice refers here to ‘distributive justice’, that is, an idea of how income or wealth should be distributed over individuals.

rise by making a fortune, which in turn eliminates the most important aspect of a free society (Hayek 1976b: 118).

Government may also step in to provide essential services which the spontaneous market forces cannot provide or which are genuine public goods (Hayek 1966: 186; 1976b: 111). It is thus convenient to make some resources available to the government, so it can provide these services to its citizens. For example the government may provide special help to those who don't succeed in the market (Hayek 1966: 198). The importance of this aspect is that although it doesn't preclude government's social responsibility, it does not imply a comprehensive welfare state. This last concept is not in accordance with Hayek's model because it will imply a set of rules as its foundation, which cannot be defined in the social complex system (Hayek 1966: 196).

This shows that free enterprise and competitive order are not exactly the same. The purpose of competitive order is to make competition work. How far the government intervenes will determine the market's competitive conditions. According to Hayek, liberals should debate these issues, trying to find solutions that will least interfere with the functioning of the market (Hayek 1976b: 112).

3.5 CONCLUSION

Throughout this chapter, it has been explained how Austrian economists modelled society as a set of institutions that can arise naturally without a design, although Menger conceded that some social institutions may be intentionally designed. Later Mises incorporated the principle of the division of labour in order to describe how this spontaneous organization occurs.

The merit of Hayek's economic theory lies in its comprehensiveness. He starts off from a meaning of individualism, where actions are only partially defined by reason and where reason is limited and imperfect. He then describes how individuals obtain knowledge, which is incomplete. From this, he situates men in society and develops the concept of the social mind, which says that total knowledge is divided amongst

many individuals and the market, through its price mechanism, creates a structure similar to that of the mind of person having complete information.

He explains that this environment is a self-generated complex system and that competition allows people to discover ways to improve their situations. Thus, the liberal social system, by allowing the necessary experimentation, adaptation and selection, enhances social welfare. Hayek's model shows that uncertainty means that the universe is too complex to be captured by deterministic laws but not that it is irrational or random. These are some of the most important contributions of Austrian thought.

The next chapter introduces the markets according to the Austrian view. It builds further on what this chapter explained about markets and defines the framework for the entrepreneurial role.

CHAPTER FOUR

THE MARKET: A FRAMEWORK FOR COMMERCIAL TRANSACTIONS

“Although our intellect always longs for clarity and certainty, our nature finds uncertainty fascinating” (Karl von Clausewitz, unknown source)

4.1 INTRODUCTION

Following the description of how society works, Austrian economics defines an institution that allows for commercial transactions: the market. It is here that Austrian economists have made an important contribution to science because they differentiate from classical economists in that they consider it to be a dynamic process.

This chapter starts by explaining Mises’ idea that the market is the environment for entrepreneurship. It continues with Schumpeter’s conception of the market as a place where business cycles and innovation occur and with Kirzner’s view of it as a place for creative acts of discovery. Then, it explains how Lachmann’s view of expectations as subjective results in a market where outcomes cannot be forecasted but where there is still room for market interpretation; and Hayek’s concept of the market as a place for knowledge sharing and freedom. Finally, some consequences of markets as dynamic processes and some criticisms of this Austrian view are discussed.

4.2 THE MARKET

Boettke (2002: 264) comments that the uniqueness of Austrian economics resides in its social institutions (private property, freedom of contract and limited government) and in its treatment of knowledge. In the standard models of information economics, actors are almost mechanical learners. Austrians instead, accept the difference between risk and uncertainty and between information and knowledge. In standard models, these last two concepts are treated as commodities, but Austrians instead treat knowledge as flow. In doing this, Austrians discuss the discovery and use of knowledge in making economic decisions, and they single out the necessary

interpretation and judgment that is embodied in the use of knowledge. Knowledge is thus a market result and it is contextual and concrete (Boettke 2002: 266-7). This distinctive use of knowledge is foundational to Mises' view of the market as an entrepreneurial process, to Schumpeter's idea of innovation, to Hayek's vision of the price system and to Lachmann's notion of expectations. It also underlies the Austrian's concept of entrepreneurship.

4.2.1 Mises: the market as an entrepreneurial process

Mises' view of the market is defined by human action within a societal environment and related by cooperation under the division of labour. This process is the result of individuals adjusting their activities to the requirements of mutual cooperation (Mises 1949: 258).

Thus, the market is determined by a set of exchange values, which direct individuals towards where they perform best. Efficient men who succeed better replace less efficient ones and create a dynamics in time, whose different states are identified by the price structure or the totality of exchange ratios (Mises 1949: 258 – 9).

Therefore Mises proposes a market-economy model, defined as a social system under the division of labour and under the private ownership of the means of production. In it, prices show individuals what, how and how much to produce. Under this direction, man chooses production methods that may require more resources but will result in more sophisticated products and in larger production amounts (Mises 1949: 260).

This market direction is determined by actions of consumers who support those enterprises that satisfy their wants in the cheapest ways. Their actions create a system of social competition, with individuals trying to obtain their best position in their society. Within it sellers must compete by offering better goods at cheaper prices and buyers by offering better prices. Entrepreneurs also drive the economy by determining the use of factors of production (Mises 1949: 270, 288).

Consequently, social competition has the function of ensuring the best satisfaction of man's wants under a given state of scarce resources. In it, consumers' only interest is

to attain the best possible satisfaction of their needs (Mises 1949: 276). They are not concerned with the equality of men or with others' personal situation. Their relations are defined by own personal interests (Mises 1949: 283).

Furthermore, according to Mises (1949: 285) true freedom for man can only be attained within the framework of a market economy, because it is defined by contractual relations, and man serves others only by serving himself. This freedom allows man to design his life according to his own wants and plans. And as plans and wants are different for every man, this freedom is incompatible with equality. This market process also shapes the role of a government as the defender of the social system, and therefore of the freedom of all men (Mises 1949: 280).

4.2.2 Schumpeter: the market as a process of innovation

In his book on business cycles (1939), Schumpeter attempts to explain the workings of a market economy. There he proposes a model, which he later applies to analyze the US economy.

He begins by dividing influencing factors into external (exogenous) and internal (endogenous), and explains that models are attempts to describe situations with endogenous variables. Models can be of theoretical or of statistical nature. The statistical approach provides tools to filter seasonal fluctuations and trends. What remains after this process are cycles (Schumpeter 1939: 22).

Within the variables included in models, there are prices, physical quantities and values (the product of physical quantities and prices). The fundamental question is the causation, and the aim is not to choose between using or not using theory, but to develop a practical tool for analysis (Schumpeter 1939: 34).

Schumpeter first develops a stationary model that explains autonomous change in a closed domain. It describes an economic process that flows on at constant rates in time and reproduces itself. He asks what would happen in the case of disequilibrium

in this system. He finds the answer in chemistry in the Le Chatelier principle⁸. This rule states that a closed system will react to disturbances in such a manner as to absorb change and restore equilibrium (Schumpeter 1939: 47).

Similarly, the principle can be applied to an economic system, where the presence of disturbances will drive the system towards a new equilibrium. This is due to the fact that before change individuals can respond in a creative or in a passive manner (Schumpeter 1939: 72). In case they respond creatively, innovation becomes an internal factor of change during periods of crisis. The production function describes how the quantity of a product changes if quantities of factors of production vary. Innovation is then defined as a change in the form of the production function or as a change in the commodity to be produced (Schumpeter 1939: 87). For example, innovation can take the shape of a better organizational structure, with a more efficient division of labour. Innovation, according to Schumpeter (1939: 91), dominates capitalist life by causing disequilibrium. It is the way that new structural changes are brought into an economy, for example by creating railroads through a country. Thus they result in big changes, enforcing a process of adaptation. In this process of adaptation, other firms modify their production function with a lag, the result of which is disequilibrium.

Schumpeter (1939) explains that every innovation is brought about by a new firm, created for that specific purpose. The success of this new firm will mean the death of other less competitive ones (Schumpeter 1939: 94 – 95). This new firm is usually responsible for the construction of a new plant or the reshaping of an old one. However, in order for this to happen, it has to be a new leader. Schumpeter says that this new leadership requirement explains why innovations usually do not grow out of old business, why they are not carried out simultaneously, why they tend to develop in clusters and why they tend to concentrate in certain sectors and their surroundings (Schumpeter 1939: 97, 100 – 101). As a consequence, industrial progress is not homogeneous and some industries advance, while others remain stagnant.

⁸ Principle discovered by Henry Louis Le Chatelier (1850 – 1936) that describes the effects of a change in conditions on a chemical equilibrium.

Schumpeter makes very clear that he is not attacking the Walrasian equilibrium-based model (Schumpeter 1939: 98). Equilibrium describes stationary, non-innovative firms, which just grow in a steady manner. Schumpeter says that his model describes the innovative firms and therefore extends Walras's ideas.

Innovation creates a new paradigm. In it a new production framework is created. Once its initial problems have been solved, it becomes much easier for others to imitate and improve it. Progress is this: disequilibrium caused by the disturbance of existing structures. In order to explain this, Schumpeter (1942a) introduced the concept of creative destruction.

According to Reinert and Reinert (2006) the idea of creative destruction is found in the work of earlier thinkers such as Mikhail Bakunin, Friedrich Nietzsche, Werner Sombart and Karl Marx, and its roots can be traced back to Indian philosophy, from where the idea entered German philosophy.

Schumpeter saw capitalism as changing from within. He acknowledged the existence of other factors such as wars, revolutions, increases in population and capital, but not as the main movers. The fundamental impulse of capitalism, according to him, is creative destruction, the process of destroying the old to create the new, which originates from "the new consumers, goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that the capitalist enterprise creates" (Schumpeter 1942a: 82). Thus, in capitalist reality the competition that counts is the one from "the new commodity, the new technology, the new source of supply, the new type of organization", because these innovations create decisive cost or quality advantages and justify the existence of the firms which apply them (Schumpeter 1942a: 83). Such a process of continual innovation can be seen in all areas of economic life. For example, farms have changed through crop rotation, ploughing and mechanization; transportation under the influence of the steam and internal combustion engines; etc.

This concept of continual innovation has become one of the most widely used ideas in contemporary economics and has been extended in many areas beyond economics and

business. It also provided new questions, such as “how capital formation and productivity can be maintained so that rapid technological change and employment can be sustained?” and “what is the minimum profit needed?”. Thus, according to Drucker (1983: 4), Schumpeter did not give an answer to all such questions but, by recognizing the importance of continual change and innovation, decisively shaped modern economic theory and practice.

Furthermore, this model results in a product cycle that has the following phases:

- I. Product innovation: the product is sold at a high price to wealthy people.
- II. The product is acquired by middle class people.
- III. The acquisition of the product spreads to everyone and reaches a saturation state.
- IV. Product is standardized and mass-produced at low prices, in some cases by a monopoly.

The result is that economic development tends towards the standardization of products.

This process of innovation describes important changes in the cycle of the economy. But there are other smaller changes that also affect the dynamics of a market. This is the focus of Kirzner’s view of the market process.

4.2.3 Kirzner: the market as a process for creative acts of discovery

According to Kirzner (1973: 9 - 12), the market is a competitive process because consumers and entrepreneurs change their plans by revising decisions and correcting mistakes over time, that is, by testing and revising their plans in the market. Therefore, equilibrium means the end of this process and, with it, competition.

To understand the market process, Kirzner proposes to include an entrepreneurial element in economic decision making (Dolan 1976: 10). In this process entrepreneurs are those who manage to learn from experience by showing alertness to previous unnoticed changes. Thus, they profit by buying at lower prices and selling at higher prices. As market participants become aware of the new opportunities their pattern of decisions changes from period to period, creating at the same time new opportunities

for the alert entrepreneur (Kirzner 1973: 14 – 15). It is therefore helpful in developing a viable theory of market process to consider the role of entrepreneurship (Kirzner 1976b: 80).

In order to achieve this, the Misesian notion of human action has to be used to model decision making in a way that includes the element of entrepreneurship, “to account for the way in which market participants change their plans”. This is due to the fact that “Misesian theory of human action conceives of the individual as ... alert, waiting, continually receptive to something that may turn up. And when the prevailing price does not clear the market, market participants realize they should revise their estimates of prices bid or asked in order to avoid repeated disappointment” (Kirzner 1976b: 81). This role of entrepreneurship will be expanded in the next chapter of this thesis.

This capacity to read the market was further analysed by Lachmann, who tried to answer the question about whether humans can or cannot predict what can occur in the market.

4.2.4 Lachmann: the market as a place for interpretation

According to Lachmann (1976b: 86 - 87) “the market process is the outward manifestation of an unending stream of knowledge”. The pattern of knowledge in society is continuously changing in a way that is difficult to describe. Therefore as “knowledge defies all attempts to treat it ... we cannot have future knowledge in the present”. Hence men have to act and make plans based on expectations.

The starting point for Lachmann is expectations that are held by different actors, who may also require different time frames to take decisions. As a result, these expectations are diverse (ex: bull / bear market expectations in financial markets) and potentially divergent, depending on the conditions of the market (AEN 1978: 4; Lachmann 1976a: 59; 1986 a: 18). This divergence of expectations has a function in the market: the wider it is, the higher the probability that someone is right and the future is correctly interpreted. Based on this, he concludes that asset markets without divergent expectations, in general, don't exist (Lachmann 1994: 220).

There are exceptions. For example Lachmann describes a basic market for food, where, he explains, expectation divergence is not so important as buyers and sellers will find the right prices for goods through direct negotiations (Lachmann 1986: 121). Expectations are more important the greater the amount of transactions in a given market.

Lachmann's conclusion is that it is necessary to consider a social sciences research program. This program should be aimed at explaining social phenomena in terms of multiple different plans and multiple different actors. The results of this program should be an explanation of Shackle's kaleidic society, "a society in which sooner or later unexpected change is bound to upset existing patterns" (Lachmann 1976a: 55; Lachmann 1994: 230). Equilibrium, he explains, is merely the remains of the Victorian world view as an orderly process, and not a description of reality.

Therefore the notion of general equilibrium must be abandoned, but that of individual equilibrium must be retained, because it is the result of rational action. Thus, "the market process consists of a sequence of individual interactions, each denoting the encounter (and sometimes collision) of a number of plans, which, while coherent individually and reflecting the individual equilibrium of the actor, are incoherent as a group" (Lachmann, 1976b: 88)

The consequences of this approach are quite wide and interesting. Firstly, the future is unknowable but not unimaginable (Lachmann 1976a: 55) and therefore making "forecasts is a human, not a scientific activity" (Lachmann 1986: 139). Secondly, our understanding of the present depends on our interpretation of the past. Thus, our tools for study should be case studies instead of very general theories (see Chapter 5 for an example of this approach). Thirdly, theory should provide various alternative explanations of historical events. Fourthly, the economist may "interpret" the present, based on the heritage of the past. And finally, historical knowledge should be used before forming action plans, as they will help the person to identify potential constraints.

In addition, as Lachmann identifies, there are other tools that society has created to help men deal with an uncertain future and to help them to interpret that future. In this context, institutions constitute the external framework of human action, as they provide for legal order. They evolve as a result of human actions. Market economy rests mainly on the basic institutions of property and contract (Gringer 1940: 18).

4.2.5 Hayek: the market as a place for knowledge sharing and freedom

As it was explained in chapter 3, according to Hayek, the problem of coordination is the problem of how knowledge is distributed and made available to individuals. In the market this problem is solved by the price system (Hayek 1945b: 5 - 6), which by using rates of equivalence produces the same solution that a sole mind with all the information would have arrived at.

The role of the price system is thus that of communicating information and it is one of the institutions developed by man that have become part of the foundation of civilization. It allows producing a solution “by the interaction of people each of whom possesses only partial knowledge” (Hayek 1945b: 7).

Therefore, the great achievement of economics is that it understood that through the market, man could participate in a more complex process than he alone could manage to understand. In this process, the market allows him to find out about what others can do. Human reason thus becomes an interpersonal process in which any contribution is tested and corrected by others (Hayek 1945a: 14).

Hayek’s (1944) *The road to serfdom*, is an avowed political book written in an assertive style, almost not allowing the reader to doubt the benefits of liberalism as the political expression of a market economy. Liberalism is therefore the practical way to achieve an efficient market process.

He mentions two principles as the basics of liberalism (Hayek 1944: 17):

- We should make as much use as possible of the spontaneous forces of society.
- Coercion should be minimally used.

In this way, Hayek explains, the market will make the most efficient use of the forces of competition as a means of coordinating human efforts. This is achieved because liberalism gives all individuals a chance to decide, according to the risks they are prepared to take, on the particular occupation they want to be in. Competition thus requires free access for all parties to buy, sell or produce, without restrictions on prices and quantities (Hayek 1944: 38).

In addition, the market also requires the existence of two other factors (Hayek 1944: 39):

- Institutions: such as money, different markets, channels of information, etc.
- A body of law that clearly defines property rights and voluntary exchange.

In this manner, the owner of a resource can receive all the benefits associated with the services rendered by his possessions and bear all the consequences of the risks taken.

Mises (1949: 258) had already explained that the market process is possible because of the principle of division of labor. Hayek (1944: 43, 51 – 52) adds that it is through the market that coordination can happen. He rules out any possible middle-way, because it would mean that “competition ceases to operate as an effective guide to production”. A market economy is the only way that will allow for an effective use of the price system: a mechanism that records all the effects of individual actions.

In order to obtain these market dynamics, it is necessary that the rule of law is predominant. This enables individuals to predict others’ behaviour and ensures the absence of legal privileges (Hayek 1944: 79, 83). Measures such as limiting working hours, sanitary arrangements or systems of social services can be permitted as long as they affect all parties equally. The role of the government is only to determine under which conditions the available resources are to be used. The ends are purely determined by individuals, because they know better than anyone else under which circumstances they act, and thus they adapt their actions to them. Therefore, the final result cannot be predicted or even less planned.

This method is superior because individuals don't possess complete knowledge and have different value sets (Hayek 1944: 62). The result is that the best policy is to create conditions favourable to progress, rather than to "plan progress". In this kind of system, individuals should be remunerated according to the service that they give to society (Hayek 1944: 126). If freedom of occupational choice must exist, a similar income cannot be given to all.

According to Hayek, the social benefits are immense. The result will be security and freedom, as every individual will perform in a position that is the best for him and where he is most useful to his society (Hayek 1944: 129). And very important, the control of the means of production will be divided among many people, allowing individuals to decide by themselves without being subjected to external coercion.

4.3 LATER STUDIES

4.3.1 Criticisms and comments

Hoppe (1997: 50) disagrees with Lachmann's kaleidic world concept. According to him, Lachmann makes a logical error in his reasoning: the fact that we don't live in a world of perfect knowledge does not imply that our world is one of perfect uncertainty. Hoppe explains that even though our knowledge is imperfect, by using it human beings can bring about a more preferable state of affairs. He continues by saying that economic science should be approached through a middle-of-the-road position, that is, accept that there exists uncertainty but also that there exists some knowledge. For example, we know that there exists uncertainty (Hoppe 1997: 51).

According to him, our knowledge is uncertain in the sense that objects, their qualities and quantitative cause-effect relationships have to be learned from experience, and therefore a posteriori. Thus, this knowledge can't reveal the future, but can help us to predict the effects of definite actions (Hoppe 1997: 52). In the long run, this knowledge will ensure more successes than failures, for example by making possible the existence of insurance.

Hoppe (1997: 55) gives several examples of this type of knowledge. For example, we know that black people suffer more from sickle cell anemia than white people or that floods occur more in certain areas. Thus our future is not totally unknowable and continuous scientific progress is possible (Hoppe 1997: 60).

He says that Lachmann was correct in explaining that man's future actions are categorically different from predicting the outcome of given actions. His disagreement with Mises was on how successful our method of understanding is, as he concluded that a priori knowledge can't help to predict (Hoppe 1997: 61 - 62).

Hoppe adds that Lachmann made another logical error. He considered that because humans can learn, everything concerning the future of human actions may possibly change in the course of time. Just to know that humans can alter their behaviour is to know something and that, what worked in the past may also work in the future (Hoppe 1997: 64). Furthermore, without continuity of human actions it would be impossible to understand certain concepts. He gives the example of capital goods, which imply something to be continued and therefore are an empirical proof of past influence in the future. This example is for Hoppe enough reason to disregard the kaleidic idea. Another logical flaw in Lachmann's reasoning is that, in a kaleidic world, everyone can predict others' behavior equally well, a conclusion that doesn't agree with reality (Hoppe 1997: 76).

He concludes that a patterned model of social change, such as Mises' is closer to reality than a Lachmann's kaleidic model, which he considers more line with the Historical School than with Austrian economics. He explains that this is due to Lachmann being influenced by Werner Sombart (Hoppe 1997: 62).

According to Garrison (1997: 2), Lachmann's agnosticism on the ability of markets to coordinate equilibrium and disequilibrium forces is well expressed in what Koppl named the Lachmann problem, namely: expectations being neither exogenous nor endogenous (that is determined outside or inside the theory). If expectations are exogenous, the model's parameters can't influence them. Therefore it is important for economic theory to try to include expectations as endogenous parameters.

In modern economics several attempts have been made to include them. Examples of these attempts are the adaptive and rational expectations models. However, according to Garrison (1997: 11), most theories include demonstrations that the assumptions about expectations are consistent with the theory itself. None of them try to prove the connection between theory and actual economy. He further mentions that after the publication of *The Sensory Order* by Hayek some Austrian scholars, such as Butos and Koppl, have tried to connect expectations with cognitive psychology. But, he adds, this approach has proven to be difficult to integrate into business cycle theory.

Austrians have made two assumptions about expectations: entrepreneurs do not know the underlying economic realities and “prices, wages and interest rates tend to facilitate the coordination of economic decisions” (Garrison 1997: 14). This means, according to Garrison, that there exists an economic problem and that the market is its solution. Expectations are thus different from adaptive, static or rational models.

Within the market Hayek says that knowledge is of two types (Garrison 1997: 15): of the specific particular circumstances of time and place, and knowledge of the structure of the economy. An economic agent doesn't possess both types of knowledge but they overlap as a result of the market process. His expectations are based on his knowledge and are adaptive to variations in interest rates, prices and wages. They are thus subjective and therefore not endogenous. Hence, they can't be modeled. Lachmann's expectations can therefore be compared in importance with the classical assumption of rational expectations (Garrison 1997: 18). This researcher agrees with Garrison's comment: subjective expectations will probably be one of the enduring findings of the Austrian school.

Hodgson (2005b) disagrees with Hayek in that the market leads to freedom. He bases his argument in the fact that such a system requires clear rules that distinguish between what belongs to each person (property rights). However, Hodgson (2005b: 549) writes, this would be incompatible with, for example, patriarchal family values, the case of the children and the insane. In addition, “the outcomes of markets depend very much on social and institutional contexts”. Furthermore, markets are not a universal form of allocation, for example it cannot be accepted for child prostitution, the selling of babies or voluntary enslavement.

A first example in our modern world where market rules do not apply is in the firm, because within it, allocation and coordination are done by administrative transactions. Although Hodgson agrees that this is a grey area of argument, as the corporate firm is considered a legal person and therefore it could be said that market rules should not apply to its internal transactions, he concludes that the Hayekian framework fails to explain why firms actually exist (2005b: 552).

A second case is the labour market where there can be no futures markets because it would end up into a form of voluntary slavery. The result is underinvestment in human education and the existence of the employment contract, which are asymmetrical in that the employer has the power of control over the manner of work. This asymmetry is the result of uncertainty about the future. The employment contract enables the employer to deal with unforeseen circumstances and oblige the workers to change their activities according to changing needs (Hodgson 2005b: 449, 553 – 555).

And a third example of a market situation where Hayek's concepts do not apply is, according to Hodgson (2005b: 555 – 556), the information market. Information has some important characteristics: firstly it can be reproduced in multiple copies by its buyer and then sold to many others. Secondly, once it is sold, it also remains in possession of the seller. Thirdly, the buyer will usually not know the correct value of what he buys until he is in possession of it. Fourthly, it is very difficult to determine who discovered the information. Moreover, knowledge is a social product as it is the outcome of experience and experimentation of many generations. As such, it is the product of the institutions and culture as much as it is of individuals. For example we rely on the institution of language to receive and communicate information. Therefore, it is not completely divisible into separate units. As a result, in the information market it is very difficult to establish property rules and Hodgson concludes markets in the Hayekian way are an anachronism. This researcher thinks that this is an important point that deserves special consideration. For example, who should be considered the owner of the windows concept in software: Xerox, Apple or Microsoft (see Chapter 6)?

Jeffrey Sachs (2006) claims that Hayek's assertion that high taxes hamper a free-market system is wrong. In order to explain his point, he compares two groups of economies, the low-tax, high-income English-speaking countries (Australia, Canada, Ireland, New Zealand, the U.K. and the U.S.) to the high-tax, high-income Nordic social democracies (Denmark, Finland, Norway and Sweden). This second group combines market forces with a strong commitment to antipoverty programs. Their dynamism, despite high taxation, is based on strong spending on research and development and, on higher education. They have also worked to maintain social expenditures compatible with an open, competitive and market-based system by keeping low tax rates on capital and implementing labour policies that encourage the employment of low-skilled, difficult-to-employ individuals in the service sector, particularly in quality-of-life areas such as child care, health and elderly and disabled support. The result, when comparing, is that the U.S. has the highest poverty rate among the rich countries and a high prison population.

According to Steele (2002: 142), Hayek saw a distinction where none exists, that is, between the mental and physical phenomena. Therefore, to hold a person responsible for their actions cannot be an assertion based on causality or fact, but is a principle that Hayek introduces to make people observe certain rules. Such causality could have been derived by an understanding of the sensory order as being part of the physical order. This explains Hayek's emphasis on individuals' actions and the responsibility attached to the individuals for their actions.

4.4 CONCLUSION

The Austrian concept of the market as a dynamic process is a powerful consequence of viewing it as the result of individual human actions within an environment created by cooperation through the division of labour.

In it, Mises pointed out the importance of consumers and their actions to satisfy their wants. Schumpeter and Hayek saw even more, Schumpeter in acts of innovation that allow for progress, and Hayek in the solution to the knowledge problem and freedom given to man through the market process. Kirzner extended the benefits of the market to almost everyday life by explaining the market as a process for creative acts of

discovery and Lachmann's legacy is that economics requires more than simple logic, but study and interpretation of the world around us (Harris 1995: 130).

All these market characteristics define a necessary and special human role, that of the entrepreneur, which is the subject of the next chapter.

CHAPTER FIVE

THE ENTREPRENEUR: EXPLAINING MARKET CHANGE

“What would you do if you knew you could not fail?” (Robert Schuller. Entrepreneur)

5.1 INTRODUCTION

Given the Austrian model of the market as a process, it is necessary to explain how change within it occurs. This is done through the addition to the model of a specific role: the entrepreneur. This chapter describes and analyzes this concept and his role as the human agent and driving force of the market process. It is based on ideas developed by the main contributors to the Austrian school.

The chapter begins by analyzing some influences on Austrian ideas and with a brief historical description of the evolution of the term and the development of its theory. It continues with Menger’s concept of entrepreneurial activity and Mises’s entrepreneurial element. Then, it explains Schumpeter’s ideas about the role of the entrepreneur and creative destruction. It finishes by explaining Kirzner’s concept of the universal entrepreneur and some broader consequences of entrepreneurship for several areas such as institutions, culture and economic progress. Attention is also paid to some subsequent research that was influenced by Austrian thought.

5.2 EARLIER STUDIES AND INFLUENCES

5.2.1 A brief history of the term and its theoretical development

Kirszner (1985) gives a synthesis of the development of the term entrepreneur. He mentions four different developmental stages. The first begins in England with authors such as Daniel Defoe and Sir Walter Raleigh who used the term *projector* and Adam Smith who used the word *undertaker* to indicate an individual who had a contract, particularly with the government. This term was then changed to *capitalist*

and later the term entrepreneur was borrowed from the French. Its main use was to name someone who was taking some risk in his occupation.

In France the term entrepreneur was used in the middle ages to indicate someone with large projects with the government, or involved in wars. The word derives from the verb *entreprendre*, whose meaning is to get things done (Formaini 2001b, 3). In the seventeenth century the term indicated a person having contracts with the government, usually at a fixed rate, and therefore bearing low risk. During the eighteenth century, the physiocrats introduced the concept in economic literature. Cantillon (1680 – 1734) in his 1755 work *Essai sur la nature du commerce en general*, used the term meaning a risk bearer, that is, someone who buys means of production, creates a new product and tries to sell it (Thornton 1999: 15 – 16). His risk consists of having to bear the cost under the pressure of an uncertain sell. In doing this he attracts labour and accepts the uncertainty of prices in consumer markets. As a result, his activities lead the market towards a situation of equilibrium. For his activity the entrepreneur receives an income given by the difference between the buying and selling prices. Any person who receives an uncertain income is an entrepreneur, be him a landlord, a labourer or any other agent in the market. Beaudeau (1730 – 1792) explained that an entrepreneur not only was the person who would take risk, but also the one who was in charge of planning, organizing and supervising. He mentioned the importance of intelligence, which he defined as the ability to collect and process knowledge and that gives the entrepreneur a measure of control (Hébert and Link 2006: 590). Francois Quesnay (1694 – 1774), a medical physician, referred to land-owning entrepreneurs. Anne-Robert Turgot (1727 – 81) considered the entrepreneur as someone who used his own capital, a view that makes sense in a world where financial markets were not fully developed (Formaini 2001b: 4). J.B. Say (1767 – 1832) in his *Cours d'Economie Politique Pratique*, published in 1828 was the first to distinguish between the capitalist and the entrepreneur and considered it as the coordinator of productive services, the link of communication (Barreto 1989: 6). His remuneration was defined as a wage for coordinating and making decisions plus an interest for capital provision and a premium for risk-bearing.

The second stage is the result of the Marginalist Revolution. In the eighteenth century and beginning of the nineteenth century, under the influence of classic economics, the

term lost its use in economic literature, excepts perhaps in Germany, where JH von Thunen (1738 – 1850) differentiated between entrepreneurial and managerial activities, and between the entrepreneur and the capitalist (Hébert and Link 2006: 592). He considered the entrepreneur as a risk bearer and innovator. HK von Mangold (1824 – 68) introduced the element of time in risk and anticipated Frank Knight's differentiation between risk and uncertainty (Formaini 2001b: 5). Two German historicists also wrote about the entrepreneur. Gustav Scholler (1838 – 1917) collected large amounts of data and from the examination of this information, he discovered a unique central force in economic activity, which he defined as the enterprising spirit or the *Unternehmer* or entrepreneur. Its role is that of innovation and of initiation of new projects, by combining factors of production to yield new products or new production methods. Werner Sombart (1863 – 1941) considered the entrepreneur as a leader who animates the whole economy by means of innovations (Hébert and Link 2006: 593). Later Menger elaborated the view of the entrepreneur as someone who acquires information, makes calculations, supervises production and bears risk. Following him, in Austria and later in the USA, Mises introduced the idea of the market as a process driven by the entrepreneur. During these years most mainstream science moved to the USA, where Schumpeter, influenced by the developments in the nineteenth century, developed the idea of the entrepreneur as a disrupting force of the capitalist business cycle. During this period, in England Marshall used the expression *business management* and identified the figure of the entrepreneur as someone who is a coordinator, an arbitrageur, an innovator and who bears uncertainty. According to him, the entrepreneur or undertaker drives the economic process, inducing progress. Edgeworth (1845 – 1926) saw the entrepreneur as someone influencing the production side, through coordination and arbitrage. He disagreed with Walras that equilibrium means zero profit (Barreto 1989: 49). In the USA, Herbert Davenport and Frank Knight distinguished between risk and uncertainty (Knight 1921). Clark (1847 – 1938), one of the founders of the Institutional school, treated the entrepreneur as an arbitrageur in a dynamic economy, with a coordinating function and being the moving force behind the economy by shifting resources to more profitable projects. Later, Hawley (1843 – 1929) in his *Enterprise and the productive process*, published in 1907, characterized the entrepreneur as an owner of capital who decides what to do (Barreto 1989: 36). His profit is the result of an income obtained in a world of uncertainty, where he has borne

the burden of accepting insecurity. In Switzerland, Walras (1834 – 1910) treated the entrepreneur as a coordinator of resources and an arbitrageur. However he dropped it when he developed his general equilibrium framework and focused on the laws governing equilibrium states. The development of these ideas was aided by the fact that there was still no single dominant school (Lachmann 1994: 276) and several trends of thought - such as Austrian, Marshallian, Historical and Paretan - were competing.

The third stage begins during the 1920s – 1930s, when economists followed Pareto in adopting the method of classical mechanics and as a result of the success of the equilibrium model in the academic environment, the term basically disappeared from mainstream literature (Barreto 1989: 47). In this period, Tuttle published two articles in 1927 where he defined the entrepreneur as the one who owns the production factor called organization. Kaldor in 1934 described the entrepreneur as a coordinator and Coase equated him with the firm (Barreto 1989: 62 - 65). Within the writings of the Austrian School, Kirzner extended the view of Wieser on entrepreneurial alertness and elaborated the Misesian universal entrepreneur. The debate on socialistic calculation, driven by the Austrian economists, kept the entrepreneur at the centre of capitalist ideas. From the 1950s onwards, the entrepreneurial function has been researched in business economics with writers such as Peter Drucker and others.

The fourth stage began during the 1970s, when the term was rediscovered. The beginning of this entrepreneurial research may be dated to sometime before 1978 when Babson College established a center for entrepreneurial studies (Koppl 2003: 2). Today, it is considered one of the pillars of free market economics, and studied in most business schools. The concept of entrepreneurship has been proven useful in different environments, not only to explain some big developments in big business like the steel industry, but also in micro-lending programs as the Grameen Bank of Bangladesh experience proves (Yunus 1997).

Amongst the recent contributions Parker (2007: 1 - 11) introduces an important concept for the study of entrepreneurship: the life cycle of entrepreneurial ventures. He defines it as “the sequence of stages in the evolution of new ventures”. The practical aspect of this idea is that it gives a framework to analyze entrepreneurship. The entrepreneurial cycle commences with the initiation of the venture, which

involves the commitment of time and resources necessary for the enterprise. It is the most crucial stage, and if the entrepreneur makes the wrong choices, his venture may not survive. Following this, the entrepreneur must develop its venture based on decisions that consider several aspects, such as: what to produce, quantity and factors of production. Later, the measurement of parameters such as growth and profitability must be introduced; these values will guide the entrepreneur in his venture expansion. The venture life ends involuntary through failure or voluntary through IPOs, mergers, buyouts, etc.

5.3 THE AUSTRIAN ENTREPRENEUR

Austrian writers helped to re-introduce the concept of entrepreneur into the modern economy. This section explains the main ideas as developed by Menger, Mises, Schumpeter and Kirzner. Although these authors have some differences in their views on economics, their ideas can be seen as complementary and expanding on each other, as they discover different aspects and attributes of entrepreneurship.

5.3.1 Menger: entrepreneurial activity

Menger explains in his *Principles of economics* that in the production of goods there is a person called the entrepreneur whose function is to bring all goods together, including technical labour services. His activities include (Menger 1871: 160):

- obtaining information about the economic situation,
- making all necessary calculations for an efficient production process,
- deciding on which inputs are necessary for the production process, and
- supervising the production plan to ensure it is executed in the most economical way,

For Menger (1871: 172), this entrepreneurial activity is part of labour services and an economic good. These labour services have two important characteristics. Firstly, they are not commodities and therefore have no prices. Secondly, “they have command of the services of capital”. This last factor can critically influence the amount of entrepreneurial activity: for example, its quantity can be increased by making credit

available or decreased by factors such as legal uncertainty. Menger (1871: 161) also disagrees with the idea that the entrepreneur's essential function is risk-bearing, since risk "is only incidental and the chance of loss is counterbalanced by the chance of profits".

This entrepreneurial activity has evolved with time. In earlier years and in small enterprises it was usually performed by the same individual who also did the technical labour. With the increase in size of enterprises, it has become a full time occupation and as necessary a factor "in the production of goods as technical labor services" (Menger 1871: 161). The functions of owner and manager are now separated mainly as a result of the predominance of the limited-liability corporation.

5.3.2 Mises: the entrepreneurial element

According to Mises, human action is characterized by the possibility of mistakes, which results in market maladjustments. These, in turn, provide profit opportunities for those who decide to take the necessary risk and seek to rectify these maladjustments. In addition, human decision making is composed of two elements namely maximizing and entrepreneurial. The maximizing element is directed at the optimal use of resources. The entrepreneurial element, identifies potential ends and available means for the attainment of the chosen ends (Kirzner 1986-7: 4). The latter has a speculative character and defines a special participant in the market, called entrepreneur.

This agent deals with the uncertainty present in the market. He provides direction to other market participants by directing production and factors of production towards definite goals (Mises 1949: 270). He selects those ends based on market data, which he interprets. His success is determined by his capacity to serve the consumers, anticipating their needs. In order to be capable of doing his task, the entrepreneur needs certain qualities, such as judgement, foresight and energy. These qualities cannot be given by education or training (Mises 1949: 311). A person proves himself to be an entrepreneur only by seizing an opportunity and succeeding in his task.

He must also compete with fellow entrepreneurs, and only the most able will succeed in their enterprise. The surplus resulting from the enterprise will be divided among several parties. However, the greatest part of this surplus will not be assigned to the entrepreneur but to other non-entrepreneurial parties (Mises 1949: 293). For his success, the entrepreneur will be rewarded with profit defined as the value of the result attained less the value of the sacrifices made. Profit is obtained only once, after the completion of his task (Mises 1949: 287). His success is reflected in the economy as a whole. The greater the dimension of entrepreneurial success, the more general welfare improves (Mises 1949: 239). The entrepreneur is thus a key element of economic advancement and through it of human evolution.

5.3.3 Schumpeter: the innovative entrepreneur.

Schumpeter is best known for his development of the concept of the entrepreneur and popularizing it. His research was based in the study of business cycles, which he described as the core of a market economy. His quest was for an explanation of how economic development occurs.

In order to achieve this, he defines development as “changes in economic life [that] are not forced upon it from without but arise by its own initiative” (Schumpeter 1955: 63). However, factors such as population growth or the accumulation of wealth are not considered because they are not new phenomena.

Development in this sense is a spontaneous disturbance of an equilibrium state, and leads to a new equilibrium point. Each process of development creates the conditions for the following, and relates to the industrial and commercial sphere rather than the sphere of households as consumers of final products. It is the producer who initiates the change and educates consumers if necessary.

The new combination is not the result of small adjustments in old combinations, but amounts to a radical rearrangement of resources and processes, which can happen under the influence of the following five factors (Schumpeter 1955: 66):

- a. Introduction of new goods or a new quality of a good in the market.
- b. Introduction of new production technologies.

- c. The opening of a new market.
- d. The conquest of a new source of supply.
- e. The creation of a new organization.

The new combination is not necessarily produced by the same people who control the production of the old one. This explains social advancement, as some people rise in the social ladder through this type of achievement and others fall (Schumpeter 1955: 67).

Human error, which produces market maladjustments, also prompts responses from some individuals. These responses can be adaptive in character, such as when an industry adapts by expanding within its existing practice or they can be creative in character, such as when the action is innovative enough to modify the economy. This type of response defines entrepreneurship. The entrepreneur is thus an innovator who creates market disruption - that is further disequilibrium - with his actions. But he is also the one who gets things done. He is the one who, by his innovativeness, carries an enterprise.

Entrepreneurship has several characteristics (Schumpeter 1955: 78 -89). First, it is not a profession or a lasting condition and its function can not be inherited. Second, entrepreneurs don't form a social class, although, they can attain an elevated class position thanks to the success of their enterprise. Third, actual entrepreneurs are less numerous than those who have the possibility of being one. They are thus a special type and their behaviour a special object of research.

Leadership is the defining quality of entrepreneurship as a distinct function, because it allows them to step outside the boundary of routine and create a new combination. They must plan, but their plans are prone to more and different errors than those occurring in customary actions. Therefore their successes are based on intuition and on a capacity to see things that afterwards prove to be true, a capacity that allows them to grasp the essential and discard the inessential. Their psyche is therefore different in that they must not only have the vision of a new combination but also the will to carry it out. They must have the capacity to challenge an environment that is hostile to innovation, particularly those who are threatened by it, as well as to win over consumers. This allows us to understand why when entrepreneurs move up the

social ladder, they are usually not welcomed there (Schumpeter 1955: 90). Thus, they are usually more self-centered than other types as they rely less on tradition. Experience also teaches that entrepreneurs usually retire “when and because their strength is spent and they feel no longer equal to their task” (Schumpeter 1955: 92). Their motivation can vary from achieving social distinction, to the need to prove themselves, or simply for the fun of doing it.

Furthermore, the entrepreneur must have control over the means of production for the new combination of productive resources. Sometimes because he has not enough capital, he must resort to credit. In this context, to provide credit is the function of people called capitalists. This function is an essential characteristic of a capitalist society, in that it makes it possible for the economic system to move into new areas. This financing of new combinations, has caused the system to move in different directions in different countries (Schumpeter 1955: 70). Thus, as te Velde (2001: 7) explains, Schumpeter anticipated the rise of the venture capitalist who is an entrepreneur in his own right as he bears the financial risk. Indeed, Schumpeter realized that in order to have a full picture of the entrepreneur more research is necessary (Schumpeter 1955: 94).

If the enterprise succeeds he receives a profit, which is almost a monopoly gain as his competitors only follow him with a lag. In addition, as this gain is temporary, it cannot be called income. And, as it is temporary, it raises the question of how to maintain it. Moreover, it is important to note that entrepreneurial gain is not assigned to all who attempt, or to the industrial sector in which the innovation happens as a whole. Neither is it assigned to the capitalist who finances the venture, nor to the capitalist class as a whole.

Once he has found a solution, others will follow through imitation, creating convergence in the market towards a new equilibrium. Therefore, as the entrepreneur may not be the inventor of the innovation, his functions are to design, direct, lead and coordinate.

Holcombe (2003, 16) gives an example of this differentiation. The Windows idea in computer software was developed by R & D at Xerox Corporation. However they

failed to introduce it to the market. Steve Jobs at Apple Computer saw the profit opportunity and was the first to successfully commercialize it with its model Apple Macintosh. Later, he was followed by Bill Gates with his Microsoft Windows operative system, creating a revolution in the software market.

Another typical example is Henry Ford (1863 – 1947), who introduced the moving assembly line (new production technology) to manufacture automobiles and his Model T (new commercial model) in 1908. He also introduced a vertical integration model and higher pay to employees, having a wage rate that was more than twice the average rate at that time. The result was a raise in productivity, reduction in personnel turnover, and a constant cost reduction in automobile manufacturing. By 1916 the Model T's price had dropped by more than half. By 1920 most Americans had learned to drive on one of them.

Regarding the development of the entrepreneurial function, Schumpeter explained that in earlier pre-corporate times the entrepreneur was also the capitalist, his own buying and selling agent, the head of his office, his own personnel manager and the technical expert. Schumpeter (1955: 76 – 77) noted how J.S. Mill had failed to distinguish between the capitalist and the entrepreneur because in his times the manufacturer was usually both, but how J.B. Say had correctly defined the entrepreneur

Schumpeter realized that the entrepreneur had a role in the economy of his time. He thus raised the important question: does the importance of the entrepreneurial function decline with time? He left its answer for other researchers.

Later Schumpeter (1942b) argued that the entrepreneur will disappear because the process of economic development will come to a halt and capitalism will give way to socialism. This will result from the creation of a new class that benefits and that is “opposed to saving and allocating resources to economic productivity” (Drucker 1983: 5). He gives two reasons for this: first innovation itself will be reduced to routine as technological progress increasingly becomes the task of trained specialists whose work is more and more predictable. Second, personality and willpower will

count less because consumers will tend to accept what is offered to them (te Velde 2001: 3). In his own words:

“The management of industry and trade would become a matter of current administration, and the personnel would unavoidably acquire the characteristics of a bureaucracy. Socialism of a very sober type would almost automatically come into being. Human energy would turn away from business. Other than economic pursuits would attract the brains and provide the adventure” (Schumpeter 1942b: 131).

In this manner capitalism will be destroyed by the democracy it helped to create and inflationary pressure will destroy both democracy and capitalism. While, “for the calculable future this vision is of no importance” (Schumpeter 1942b: 131), it defines the central problem of free-market economics (Drucker 1983: 5).

5.3.4 Kirzner: the universal entrepreneur

Kirzner’s research was greatly influenced by the work of Mises, of whom he was a disciple. As he clearly explains in his book *Discovery and the Capitalist Process* (1985), he tries to create a view that lies between the neo-classical ideas of T.W. Schultz and the more advanced ones of Shackle.

Schultz viewed the entrepreneur as the agent with the function of “relocating resources under conditions of disequilibrium” in a world ruled by equilibrium (Kirzner 1985: 8). Shackle, departs from all other researchers and defines entrepreneurial activity as an action of choice, which “is an originitive and imaginative art” (Kirzner 1985: 9). Therefore, there is a limit to rationality and, choice and reason have different natures and functions. Reason doesn’t perform the selection. It serves the chosen purposes.

Kirzner (1985) proposes to accept the concept of equilibrium, augmented with the idea of human alertness to opportunities for pure profit. The combined result is entrepreneurial discovery. Decision is the sum of calculation and an entrepreneurial element which is creative. Calculation relates to a constrained maximization problem and has an allocative function (Kirzner 1985: 16). The entrepreneurial element results from the individual knowing that he is partially ignorant. This entrepreneurial element

is a scarce resource that needs special treatment. It cannot be stored and it is costless (Kirzner 1985: 18 – 24).

Kirzner (1985: 25) extends the idea to each human action, as a way for individuals to deal with uncertainty. The market process is thus driven by the entrepreneur, its leadership, alertness, initiative and drive. Its scope is defined by the possibility of discovering error.

He explained his concept of the entrepreneurial role twice. First, he defined entrepreneurship “in the simplest of contexts, i.e., in markets for single commodities, within a single time period”. Here the entrepreneur discovers “earlier errors made in the course of market exchanges” (Kirzner 1999: 6). These errors are the result of over-optimism or of over-pessimism in market transactions. Thus the entrepreneur starts with an initial state of disequilibrium and through noticing errors, moves “equilibratively to correct them” (Kirzner 1986-7: 26; 1999: 8).

Later Kirzner extended his model to the multi-period case, in order to consider uncertainty. In this case, he points out “entrepreneurial alertness must include the entrepreneur’s perception of the way in which creative and imaginative action may vitally shape the kind of transactions that will be entered into in future market periods” (Kirzner 1999: 10). For this a successful entrepreneur must have the characteristics of vision, boldness and creativity. These psychological qualities are necessary to effectively recognize future price differentials upon which profits can be made. But still the key element is to recognize arbitrage in all entrepreneurial activity, whether single- or multi-period. “The equilibrative properties of entrepreneurial activity still consist purely in perceiving price differences” (Kirzner 1999: 12).

Because he is ignorant, the entrepreneur cannot be sure of the correct framework for the calculating activity. Thus, he must choose it. Once he has formed a picture of the future, the entrepreneur acts, believing that his picture will approximate reality. Alertness is thus, the “man’s propensity to formulate an image of the future” (Kirzner 1985: 56). It gives man a framework that without it, he cannot act. Alertness is thus, the manner in which people deal with uncertainty, where the “future is unknowable but not unimaginable” (Kirzner 1985: 67).

Kirzner's concept of alertness can be explained as a propensity to problematize open possibilities. The underlying reason is that virtually all man's ideas are vague and therefore open up possibilities. Consequently, discovery creates a problem for the entrepreneur and in order to solve it, he must learn new things. When there are various open possibilities, the entrepreneur must choose, confronted with what Koppl calls a problematic possibility. Thus, entrepreneurship is about change in knowledge (Koppl 2002: 8 – 9). Kirzner's contribution has been to understand that any human action implies a prior interpretation of the environment (Koppl 2002: 13).

This entrepreneurial process has two meanings. In the short-run, it is competition. In the long-run, it is discovery, invention and innovation. This has great significance for the development of a nation's economy, which Kirzner defines as "the interaction of innumerable individual acts of mutual discovery" (Kirzner 1985: 71 - 72). In a closed world, economic growth depends on postponing resources that is on savings. In an open world, uncertainty plays a role and the mistakes of some players leave room for further discovery (Kirzner 1985: 80). In this way, entrepreneurs not only use dispersed knowledge, but they actually produce knowledge by transforming it from being at the individual level into a new form of quasi-knowledge that exists at market level (Koppl 2003: 8).

Thus, according to Kirzner, the entrepreneur has three principal activities (Kirzner 1985: 84 – 86; Lachmann 1986: 125 - 126):

1. Arbitrage: it is acting upon a price difference across space. It calls for no innovation.
2. Speculation: it is arbitrage across time. It also doesn't call for innovation.
3. Innovation: it is the creation of an output, method of production or organization. It needs creativity and imagination. The opportunity is created and it doesn't exist until that moment.

All three activities have some common characteristics: they involve alertness and knowledge of value, and are inspired by the motive of profit.

An example of entrepreneurial alertness is the case of the Grameen Bank in Bangladesh. This country has a population of more than one hundred million people

and the highest population density in the world. At the same time, it has one of the world lowest earnings per capita. A large part of its population lives on the bread line. Within this context Professor Yunus created the Grameen Bank, which at present has 13000 employees and three and half million debtors with an average loan-repayment rate of 98% (Yunus 2002: 1 - 2).

It started with loans for very poor people, no collateral was required. These loans were for small entrepreneurial projects, such as buying a cow and selling its milk. The result was that all money was repaid. Before this initial success Professor Yunus decided to continue with the project. Most loans are now given to women, mostly mothers who are usually illiterate. For cultural reasons, Bangladeshi banks would typically not lend money to women. The experience showed that the family would usually benefit more when money is lent to the wife than to the husband.

The impact on people has been immense. Infant mortality amongst the bank's clients has been reduced by 37 %. Almost 100% of the children of those families attend school (Yunus 2002: 9, 14). Loans have been extended to housing and studies. Many of its clients are former beggars. The bank accepts every person with a good project. The project is monitored and the entrepreneur is helped in its management. According to Yunus, the success is due to the fact that by empowering people through entrepreneurial activities, they feel proud of their achievements and want to continue performing. The loan allows them to take control of their lives (Yunus 2002: 8, 10, 17).

As Yunus summarizes it, this experience has taught us that our knowledge of human behaviour is poor and that every person has entrepreneurial potential. In addition it exposes the need to create an environment favorable to creativity (Note: this aspect is treated later in the section on entrepreneurship and context). And more importantly, that poverty perhaps exists because we don't want to eliminate it (Yunus 1997: 1-2; 2002: 11).

5.3.5 Comparison of Schumpeter's and Kirzner's entrepreneur

There seems to be an apparent contradiction between both authors' exposition of the entrepreneurial role (Kirzner 1999: 7). For Schumpeter, the essence of entrepreneurship is the capacity to break away from routine in a dynamically competitive process, which in essence means to disrupt equilibrium. For Kirzner, there is an initial state of disequilibrium that the entrepreneur corrects through his alertness, restoring the equilibrium situation.

Using the example of how the automobile industry disrupted the horse-drawn carriage industry, Kirzner (1999: 14) explains that there is a state of disequilibrium before the new industry appeared. Due to this disequilibrium state consumers were paying excessive prices for an inefficient transportation, production was inefficient and resources were misallocated. Therefore, we can recognize a coordinative quality in innovation and not a purely disruptive one as Schumpeter had claimed.

He concludes with four points, summarizing why both the disruptive and coordinative nature of innovation can be simultaneously accepted (Kirzner 1999: 16):

1. Schumpeter's description of the psychological profile of an entrepreneur is valid and accurate.
2. Schumpeter's portrayal of creative destruction as the essential feature of capitalism is valid and essential.
3. For the understanding of the equilibrative tendency of markets in general, Kirzner's view of alertness to opportunities is valid and significant.
4. Both views of the entrepreneur are not necessarily inconsistent.

5.3.6 Holcombe: the link between present and past entrepreneurial opportunities.

Holcombe (1998) extends Kirzner's ideas on entrepreneurship by linking present entrepreneurial opportunities to past entrepreneurship. He presents the question: "where do entrepreneurial opportunities come from?" His solution to this problem is that many opportunities are the result of the past actions of other entrepreneurs. Thus, entrepreneurship creates an environment that can breed more entrepreneurship.

According to Holcombe (1998: 54), opportunities have three sources. First, changes in the economic development of a society that result from entrepreneurship. Second, these changes create new opportunities for greater specialization. Third, they create market niches. Together they are the root for new entrepreneurial opportunities. He gives as an example the computer industry, where the development of the infrared mouse was based on the previous development of the mouse as a peripheral, which in turn was an improvement for the personal computer.

This important conclusion is criticized and extended by Boettke and Coyne (2003) who explain that entrepreneurship is so widespread that it can not explain by itself economic growth, as many countries with poor growth have entrepreneurial resources. Therefore they expand Holcombe's idea and explain that "development is caused by the adoption of certain institutions, which in turn channel and encourage the entrepreneurial effect of human action in a direction that spurs economic growth" (2003:3).

5.3.7 High: the entrepreneur as originator of institutions

High (2009) applies both ideas: he extends the concept of entrepreneurship beyond market boundaries and defines an entrepreneur as the originator of an institution such as the division of labor, monetary accounting and private property. His entrepreneur combines the properties of Mises', Schumpeter and Kirzner's definitions. From Mises, he considers the entrepreneur as a bearer of uncertainty inherent in every action. From Schumpeter he adds the introduction of a new combination and from Kirzner the alertness to opportunities for gain. The entrepreneur is therefore defined as someone who bears the uncertainty of action and who by means of his alertness to opportunities introduces a new institution.

High considers three steps in the formation of an institution, meaning the establishment of a common practice, as an entrepreneurial process. First, the introduction of a new practice by the entrepreneur. Second, other members of the group learn and judge the new practice. Third, early adopters implement the new practice through imitation and persuasion, establishing a new institution. He gives the example of a hunter who introduces a new weapon and becomes a better producer of

meat. Other hunters observe him and evaluate the new weapon. Once satisfied of its advantage the practice is extended to the whole community and a new institution is established.

In his study, High then proceeds to explain how the division of labour, monetary accounting and private property appeared thanks to the existence of some entrepreneurs who saw each of them as an opportunity to increase efficiency.

This extension, together with Holcombe's view of the entrepreneur, bears great importance in the development of a comprehensive economic theory as it allows for the explanation of different institutions that have appeared through time and history.

5.3.8 Consequences

5.3.8.1 *Entrepreneurship and ethics*

Kirzner (1979) explores the aspect of the morality of entrepreneurial profit. He bases his argument on the fact that “as the market process is one that is generated, at each and every moment, by entrepreneurial decisions” (Kirzner 1989: 18), justice of the entrepreneurial profit must “be judged against criteria appropriate to the context of discovery” (Kirzner 1989: 97). Therefore, he explains what he defines as the *finders-keepers* ethic. The real market is in a state of disequilibrium and an owner of a resource or of a commodity only possesses those aspects of it which he is aware of. The entrepreneur discovers a new element associated with that resource or commodity, which until discovered had not existed at all and therefore not possessed by anyone else. In his discovery, the entrepreneur sees additional unexploited value, which justifies his right to obtain profits out of it (Kirzner 1979: 211 – 214).

According to the Austrian school, a person should not be remunerated according to any concept of justice, because value and merit are two different things. Social justice should be based purely on the concept of individual merit and therefore has no specific meaning. In a market economy no rules of conduct should be imposed on distribution of wealth and nobody designs the final distribution, therefore, there is no concept of what is just or unjust. Distribution has to be abandoned to the market. The

idea of something just or unjust implies that the state of affairs has to be designed in a just manner, which in turn implies planning and the abolition of personal liberty (Hayek 1966: 188, 193). There is therefore no concept of welfare policy for the government.

However, the entrepreneur has a further role in this social model. As the history of the USA shows, successful entrepreneurs feel the moral obligation to return to society what society helped them to achieve. This has been the case of former millionaires such as Rockefeller, Carnegie and presently billionaires such as IT magnate Bill Gates and financial guru Warren Buffett (Loomis 2006a, b and c). Entrepreneurs like them have and are financing education, research and health programs. As Holcombe (2003: 22 - 23) explains, if welfare means making people as well-off as possible, then these contributions are important because they contribute to economic progress as a process and by bringing not only capital but also their corporate experience (Swaminathan 2008).

Social responsibility also relates to the actions of the entrepreneur. By recognizing discrepancies and acting to solve them, he shifts factors of production from other processes to the one he considers more profitable. Thus, he serves “the consumers by anticipating where the factors are more valuable” (Rothbard 2004: 2). If his vision is wrong, he will suffer losses. If proved right, his reward will be in the form of profits. The greater his profits, the more praiseworthy his role, because it implies that he has solved a bigger maladjustment. The greater the losses, the more he is to be blamed because of his contribution to maladjustment in the economy. Rothbard (2004: 3) indicates that the entrepreneur should not suffer other types of punishment but losses, because if he would have known better, he would have acted differently. In addition, as others didn’t act, they can’t be judges and punishers of his actions.

5.3.8.2 Entrepreneurship, economic progress and context

One important contribution of the Austrian school to economics is the difference between the concepts of economic growth and economic progress. Growth is the production of increasing amounts of output, and therefore a quantitative concept. On

the other hand, progress is “the substantial change in the qualitative nature of the economy’s output” (Holcombe: 2003: 5). Thus, it is the product of entrepreneurship.

Holcombe (2003, 5) gives some good examples: in the 20th century in the USA, life expectancy increased from 47 to 77 years; entertainment at the beginning of the century didn’t included movies or radio or television, but at its end the internet played a significant role; transport evolved to include the airplane and; the quality of work improved as people went from an average of 50 hours per week to 35 hours per week in an environment that is less dangerous and physically demanding. Accidental deaths decreased from 88 per 100000 to 34 per 100000.

All these contributed to a better quality of life and, more importantly, created new profit opportunities for entrepreneurs, revealing the pattern of entrepreneurial action as dynamic and interrelated. For example, improved means of transport changed the corner grocery – close to home – to the modern supermarket – far from home, but now reachable with the automobile.

In the classical view, product differentiation gives sellers some monopoly power, resulting in inefficiency for the economy. The Austrian view is different. Product differentiation gives consumers more variety to choose from and therefore opportunities for entrepreneurial profit. Even more, “product differentiation is the route through which innovation expresses itself” (Holcombe 2003, 20) allowing for improvements in the products available to consumers. These products are thus more specifically tailored to their particular needs.

Holcombe (2003: 20) mentions that Coc and Alm refer to this as “mass customization”, giving as an example in the case of the automobile industry where in the early 1970s customers could choose amongst 140 different models and 654 different styles. By the late 1990s, these values had increased to 260 and 1212 respectively. The result of product differentiation is therefore not increased inefficiency but economic progress.

Therefore, how can the entrepreneurial process be promoted? Holcombe (2003: 17) enumerates three key components that an environment friendly to entrepreneurship

must have: profit opportunities, easy recognizability of them and the incentive to act upon them. Kirzner (1985: 89) believes that policies should help to create this type of environment by affecting the entrepreneurial attitudes and character of a population, and should ensure that the entrepreneur can keep his profits. Thus, he proposes an open and free economic model with equal access to opportunity, which guarantees ownership rights and has stable institutional practices.

5.4 LATER STUDIES

5.4.1 Criticisms

5.4.1.1 Schumpeter's entrepreneur

Rothbard (1985: 285 - 286) criticizes Schumpeter's description of entrepreneurship. According to him, Schumpeter kept Walrasian equilibrium as a starting point, he assumed that tastes do not change and that resource supply remains substantially the same. Technological innovation was therefore the only factor that could be considered as a motor force for the economy (a change in technical knowledge or production function).

In addition, Schumpeter also rejected the concept of time preference (the difference in value between present and future goods of equal characteristics). Thus he concluded that in equilibrium the rate of interest, profits and losses are all zero. Therefore, in his model new projects could only be financed through inflationary credit and the function left for the entrepreneur was equilibrium disruption through innovation (Rothbard 1987: 101). He explained how the entrepreneur could find a way to return the economy to equilibrium, but he couldn't really explain why older firms could not correctly foresee. Finally, Schumpeter's model implies that innovations come in clusters, which empirical evidence does not bear out (Rothbard 1987: 103).

Therefore, Rothbard concludes, Schumpeter had found a fallacious way to break out the static Walrasian model, but his system has no relation to the real world (Rothbard 1987: 104). Rothbard adds that in a market economy all prices and activities interact

and “there therefore can never be any hermetically sealed cycles” (Rothbard 1987: 104).

Steyaert (2005: 9) explains that Ögbor, through his ideology critique of entrepreneurial studies, has found that sometimes Schumpeter’s ideas have been referred to without proper understanding. For instance, Schumpeter erased some parts of his writings in later editions, because they were initially ill-received, but today those passages could instigate renewed interest in entrepreneurship.

Te Velde (2001) disagrees with Schumpeter’s idea that the entrepreneur will disappear with time. Her point is that “the ever increasing rate of scientific and technological development has only increased general feelings of uncertainty” (te Velde 2001: 3). This is because the complexity of the present knowledge-based economy brings more ignorance in each individual, creating a situation of higher risk. She concludes that if ever there was a need for entrepreneurship, it is now. She refers to studies by Mark Elam and Michael Polanyi (te Velde 2001: 15) that concluded that any new combination in this technological era requires vast amounts of information and skill, in turn requiring bigger amounts of trust because we have to rely on personal knowledge and in collective entrepreneurship (te Velde 2001: 17).

Kirzner (1999: 8, 16) considers Schumpeter’s use of language confusing. He explains that it obscures that “entrepreneurial activity is, after all (and most significantly) stimulated and motivated by the possibility of winning pure profit ... the entrepreneurial activity with which he is dealing with is, at a deep level, responding to the conditions of the market” (Kirzner 1999: 16). In this manner Schumpeter’s exposition create the wrong impression that a state of equilibrium can establish itself without any social device to manage the scattered information available.

5.4.1.2 Kirzner’s entrepreneur and the finders-keepers principle

Rothbard (1985: 282 - 284) criticizes Kirzner’s definition of entrepreneurship. According to him, it focuses on the quality of alertness and not on uncertainty bearing as Mises’ concept did. In reality a profit opportunity is uncertain and something as

simple as alertness is not enough to exploit it. Besides if the entrepreneur faces no risk, he cannot suffer any losses or gain any profit.

Rothbard (1985) continues by explaining that Kirzner's ideas were a reaction to Lachmann and the result of a lack of clarity in Mises' *Human Action*, where Mises sometimes portrays the entrepreneur as a separate entity and not just as a forecasting capitalist. Böhm-Bawerk, Rothbard says, defined the entrepreneur more clearly by describing him as the capitalist.

Similarly, Salerno (2008) criticizes Kirzner's entrepreneur and calls it an imaginary construction. He explains that considering the entrepreneur as a risk-bearer who has no means is too theoretical and therefore he proposes a more realistic view where the entrepreneur is also a capitalist and property owner.

Burczak (2002: 75) criticizes Kirzner's finders-keepers defense of profit on the grounds that Kirzner's argument is not supported by the juridical principle of imputation. This principle holds that people should be held legally responsible for the actions for which they are factually responsible. This principle is based on the labour theory of property by David Ellerman. Therefore if Kirzner based entrepreneurial profit legitimacy on wage-for-labour change as legitimate, this is only possible if workers are not responsible while employed by the entrepreneur, proposition which contradicts the principle of imputation.

Kirzner (2002: 92) replied to Burczak by saying that the entrepreneurial element is in every human action and decision, including the choice to supply labour services. Kirzner thus argues that not giving labour this responsibility is the same as treating it as a thing. Burczak (2002: 82) mentions that Prychitko extended this idea by considering that individuals are self-managed firms, who sell the products of their labor efforts to the highest bidder they can discover.

The second aspect of Kirzner's thought that Burczak criticizes is the idea that in a market economy everyone has, in principle, an equal opportunity to be an entrepreneur, that is, markets do not systematically discriminate amongst types of borrowers. But according to Burczak, this idea goes against models of credit rationing

that demonstrate that the market discriminates based on collateral capacity, regardless of the interest rate that the aspiring lender is prepared to pay. Asset neutrality is therefore not a reality, due to market imperfections as for example Stiglitz and Weiss showed (Burczak 2002: 85). This model shows that asymmetric information may prevent the interest rate from equilibrating the loan market because banks care about both the interest rate and the expected return of loans. Therefore wealth holders have an advantage and entrepreneurial profit also includes a reward for this wealth.

Burczak (2002: 86) mentions that Kirzner's answer is that even though credit markets are imperfect, most theories of financial markets ignore transaction costs, which are considered by the entrepreneur. In addition, Kirzner explains that if capital is indispensable to obtain pure profit, profit is then reclassified as a return on capital and Burczak's critique does not relate to the justice of pure entrepreneurial profit. If capital is not an indispensable factor, then profit can be found, or created by the entrepreneur alone. He gives an example of a person who finds a valuable flower. In this case, "the presence of such differential advantage does not eliminate the finders-keepers basis for the justice of profit gained" (Kirzner 2002: 93 -94).

Burczak (2002: 89) concludes that the government has an important role in redistributing wealth, in order to make entrepreneurial opportunities more available to all.

5.4.1.3 Entrepreneurship, economic progress and context

The situation is however different in underdeveloped countries. Kilby's (1971) pioneering research on entrepreneurship in developed and underdeveloped countries reveals that in developed countries, because they have a stable socio-political environment, good entrepreneurial talent is in ample supply. As most research has been done in developed countries, the focus is on opportunity identification and resource assembly rather than entrepreneurial talent. By contrast, Kilby (1971) found that in developing economies, West Africa in particular, that there is a need to create those elements of the socio-political-legal structure that facilitate the development of entrepreneurship. As a result, in addition to sound managerial skills, people somehow

need the ability to fulfill this entrepreneurial role, in order to launch productive business (Jones and Wadhvani 2006: 21).

Of interest is also the work of Jalloh (1999) who studied the Fula community in Sierra Leone. This community is economically successful in a Christian dominated environment in spite of being marginalized, immigrant and Muslim. In his book Jalloh emphasizes kinship relations, political activity and Islam as the key factors for their success. Islam provided a set of values that helped solidify group relations and enforced oral contracts within the community. In addition the Fula maintained a policy of supporting the government in power in order to gain economic advantages. However, these kinship ties have also prevented the Fula from creating large-scale industries as information is rarely shared outside the group.

Similarly a study by Muhanna (2007: 2) about the determinants of successful entrepreneurship in the South African context found that social networking plays a very large role in the determinants of successful entrepreneurial behavior: those individuals whose relatives and childhood friends are entrepreneurs are more likely to be entrepreneurs. He adds as further contributing factors, academic success, educational background and personal confidence.

Education and self-confidence are also found as the main constraint in a study on entrepreneurship in Swaziland (Sherief 2008: 9). Regarding self-confidence, Sherief explains that the focus should move away from poverty alleviation to wealth creation, because poverty alleviation centers on the negative aspects of life and promotes a paternalistic attitude. This researcher finds this difference very important. A focus on wealth creation can help promoting entrepreneurship and as a consequence economic progress.

Alvord et al. (2003: 146) also refer to education and the understanding of the political context as critical factors in social entrepreneurship. They point out that in their research all successful programs were initiated by highly educated individuals and supported by the political establishment. For example the Grameen Bank in Bangladesh was an economics professor with strong government ties, the Plan Puebla in Mexico created by university researchers only succeeded once they could involve

the government and, the Self-employed Women's Association in India, which was founded by a high cast and trained lawyer who had relationships with key political leaders.

Moreover, Christy and Dassie (2000: 18) in their research on economic development based on entrepreneurship with reference to poor African-Americans, found home-ownership as important a factor as education.

Malecki (1997; 2007) and Nijkamp (2009) identify networking as a key aspect of favourable entrepreneurial environments. In addition, within that network, the existence of a strong entrepreneurial tradition is very important. This tradition is represented by the presence of family businesses and entrepreneurial role models in the community and the existence of government incentives to start new businesses. They propose that pipelines to external knowledge can be created through the exposure of communities to universities and venture capitalists and explain that with the advent of the internet, networking is faster and more technology driven. This researcher finds this proposal very important. As the case of the Grameen Bank in Bangladesh shows, exposure is a significant factor in promoting entrepreneurship, particularly amongst the less educated.

Although the USA is not a developing economy, John (2000: 96) also mentions political connections as an important factor in the entrepreneurial success of Theodore Vail at Bell System and AT&T. He explains that Vail "encouraged state legislatures and state regulatory commissions to mandate high technical standards", which in reality created barriers for smaller competing companies. This factor is probably connected to Baumol's research on entrepreneurship and the wrong context.

Baumol (1990) interestingly suggests that, in the wrong context, entrepreneurship can also have negative effects. In order to show this, he proposes the hypothesis that the contribution of entrepreneurship to society is a function of its allocation between productive / unproductive activities. That is, it is a function of the rules of the game in the respective society (1990: 893). This follows from the fact that private enterprise is not really directed towards innovation but to profit. Therefore, if a society rewards activities orientated towards for example organized crime, entrepreneurs will go to

such activities. The result will be that entrepreneurial activities will be diverted to other non-productive efforts and their productive contributions get lost.

Therefore, Baumol's (1990) research extends Schumpeter's theory of entrepreneurship by adding some more types of entrepreneurial activities. Innovation can be seen in for example a legal trick that allows for tax evasion. This new list includes activities that may be of questionable value for society. Entrepreneurship is thus defined as a pursuit of position, be it through power, prestige or wealth (Baumol 1990: 909).

Baumol studies this hypothesis in an historical context. First, he explains that in Ancient China, because the monarch owned all the resources, ordinary people would prefer to belong to the state bureaucracy in order to climb in the social ladder (Baumol 1990: 1 – 2). Similarly, in Ancient Rome, the three honorable sources of income were: landholding, usury and political payments (Baumol 1990: 899). Thus, even though technologies such as the steam engine were already known in Alexandria, Rome made no use of them in an industrial manner, as industry didn't lead to upward social mobility (Baumol 1990: 910).

During the middle ages, wealth and power were pursued mainly through military actions, leading to innovations such as the crossbow, the long bow and gun power (Baumol 1990: 903 – 4). Later, with the revival of towns, architecture and engineering became the main source of wealth. In present times, he mentions rent seeking as unproductive, as for example activities of litigation and tax evasion result in more lawyers and accountants than engineers.

5.5 CONCLUSION

This chapter is the core of this thesis. It traces the history of the concept entrepreneur from its origins to the views of Schumpeter and Kirzner. Perhaps it is important to stress Kirzner's comparison of his view on the entrepreneurial role with Schumpeter's, which shows that both are valid and that viewing the situation as disruptive or constructive are just two sides of the same coin.

Thus, by considering both views, the Austrian entrepreneur becomes a very comprehensive concept. Not only big entrepreneurs such as Henry Ford or Bill Gates are considered in this model, but also the small business man, as the Grameen Bank of Bangladesh experience shows, with both types contributing to economic growth in the short-term through competition and, in the long-term, through innovation. Entrepreneurship is therefore a lasting contribution of the Austrian school to economics science.

The following chapter studies some cases of entrepreneurship that have shaped our modern times. Each is a story in itself and could be described as a case of “creative destruction”. Each shows the special alertness and will to achieve described in this chapter.

CHAPTER SIX

CASE STUDIES

“Some people dream of great accomplishments, while others stay awake and do them” (Anonymous).

6.1 INTRODUCTION

After explaining the Austrian model in the previous chapters, the focus of this section is to demonstrate that the philosophy and methodology of Austrian ideas about entrepreneurship in the economic market are borne out by reality. The contribution of history to the study of entrepreneurship and the characteristics of the entrepreneur in the modern environment will be explained, followed by an analysis of some of the most important paradigms of IT development, namely the cases of IBM and the mainframe, Microsoft and the PC, Google and the search engine, and finally Facebook and the internet social network. In each case, the revolution in the market created by a visionary entrepreneur is identified.

6.2 HISTORY AND THE STUDY OF ENTREPRENEURSHIP

A review of historical literature reveals that history has always played a major role in studies on entrepreneurship. Jean B. Say cited the case of the English textile industry's dominance over the Belgian wool and German cotton industries during the eighteenth century in order to explain the difference between scientific ability and entrepreneurial skills. Schumpeter also explained that research on entrepreneurship should include a study of the structure of and changes in the industries, markets, societies, economies and political systems in which entrepreneurs operate. Schumpeter even attempted to write his own history of entrepreneurship (Jones and Wadhvani 2006: 4 - 6).

Schumpeter's writings on the entrepreneur inspired a group of economic historians in the 1940s, led by Harvard scholar Arthur Cole. Later, Thomas Cochran, under the influence of Talcott Parsons, added a sociological framework to the study of

entrepreneurship (Jones and Wadhvani 2006: 7). As this school didn't produce anything of significance, most research in the 1960s shifted towards the study of organisations and the role of entrepreneurs within those organisations. In the 1970s, research on entrepreneurship was mostly pursued by sociologists, psychologists and a few economists who concentrated on the key traits associated with entrepreneurship. In the late 1970s Mark Casson attempted to relate entrepreneurship to historical patterns of development (Jones and Wadhvani 2006: 8 - 11).

Later developments were mostly from management scholars who searched for the personality characteristics of the entrepreneur. The more recent studies centred on an evolutionary approach, and have subsequently created a renewed interest in history, showing a potential for integration of historical and theoretical studies. Some emerging fields include international entrepreneurship and e-entrepreneurship. Path dependency, defined as the fact that variations in the historical context create fundamental variations of entrepreneurial behaviour have also emerged as an important concept. All these facts have prompted Jones and Wadhvani to conclude that the merging of history and theory holds a lot of promise for future research (2006: 29)

6.3 THE MODERN ENTREPRENEUR

Te Velde (2001) looks at the characteristics of the present day entrepreneur. Firstly, the modern IT entrepreneur must obtain the commitment of other people. Since high levels of skill are required, shared commitments are necessary, which in turn make high demands on mutual trust. The entrepreneur must thus act "as a guarantor for certainty and as a focal point of trust" and he / she must convince all parties involved that it "can really be done". This aspect of entrepreneurship was already acknowledged by Schumpeter (te Velde 2001: 16 - 17).

The entrepreneur's challenge is thus to acquire the necessary resources and manage these expectations. There are therefore two dimensions to the entrepreneurial function: the rhetorical (expectations: "this technology holds great promises") and the material (actual development) (te Velde 2001: 19). The difficulty for the entrepreneur is to create the critical mass needed to get the innovation going (material), without

losing the support of his sponsors (rhetorical). The art of entrepreneurship consists in keeping both aspects aligned.

Te Velde concludes that the primary function of the entrepreneur is to construct a rhetorical track for new combinations. Thus the material track supports the rhetorical one. Technological progress is therefore the result of the proper management of expectations. Economic growth is not driven by capital but by psychological phenomena (te Velde 2001: 22 - 23).

6.4 COMPETITION IN THE KNOWLEDGE ECONOMY

While the information age has defined new ways of doing business, “the fundamentals of competition remain unchanged.” (Porter 2001: 78). Market participants must still start with the right goal, deliver a different benefit from those that the competition offers and accept trade-offs in the product and the value chain, which will make a company distinct and unique among its peers, etc. (Porter 2001: 71). Based on this, the information industry has created new substitutes, increased the number of competitors and reduced costs.

The following four case studies defined the modern information industry: from the mainframe which changed the way big firms do business, to the global village exemplified in the social network of Facebook; passing through the advent of the PC in the household and the development of search tools. As Chandler and Cortada explain (2000: 288 – 289), the key to their successes can be summarized as follows: a system embedded in large business enterprise.

6.5 DEFINING MOMENTS IN THE IT INDUSTRY

6.5.1 IBM and the mainframe revolution

According to their provided information (IBM 2007) the IBM revolution dates back decades before the development of electronic computers to Herman Hollerith (1860 – 1929), a German-American businessman and engineer who created the foundations of

what later was to become International Business Machines Corporation, more commonly known as IBM.

Hollerith's key idea was that data could be coded numerically by punching numbers in specific places on a card. Then, with the aid of a device the information on these cards could be read, counted and sorted. He patented it on January 8, 1889 as a "method of compiling statistics". He later built machines for the US Census Bureau, which used them during the 1890 census. The difference was substantial: while the previous 1880 census had taken eight years to process, the work could now be done in only one year. Thus, his invention became the foundation of the modern information processing industry. In 1911 he merged his company with three other firms. The new firm, under the leadership of Thomas J. Watson, was renamed International Business Machines Corporation or IBM in 1924. The new company manufactured several products including employee time-keeping systems, weighing scales, automatic meat slicers, and punched card equipment. During his tenure, Watson was central in shaping what would become the IBM culture. Years later, during World War II, IBM built the Harvard Mark I, the first automatic digital computer. During the 1950s it became an important contractor for developing computers for the US Air Force's automated defense systems. Later IBM built the SAGE computer which included video display, magnetic core memory, an algebraic computer language, and digital data transmission over telephone lines and networks. A single such computer cost \$30 million. With this experience IBM later designed its successful SABRE airline reservation system and established itself as the largest computer manufacturer.

However, the big break came with the advent of the System/360, the IBM mainframe, which defined IBM as the survivor in the computer business, producing more than 70% of all computers in 1964 and changing the way big firms operate. Its main competitors UNIVAC, Burroughs, NCR, Control Data Corporation, General Electric, RCA and Honeywell gradually shrunk or disappeared from the market. NCR and Honeywell dropped out of the mainframe business, NCR going into cash registers and Honeywell into thermostats.

Key to the success of the IBM System/360 was that it differentiated between architecture and implementation, which allowed the company to sell a family of

compatible designs at different prices. Customers could now start with small systems, knowing that they could upgrade to larger systems which used the same operating software and had the same software applications (Chandler 2000: 28). In addition, IBM started to differentiate between sales and production and introduced the concept of leasing the computers instead of selling them. This flexibility gave IBM a market advantage over its competitors, whose clients had to choose between machines that they would outgrow and machines that were oversized and unnecessarily expensive. The person behind this idea was Gene Amdahl (1922 -), a Norwegian-American computer architect and hi-tech entrepreneur (IBM 1964; Amdahl 1964).

6.5.2 Microsoft and the PC

Because IBM was focused on the mainframe computer business and Digital Equipment Corporation (DEC) on low cost minicomputers, they did not realize how the market was turning to the PC (Holcombe 2003: 13).

This opportunity was fully taken by Bill Gates of Microsoft. Gates (2006) explains how he and Microsoft co-founder Paul Allen realized that what was necessary to create software for the PC was a platform suitable for both household and office that would allow programmers to produce “truly useful products on a commercial scale.” Their solution was Microsoft BASIC, which provided the common foundation that enabled programs developed for one set of hardware to run on another. BASIC also made computer programming much easier, which brought more people into the industry (2006: 3).

The second turning point was MS DOS. Gates did not have a definite study plan while a student at Harvard, and thus took a leave of absence in 1975. After Intel released the Intel 8080 CPU, he realized that this was the first computer chip that cost less than \$200 and that could run BASIC. He seized the opportunity and decided to start a computer software company with his friend Paul Allen (Gates 1996: 18).

In 1980 IBM approached Microsoft to design the BASIC interpreter for its PC. Gates referred them to Digital Research (DR) and their CP/M operating system. IBM's negotiations with Digital Research didn't go well and during a subsequent meeting

Gates proposed that IBM use 86-DOS (QDOS), an operating system similar to CP/M. Microsoft made a deal with Seattle Computer Products (SCP) and became the exclusive licensing agent, and later the full owner, of 86-DOS. After adapting the operating system for the PC, Microsoft delivered it to IBM as PC-DOS. Gates insisted that IBM let Microsoft keep the copyright of the operating system, because he believed that other hardware vendors would clone IBM's system. This was his stroke of genius and made Microsoft a major player in the software industry.

The third key idea was its Windows concept, which commercialised an idea already developed at the R&D section of Xerox Corporation. Steve Jobs from Apple Computer incorporated the idea in his products but it was Microsoft who saw the business opportunity. At that time, IBM was developing OS/2 and AT&T together with Sun Microsystems, Xerox and other firms were creating a friendlier version of Unix. Hewlett-Packard and Digital Equipment Corporation (DEC) were introducing their own versions of Unix.

Faced with this situation, Gates's strategy was six fold:

- he continued investing in MS-DOS, because it still had a big customer base;
- he created a joint-venture with IBM for the development of OS/2;
- although he saw Unix as a lesser threat, he held discussions with several firms on Unix development projects. This gave him an updated picture of where the market was going and kept him in the game in case Unix was the winner;
- he bought a major stake in Santa Cruz Operation, the largest seller of Unix for PCs;
- he continued to develop applications such as Excel and Word; and
- he made a major investment in Windows (Beinhocker 2006: 334 – 336).

In this manner, he created a plan that covered him against any eventuality. Although he was criticised at the time for not having a clear strategy, his approach proved successful. Today Microsoft Windows is practically on every PC. To this day Microsoft continues with this approach, having a portfolio of investments that include the web, corporate computing, home entertainment and mobile devices.

6.5.3 Google and the search engine

“That the company’s name has become a verb in English, German, and other languages is testament to its pervasive influence on global culture” (Vise and Malseed 2006: 7). This statement underlines how Google has become synonymous with search engines on the internet, completely displacing its competitors such as Infoseek, Lycos, AltaVista and several other smaller players.

The history of this phenomenon started in 1995 when its founders Larry Page and Sergey Brin were doing their Ph.D. research at Stanford University in California, USA. They realized that the deficiency of search engines resided in their lack of classification. The result of a search was a set of links, which were unrelated and not properly ranked. Borrowing an idea from scientific papers, whose importance is enhanced by how many times they are referred by other publications, they hypothesized that they could rank the importance of websites according to how many links to the page existed in the internet. This idea laid the foundation for their search engine (Brin and Page 1998: 4).

In addition, they kept the design of the page simple, which attracted “users hunting for information”. “It stood in marked contrast to the growing number of busy-looking Internet pages with flashy ads and crowded graphics and type. Because it didn’t feel as though Google was trying to sell anything, people took ownership of the search engine and more readily adopted it as their own” (Vise and Malseed 2006: 39-40). In this way, Google revolutionized search technology by focusing on the user.

The second thing that Page and Brin did was to have a demonstration of their idea after it was already in use at Stanford University. In this manner they made a big impression on Andy Bechtolsheim, a venture capitalist, who had seen many ideas in PowerPoint presentations. He immediately “wrote a check made out to Google Inc. for \$100 000” (Vise and Malseed 2006: 48). This was the beginning of their commercial venture.

In addition, they took some important decisions. First, they used many computers instead of one big mainframe. This allowed them to have more processing power at

much lower cost. Second, they used the open source operating system Linux, which is free. These savings gave Google a significant advantage over its competitors. And third, they ranked the appearance of advertisements according to relevance. This concept let them add advertisements to the search, but in a manner that didn't seem intrusive to users and were related to their searches (Vise and Malseed 2006: 79).

Thus, they created a business model that included a sound search technology and a clean page. Their services are provided for free and they make profits by selling advertisements. The result has been the fastest, largest and most comprehensive search engine and a fortune for their founders.

6.5.4 Facebook and the internet social network

Facebook is a social networking internet site. It was created in February 2004 by Mark Zuckerberg, together with Andrew McCollum and Eduardo Severin, and designed to connect users. The website's name refers to the paper facebooks used by some American colleges to help students and staff to get to know each other.

Facebook allows users to create profiles with their personal interests, pictures and anything else users want to post on them. Each of these pieces of data is a link that connects the user to other users who have posted similar information. Most users are students. The appeal is broad. There are groups of Jazz aficionado's, scientists, etc.

Initially access was limited to Harvard students and later expanded to other colleges in the Ivy League. In September 2005 it was launched as a high school version. It was subsequently opened to employees of several companies such as Apple and Microsoft. On September 26, 2006 it was opened to everyone with a valid e-mail address and aged over 13. The site has been blocked in various countries such as Syria, China and Iran. In October 2007 Microsoft paid 240 million dollars for a share stake (Microsoft 2007). In November 2007, Hong Kong billionaire Li Ka-shin invested \$60 million in it (Tehran Times 2007).

Facebook is free to users and generates revenue from advertising. Microsoft is Facebook's exclusive partner for banner advertising. In February 2007 it added Gifts,

which allows users to send virtual gifts to their friends and in May of the same year it added Marketplace, which allows users to place free advertisements. Several applications have been created, including games such as chess and Scrabble (Facebook 2010; Brophy-Warren 2007).

By May 2008, the site had attracted 123.9 million unique visitors and 14 million photos were uploaded daily onto the site (Sorensen 2008). It currently ranks amongst first ten top Internet sites (Quantcast 2010; Alexa 2010). Facebook won awards from PC Magazine (PC Magazine 2007) and from Webby Awards (International Academy of Digital Arts and Sciences 2008). It ranks second after iPod as the most popular things among undergraduates.

The genius of Mark Zuckerberg was to design a site that encourages people to discover who they are and how they relate to others by facilitating niche relationships that make people feel like they belong and are accepted.

However it has presented several downsides such as “Facebook addiction” – people spending many hours a day updating their pages and looking for people -, lack of discretion when presenting others and an excessive desire to show a high number of connections because it is considered a measure of personal popularity.

6.6 CONCLUSION

As Jones and Wadhvani (2006) explain, history can contribute to the understanding of entrepreneurship. With this in mind, chapter 5 presents some very important players who shaped the development of computers, their software and the internet. Hollerith redefined the information processing industry. Not only did he have a technically creative mind but he also interpreted a need in the market. It took IBM more than half a century to find another visionary in Gene Amdahl, who realized the importance of portability in the computer mainframe market.

Years later, IBM was beaten by Bill Gates’ Microsoft. His profound technical insight – a common development platform for all types of hardware – and his seizing the opportunity presented to him, defined our modern times. Today most houses and

companies in developed countries make use of his software. His dominance in the desktop environment is almost unchallenged.

But he also found his match in Google. Paradoxically, Google's idea was born in a building for graduate studies at Stanford University donated by Microsoft. Page and Brin not only showed research genius but also pragmatic business minds that resulted in the word google to be today synonymous with search. Once again, as previously had been the case with IBM's mainframes and Microsoft software, customers voted by using their product.

Facebook is perhaps too recent a case to judge. However its impressive market capture and its redefinition of social relationships are also an example of creative destruction.

All cases present business savvy people that have interpreted the needs of a market and have used their opportunities to enrich themselves. All have altered the way business is done and the way economic value is created. The result is a more conceptual than physical output, capitals moving to more cutting-edge technologies, and creating a process of creative destruction as defined by Schumpeter and an expansion of knowledge that has altered the way production is done (Greenspan 2000a, b and c).

CONCLUSION

The richness of the Austrian model resides in the fact that it offers a comprehensive view of how economic processes occur. This comprehensiveness is due to the fact that Austrian economics starts with the concept of the individual that has two main characteristics: it is unique in its capacity to impute value and, to a certain degree, it is both rational and irrational.

The Austrian view is enhanced with the description of two institutions: society and the market. The first explains how humans cooperate and, by doing that, how they form a collective. The second specifies a particular form of human cooperation, namely concerning commercial transactions.

Furthermore, the Austrian model is completed with the addition of the entrepreneurial function, which explains how change occurs within the market. This function is very inclusive in that it considers changes at different levels: entrepreneurs can be innovators on a grand scale as in the view of Schumpeter, or they can introduce more ordinary market alterations as in the view of Kirzner.

For these reasons, the distinctive feature of this Austrian view, and by consequence the importance of this study, is that it creates a framework for a precise analysis of economic processes which can accommodate many different cultural or social settings and yet, as the case studies showed, maintain a large degree of realism.

FINAL WORDS

Vernon Smith said that after finishing his PhD in Economics he realized that he didn't understand how markets behaved. This prompted him to do the experimental work that resulted in his Nobel Prize in economics in 2002. What he saw in his laboratory is what motivated him to read Hayek seriously. According to him Hayek had described the use of knowledge, self-organization and more importantly the fact that "an economist that is only an economist cannot be a good economist" (Smith 2005: 141).

The road travelled through this thesis taught me exactly that. As Hayek explained, the problem of specialization is that it is very easy for us to believe that we are right and we can see things better (Smith 2005: 143). Often our actions have unintended consequences and make things worse. In teaching me this, the Austrians scholars showed me that somehow we are in a situation where we have no choice but to open our minds to other disciplines and ideas.

BIBLIOGRAPHY

- Alexa. 2010. "Facebook.com". Available at http://www.alexa.com/data/details/traffic_details/facebook.com?q=facebook Accessed on 8th February 2010.
- Alvord, SH et al. 2003. "Social entrepreneurship. Leadership that facilitates societal transformation. An exploratory study", Working paper, Center for public leadership, John F. Kenney School of Government, Harvard University. Available at <http://contents.ksg.harvard.edu/leadership> Accessed on 2nd June 2009.
- Amdahl, G.M et al. 1964. "Architecture of the IBM System/360", IBM Journal of Research and Development, volume 8, number 2. Available at <http://www.research.ibm.com/journal/rd/441/amdahl.pdf> Accessed on 20th August 2008
- Angner, E. 2002. "The history of Hayek's theory of cultural evolution", Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences, 33(4): 695-718. Available at <http://www.dpo.uab.edu/~angner/pdf/hayekcarrsaunders.pdf> Accessed on 16th July 2008.
- Asimov, I. 1987. *Asimov's new guide to science*. London: Penguin Books.
- Austrian Economics Newsletter (AEN). 1978. "An interview with Ludwig Lachmann", The Austrian Economics Newsletter, Fall 1978, volume 1, Number 3. Available at <http://mises.org/journals/aen/lachmann.asp> Accessed on 1st October, 2008.
- Backhouse, R.E. 2002. *The Penguin history of Economics*. London: Penguin Books.

- Bank of Sweden. 1974. "The Sveriges Riskbank prize in Economic sciences in memory of Alfred Nobel 1974". Available at http://nobelprize.org/nobel_prizes/economics/laureates/1974/index.html . Accessed on 4th Jan 2008.
- Barreto, H. 1989. *The entrepreneur in microeconomic theory. Disappearance and explanation*. London: Routledge.
- Basu, K. 2005. "Methodological individualism", unpublished paper. Available at http://instruct1.cit.cornell.edu/courses/econ610_backup_20080807ckp2/basu.pdf Accessed 26th August 2008.
- Batemarco, R. 1985. "Positive economics and praxeology: the clash of prediction and explanation", *Atlantic Economic Journal*, July 1985, volume XIII, number 3: 31 – 37.
- Baumol, W.J. 1990. "Entrepreneurship: productive, unproductive and destructive", *Journal of Political Economy*, volume 98, number 5: 893 – 921. Available at http://www-econ.stanford.edu/academics/Greif_228_2007/Baumol%201990%20JPE%20Entrepreneurship.pdf Accessed on 6th October 2008.
- Beinhocker, E.D. 2006. *The origin of wealth*. Boston, MA: Harvard Business School Press.
- Birner, J. 1995. "The surprising place of cognitive psychology in the work of F.A. Hayek", Research Memoranda 019, Maastricht: METEOR, Maastricht Research School of Economics of Technology and Organization. Available at <http://ideas.repec.org/p/dgr/umamet/1995019.html> Accessed on 16th January 2008.
- Birner, J. 1996." Mind, Market and Society in the Work of F.A. Hayek", CEEL Working Papers 9602, Computable and Experimental Economics Laboratory,

Department of Economics, University of Trento, Italia .Available at
<http://ideas.repec.org/p/trn/utwpce/9602.html> Accessed on 6th June 2005.

Block, W. 1988. “On Yeager’s ‘Why subjectivism?’”, The Review of Austrian Economics, volume II, number 1: 199 – 208. Available at
http://www.mises.org/journals/rae/pdf/rae2_1_12.pdf Accessed on 10th May 2007.

Boettke, P.J. 2002. “Information and knowledge: Austrian economics in search of its uniqueness”, The Review of Austrian Economics, 15:4: 263-274. Available at
http://www.gmu.edu/rae/archives/VOL15_4_2002/boettke.pdf Accessed on 16th September 2008.

Boettke, P.J. and Coyne, C.J. 2003. “Entrepreneurship and development: cause or consequence?” Advances in Austrian Economics, volume 6: 67 – 87.

Böhm-Bawerk, F. 1891. “The Austrian economists”, Annals of the American Academy of Political and Social Sciences, volume 1. 1981. Available at
<http://socserv.mcmaster.ca/econ/ugcm/3113/bawerk/austrian> Accessed on 18th August 2008.

Brin, S. and Page, L. 1998. “The Anatomy of a Large-Scale Hypertextual Web Search Engine”, WWW7 / Computer Networks 30(1-7): 107-117. Available at
<http://infolab.stanford.edu/pub/papers/google.pdf> Accessed on 8th February 2010.

Brophy-Warren, J. The Wall Street Journal, 13 October 2007. “Networking Your Way To a Triple-Word Score”. Available at
<http://online.wsj.com/article/SB119222790761657777.html> Accessed on 6th August 2008.

Burczak, T. 2002. “A critique of Kirzner’s finders-keepers defence of profit”, The Review of Austrian Economics, 15:1: 75-90. Available at

http://www.gmu.edu/rae/archives/VOL15_1_2002/4_burczak.pdf Accessed on 16th September 2008.

Butos, W and Koppl, R. 1997. “The varieties of subjectivism: Keynes and Hayek on expectations”, *History of Political Economy*, 29(2): 327-359. Available at <http://129.3.20.41/eps/mhet/papers/9505/9505001.pdf> Accessed on 3rd June 2009.

Canterbury, E. 2002. *A brief history of Economics*. Singapore: World Scientific Publishing Co. (Pty). Ltd.

Caldwell, B.J. 1984. “Praxeology and its critics: an appraisal”, *History of political economy* 16, 3.

Chafuen, A.A. 1997. “The origins of market economics”, paper presented at The Philadelphia Society Annual Meeting, April 26, 1997. Available at <http://www.phillysoc.org/chaf97.htm> Accessed on 11th February 2009.

Chandler, A.D. Jr. 2000. “The information age in historical perspective”, in Chandler, A.D. Jr. and Cortada, J.W. (eds), *A nation transformed by information*: 3 – 37. New York: Oxford University Press.

Chandler, A.D. Jr. and Cortada, J.W. 2000. “The information age. Continuities and differences”, in Chandler, A.D. Jr. and Cortada, J.W. (eds), *A nation transformed by information*: 281 – 299. New York: Oxford University Press.

Chandler, A.D. Jr. 2001. *Inventing the electronic century. The epic story of the consumer electronics and computer industries*. New York: Free Press.

Christy, R.D. and Dassie, W. 2000. “Entrepreneurship-centered economic development: analysis of African American entrepreneurship in the Southern Black Belt”, TVA Rural Studies Program, Contractor paper 00-10. Available at <http://www.rural.org/publications/reports.html> Accessed on 2nd June, 2009.

- Cox, M.W. 2001. "Schumpeter in his own words", Economic insights, Federal Reserve Bank of Dallas, volume 6. number 3. Available at <http://www.dallasfed.org/research/ei/ei0103.pdf> Accessed on 9th Feb 2009.
- Dempsey, G.T. 1996. "Hayek's evolutionary epistemology, artificial intelligence, and the question of free will", Evolution and Cognition, 2: 139-150. Available at <http://www.cat.org/pubs/wtpapers/hayekee.html> Accessed on 25th November 2004.
- Dolan, E.G. 1976. "Austrian economics as extraordinary science", in Dolan, EG. (ed.), *The foundations of modern Austrian economics*: 3 - 15. Kansas City: Sheed and Ward. Available at: <http://www.econlib.org/library/NPDBooks/Dolan/dlnFMA.html> Accessed on 8th May 2007.
- Drucker, P.F. 1983. "Modern prophets: Schumpeter and Keynes?", first published in Forbes, May 23, 1983. Available at http://www.peterdrucker.at/en/texts/proph_01.html Accessed on 23rd July 2008.
- Eabrazu, M. 2006. "The debate on 'Radical Subjectivism' revised", unpublished paper presented at the Prague Conference on Political Economy, Prague, April 21-23, 2006. Available at <http://pcpe.libinst.cz/works/2006/Eabrasu.pdf> Accessed on 26th August 2008.
- Facebook. 2010 . "Chess". Available at <http://www.facebook.com/apps/application.php?id=2427617054&ref=s> Accessed on 8th February 2010.
- Feynman, R.P. 1992. *The character of physical law*. London: Penguin Books.
- Formaini, R.L. 1998. "Frédéric Bastiat: world class economic educator", Economic insights, Federal Reserve Bank of Dallas, volume 3. number 1. Available at

- <http://www.dallasfed.org/research/ei/ei9801.pdf> Accessed on 9th February 2009.
- Formaini, R.L. 1999. “Hayek: social theorist of the century”, Economic Insights, Federal Reserve Bank of Dallas, volume 4, number 1. Available at <http://www.dallasfed.org/research/ei/ei9901.pdf> Accessed on 9th Feb 2009.
- Formaini, R.L. 2001a. “Ludwig von Mises”, Economic Insights, Federal Reserve Bank of Dallas, volume 6, number 4. Available at <http://www.dallasfed.org/research/ei/ei0104.pdf> Accessed on 9th Feb 2009.
- Formaini, R.L. 2001b. “The engine of capitalist process: entrepreneurs in economic theory”, Economic and Financial Review, 4th Quarter, Federal Reserve Bank of Dallas. Available at <http://www.dallasfed.org/research/efr/2001/efr0104a.pdf> Accessed on 26th August 2008.
- Formaini, R.L. 2006. “Jean-Baptiste Say. Foundations of France’s free trade tradition”, Economic Insights, Federal Reserve Bank of Dallas, volume 11, number 1. Available at <http://www.dallasfed.org/research/ei/ei0601.pdf> Accessed on 9th February 2009.
- Galbraith, J.K. 2004. *The economics of innocent fraud*. London: Penguin Books.
- Galbraith, JK. 1958. *The affluent society*. Boston: Houghton Mifflin.
- Garrison, RW. and Kirzner, I. 1987. “Friedrich August von Hayek”, in *The New Palgrave: A dictionary of economics*: 609 – 614. London: Macmillan Press Ltd. Available at <http://auburn.edu/~garriro/e4hayek.htm> Accessed on 17th July 2008.
- Garrison R.W. 1993. “Mises and his methods”. In Jeffrey M. Herbener (ed.), *The meaning of Ludwig von Mises: Contributions in economics, sociology, epistemology and political philosophy*: 102 – 117. Boston: Kluwer Academic

Publishers. Available at <http://auburn.edu/~garriro/j2mismeth.htm>
Accessed on 17th July 2008.

Garrison, R.W. 1997. "The Lachmann legacy: an agenda for macroeconomics", South African Journal of Economics, volume 65, no. 4 (December): 459-481.
Available at <http://www.auburn.edu/~garriro/b2lachmann.htm> Accessed on 22nd Jun 2007.

Garrison, R.W. 2008. "Austrian economics", in William A. Darity Jr. (ed.), *International Encyclopedia of the Social Sciences*, 2nd ed., volume 1: 210 – 212. Detroit, USA: Macmillan. Available at <http://www.auburn.edu/~garriro/austrecon.pdf> Accessed on 17th July 2008.

Gates, B. 1996. *The Road Ahead*. Ringwood, Victoria: Penguin Books.

Gates, B. 2006. "A robot in every home", Scientific American, December 6, 2006.
Available at <http://www.sciam.com/article.cfm?id=a-robot-in-every-home&print=true> Accessed on 18th July 2008.

Greenspan, A. 2000a. "Electronic finance", address given at the Financial Markets Conference, October 16, 2000, Federal Reserve Bank of Atlanta, Sea Island, Georgia. Available at <http://www.federalreserve.gov/BoardDocs/speeches/2000/20001016.htm>
Accessed on 28th September 2006.

Greenspan, A. 2000b. "Structural change in the new economy", address given before the National Governor's Association, 92nd Annual Meeting, State College, Pennsylvania, July 11, 2000. Available at <http://www.federalreserve.gov/boarddocs/speeches/2000/20000711.htm>
Accessed on 28th September 2006.

Greenspan, A. 2000c. "Technology and banking", address given at the Sixth Annual Reception for Regulators, sponsored by Women in Housing and Finance, Washington, D.C. November 20, 2000. Available at

<http://www.federalreserve.gov/BoardDocs/speeches/2000/20001120.htm>

Accessed on 28th September 2006.

Gringer, W.E. 1940. “In pursuit to the subjective paradigm”, in Lachmann, L.M. 1940, *Capital, expectations and the market process*, online edition. Available at http://oll.libertyfund.org/EBooks/Lachmann_0721.pdf Accessed on 27th June 2007.

Harris, Jr. T.F. 1995. “Expectations and the meaning of institutions: essays in economics”, Reason Papers, number 20, Fall 1995. Available at [http://www.reasonpapers.com/pdf/20/rp_20\)11.pdf](http://www.reasonpapers.com/pdf/20/rp_20)11.pdf) Accessed on 23rd February 2007.

Hayek, F.A. 1931. “Richard Cantillon”, *The Journal of Libertarian Studies*, volume VII, number 2, Fall 1985: 217 - 247. Available at http://mises.org/journals/jls/7_2/7_2_2.pdf Accessed on 19th September 2008.

Hayek, F.A. 1936. “Economics and knowledge”, presidential address delivered before the London Economic Club, November 10, 193, reprinted from *Economica* IV (new ser., 1937): 33 – 34. Available at <http://www.virtualschool.edu/mon/Economics/HayekEconomicsAndKnowledge> Accessed on 29th May 1998.

Hayek, F.A. 1942. “Scientism and the study of man”, *Economica*, 9: 267-91.

Hayek, FA. 1944. *The road to serfdom*, reprinted 2003. London: Routledge.

Hayek, F.A. 1945a. “Individualismo: el verdadero y el falso”, paper presented at the 12th Finlay Lecture at the University College, Dublin. December, 1945. Available at <http://hayeklinks.causaliberal.net/> Accessed on 10th November 2006.

Hayek, F.A. 1945b. “The use of knowledge in society”, reprint form the *American Economic Review*, XXXV, number 4; September, 1945: 519 – 30. Available

at <http://www.econlib.org/library/Essays/hykKnw1.html> Accessed on 27th November 2006.

Hayek, F. A. 1952. *The sensory order*. London: Routledge and Kegan Paul Ltd.

Hayek, F.A. 1955. *The counter-revolution of science*. Glencoe: The Free Press.

Hayek, F.A. 1961. “The ‘non sequitur’ of the dependency effect”, *Southern Economic Journal*, volume 27, April 1961. Available at <http://mises.org/resources/1039> Accessed on 30th June 2009.

Hayek, F.A. 1964. “La teoria de los fenomenos complejos”, translated into Spanish from “The theory of complex phenomena”, in Bunge, M (ed.), *The critical approach to science and philosophy, Essays in honor of K.R. Popper*. London: MacMillan Publishing Co., Inc. Available at <http://hayeklinks.causaliberal.net/> Accessed on 3rd November 2006.

Hayek, F.A. 1966. “Los principios de un orden social liberal”, paper presented at the Conference of the Mont Pelerin Society, Tokyo, September 1966. Available at <http://hayeklinks.causaliberal.net/> Accessed on 10th November 2006.

Hayek, F.A. 1968a. “Competition as a discovery procedure”, *The Quarterly Journal of Austrian Economics*, volume 5, number 3, Fall 2002: 9 – 23. Available at http://mises.org/journals/qjae/pdf/qjae5_3_3.pdf Accessed on 29th September 2008.

Hayek, F.A. 1968b. “Historia economica y pensamiento politico”. Available at <http://www.biblioteca.cees.org.gt/topicos/web/topic-165.html> Accessed on 3rd Jan 2008.

Hayek, F.A. 1974. “The pretence of knowledge”, lecture to the memory of Alfred Nobel. December 11, 1974. Available at <http://nobelprize.org/cgi-bin/print?from=/economics/laurates/1974/hayek> Accessed on 29th April 2004.

- Hayek, F.A. 1976a. “El mensaje de Adam Smith en el language actual”, translation into Spanish from 1978, Chapter XVI, *New Studies*, University of Chicago Press, and originally published on the Daily Telegraph, London, 9 March 1976. Available at <http://hayeklinks.causoliberal.net/> Accessed on 10th November 2006.
- Hayek, F.A. 1976b. *Individualism and economic order*. Routledge & Kegan Paul: London.
- Hayek, F.A. 1977. “The road from serfdom. Foreseeing the Fall. Interview by Thomas W. Hazlett”, Reason Magazine, July 1992. Available at <http://www.reasonmag.com/hayekint.html> Accessed on 29th May 1998.
- Hayek, F.A. 1981. “Los fundamentos éticos de una sociedad libre”, address delivered at the Conference on the foundations of a free social system, Santiago de Chile, April 1981. Available at http://www.cepchile.cl/dms/archivo_971_589/rev03_hayek.pdf Accessed on 30th September 2008.
- Hayek, F.A. 1982. “The sensory order after 25 years”, in W.B. Weimer & D.S. Palermo (eds.), *Cognition and the symbolic processes*, volume. 2: 287–293. Hillsdale, NJ: Erlbaum.
- Hébert, R.F and Link, A.N. 2006. “The entrepreneur as innovator”, *Journal of technology transfer*, 31: 589 – 597.
- Higgs, H. 2001. *The Physiocrats. Six lectures on the French economists of the 18th century*. Ontario: Batoche Books. Available at <http://socserv.mcmaster.ca/econ/ugcm/3ll3/higgs/physiocrat.pdf> Accessed on 11 September 2008.
- High, J. 2009. “Entrepreneurship and economic growth: the theory of emergent institutions”, *The Quarterly Journal of Austrian Economics*, volume 11, number 3: 3 – 36.

- Hodgson, G. 1986. "Behind methodological individualism", Cambridge Journal of Economics, 10: 211 – 224.
- Hodgson, G. 2005a. "Alfred Marshall versus the Historical School?", Journal of Economic Studies, 32(4): 331-48. Available at <http://www.geoffrey-hodgson.info/p25.htm> Accessed on 19th June 2009.
- Hodgson, G. 2005b. "Knowledge at Work: Some Neoliberal Anachronisms", Review of Social Economy, 60(4), December 2005: 547-65. Available at <http://www.geoffrey-hodgson.info/p25.htm> Accessed on 19th June 2009.
- Hodgson, G. 2006. "What Are Institutions?", Journal of Economic Issues, 40(1), March 2006: 1-2. Available at <http://www.geoffrey-hodgson.info/p25.htm> Accessed on 19th June 2009.
- Hodgson, G. 2007a. "Meanings of Methodological Individualism", Journal of Economic Methodology, 14(2), June 2007: 211-26. Available at <http://www.geoffrey-hodgson.info/p25.htm> Accessed on 19th June 2009.
- Hodgson, G. 2007b. "Institutions and Individuals: Interaction and Evolution", Organization Studies, 28 (1), January 2007: 95-116. Available at <http://www.geoffrey-hodgson.info/p25.htm> Accessed on 19th June 2009.
- Holcombe R.G. 1998. "Entrepreneurship and economic growth", The Quarterly Journal of Austrian Economics, volume 1, number 2 (Summer 1998): 45 - 62
- Holcombe R.G. 2003. "Progress and entrepreneurship", The Quarterly Journal of Austrian Economics, volume 6, number 3, Fall 2003. Available at http://www.qjae.org/journals/qjae/pdf/qjae6_3_1.pdf Accessed on 15th September 2008.
- Holcombe, R.G. 2009. "The behavioural foundations of Austrian economics", Review of Austrian Economics 22: 301 – 313.

- Hoppe, HH. 1995 “Economic science and the Austrian method”, The Ludwig Mises Institute. Available at <http://mises.org/esandtam.asp> Accessed on 10th September 2008.
- Hoppe, H.H. 1997. “On certainty and uncertainty, or: how rational can our expectations be?”, *Review of Austrian economics* 10, number 1: 49 – 78. Available at http://mises.org/journals/rae/pdf/rae10_1_3.pdf Accessed on 2 October 2008.
- Horwitz, S. 2000. “From The sensory order to the liberal order: Hayek’s non-rationalist liberalism”, *Review of Austrian Economics*, 13: 23-40. Available at http://www.gmu.edu/rae/archives/VOL13_1_2000/horwitz.pdf Accessed on 18th September 2008.
- Horwitz, S. 2008. “Analogous Models of Complexity: The Austrian Theory of Capital and Hayek's Theory of Cognition as Adaptive Classifying Systems”, *Advances in Austrian Economics*, 15. Available at <http://myslu.stlawu.edu/~shorwitz/Papers/wpmain.htm> Accessed on 2nd July 2009.
- Horwitz, S. 2009. “The Sensory Order and Organizational Learning”, Forthcoming in *Advances in Austrian Economics* special issue on The Sensory Order, volume 16. Available at <http://myslu.stlawu.edu/~shorwitz/Papers/wpmain.htm> Accessed on 2nd July 2009.
- Huerta de Soto, J. 1999. “Juan de Mariana: the influence of Spanish scholastics”, in . Holcombe, R. (ed.) *15 Great Austrian Economists*: 1 – 12. Alabama: Ludwig von Mises Institute, Auburn University. Available at <http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24 June 2009.

- Humphreys, J. 2007. "Everything you always wanted to know about Austrian economics but be afraid to ask", Review, March 2007. Available at http://ipa.org.au/files/59-1_austrianeconomics.pdf Accessed on 5th June 2007.
- IBM Press Release 7 April 1964. Available at http://www-03.ibm.com/ibm/history/exhibits/mainframe/mainframe_PR360.html Accessed on 20th August 2008.
- IBM. 2007. "Frequently asked questions". Available at <http://www-03.ibm.com/ibm/history/documents/pdf/faq.pdf> Accessed on 20th August 2008.
- International Academy of Digital Arts and Sciences. 2008. "12th Annual Webby Awards Nominees". Available at <http://www.webbyawards.com/webbys/current.php?season=12> Accessed on 6th August 2008.
- Jalloh, A. 1999. "African entrepreneurship: Muslin Fula merchants in Sierra Leone", Ohio University Center for International Studies, Monographs in International Studies.
- John, R. 2000. "Recasting the information infrastructure for the industrial age", in Chandler, A.D. Jr. and Cortada, J.W. (eds.), *A nation transformed by information*: 55 – 105. New York: Oxford University Press.
- Jones, G. and Wadhvani, R.D. 2006. "Schumpeter's plea: rediscovering history and relevance in the study of entrepreneurship", Harvard Business School Working Paper 06-036. Available at <http://www.hbs.edu/research/pdf/06-036.pdf> Accessed on 19th August 2008.
- Jordaan, W and Jordaan, J. 1985. *Man in context*, First Edition, Second impression. Johannesburg: McGraw-Hill.

- Kac, M. and Ulam, S.M. 1979. *Mathematics and logic*. Harmondsworth: Penguin Books Ltd.
- Keynes, J.M. 1936. *The general theory of employment, interest and money*. NY: Harcourt, Brace and Company.
- Kilby, P. (ed) 1971. *Entrepreneurship and economic development*. New York: Free Press.
- Kirzner, IM. 1973. *Competition and entrepreneurship*. Chicago: University Press.
- Kirzner, IM. 1976a. "On the method of Austrian economics", in Dolan, EG. (ed.), *The foundations of modern Austrian economics*: 40 - 51. Kansas City: Sheed and Ward. Available at:
<http://www.econlib.org/library/NPDBooks/Dolan/dlnFMA.html> ccessed on 8th May 2007.
- Kirzner, IM. 1976b. "Equilibrium versus market process", in Dolan, EG. (ed.), *The foundations of modern Austrian economics*: 115 - 125. Kansas City: Sheed and Ward. Available at:
<http://www.econlib.org/library/NPDBooks/Dolan/dlnFMA.html> Accessed on 8th May 2007.
- Kirzner, IM. 1979. *Perception, opportunity and profit. Studies in the theory of entrepreneurship*. Chicago: University Press.
- Kirzner, IM. 1985. *Discovery and the capitalist process*. Chicago: The University of Chicago Press.
- Kirzner, IM. 1986-7. "El empresario", in Huerta de Soto (ed.), *Lecturas de economía política*, volume 1, Unión Editorial, Madrid, 1986-1987. Available at
<http://www.eumed.net/cursecon/economistas/kirzner.htm> Accessed on 13th April 2005.

- Kirzner, IM, 1989. *Discovery, capitalism and distributive justice*. Oxford: Basil Blackwell.
- Kirzner, IM. 1992. *The meaning of the market process. Essays in the development of modern Austrian economics*. London: Routledge.
- Kirzner, IM. 1999. "Creativity and/or alertness: a reconsideration of the Schumpeterian entrepreneur", *The Review of Austrian Economics*, 11: 5 – 17. Available at <http://ideas.repec.org/a/kap/revaec/v11y1999i1-2p5-17.html> Accessed on 13th August 2008.
- Kirzner, IM. 2001. *Ludwig von Mises*. Wilmington: ISI Books.
- Kirzner, IM. 2002. "Comment on 'A critique of Kirzner's finders-keepers defense of profit'", *The Review of Austrian Economics*, 15: 1: 91-94. Available at http://www.gmu.edu/rae/archives/VOL15_1_2002/5_kirzner.pdf Accessed on 15th August 2008.
- Kirzner, IM 2008. "Curriculum Vitae". Available at <http://www.econ.nyu.edu/user/kirzner/> Accessed on 13th February 2008.
- Klein, P.G. 1999. "F.A. Hayek: Austrian economist and social theorist", in Holcombe, R. (ed), *15 Great Austrian Economists*: 181 - 194. Alabama: Ludwig von Mises Institute, Auburn University. Available at <http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24 June 2009.
- Knight, F. 1921. *Risk, uncertainty and profit*. Boston, MA: Hart, Schaffner & Marx; Houghton Mifflin Co. Available at <http://www.econlib.org/library/Knight/knRUP.html> Accessed on 4th June 2009.

- Kohn, M. 2004. "Value and exchange", *Cato Journal*, volume 24, number 3, Fall 2004. Available at <http://www.cato.org/pubs/journal/cj24n3/cj24n3-8.pdf> Accessed on 2nd July 2009.
- Koppl, R. 1999. "Expectations: results from a program in subjectivist economics", unpublished paper. Available at <http://www.departments.bucknell.edu/management/apfa/Dundee%20Papers/31Koppl.pdf> Accessed on 23rd September 2008.
- Koppl, R. 2002. "What is alertness?", *Journal des economists et des etudes humaine*, 12(1):3-13. Available at <http://alpha.fdu.edu/~koppl/alertness.htm> Accessed on 3rd June 2009.
- Koppl, R. 2003. "Gains from trade between Austrian economics and entrepreneurial studies: an introduction to the volume", in *Austrian economics and entrepreneurial studies*, *Advances in Austrian Economics*, volume 6. Available at <http://alpha.fdu.edu/~koppl/01%20koppl.htm> Accessed on 3rd June 2009.
- Koppl, R. 2006. "Austrian economics at the cutting edge", *Review of Austrian Economics*, 19(4):231 – 241. Available at <http://alpha.fdu.edu/~koppl/links.htm> Accessed on 4th June 2009.
- Koppl, R and Butos, W. 2006. "Does the sensory order have a useful economic future", in Koppl, Krecke and Krecke (eds.), *Cognition and economics*, volume 9 of *Advances in Austrian Economics*. Amsterdam: JAI, an imprint of Elsevier Science. Available at <http://alpha.fdu.edu/~koppl/tso.pdf> Accessed on 3rd June 2009.
- Lachmann, L.M. 1976a. "From Mises to Shackle: An Essay on Austrian Economics and the Kaleidic Society", *Journal of Economic Literature*, volume 14, number 1, March, 1976: 54-62.

- Lachmann, IM. 1976b. "On the central concept of Austrian economics: market process", in Dolan, EG. (ed), *The foundations of modern Austrian economics*: 126 - 132. Kansas City: Sheed and Ward. Available at: <http://www.econlib.org/library/NPDBooks/Dolan/dlnFMA.html> Accessed on 8th May 2007.
- Lachmann, L.M. 1986. *The market as an economic process*. Norwich: Basil Blackwell Ltd.
- Lachmann, L.M. 1994. *Expectations and the meaning of institutions*. Essays in economics by Ludwig Lachmann. Don Laovic (ed). New York: Routledge.
- Lagueux, M. 1996. "von Mises' apriorism and Austrian economics: from Menger to Mises", paper presented at the Annual European Conference on the History of economics (ECHE '96) at the Universite Technique de Lisbonne. 8 to 10 February 1996. Available at http://www.philo.umontreal.ca/textes/Lagueux_Von_Mises.pdf Accessed on 10th September 2008.
- Leube, K.R. 2003. "Some remarks on Hayek's The sensory order", *Laissez Faire*, number 18, March – September 2003: 12 – 22. Available at www.economia.ufm.edu.gt/Publicaciones/LaissesFaire/18/LF-18%20_2%20Leube.pdf Accessed on 10th June 2005.
- Lewin, P. 1996. "Ludwig Lachmann: life and work". Available at <http://www.mises.org/content/lachmann.asp> Accessed on 22nd June 2007.
- Liggio, L.P. 1982. "Three influences on Hayek's sceptical Kantianism: Mach, Popper and Wittgenstein", *Literature of Liberty*, Winter 1982, volume 5, number 4. Available at <http://oll.libertyfund.org/title/1035/100474> Accessed on 10th July 2008.
- Loomis, C.J. 2006a. "A conversation with Warren Buffet", *Fortune Magazine*, 25 June 2006. Available at

<http://money.cnn.com/2006/06/25/magazines/fortune/charity2.fortune/index.htm> Accessed on 25th July 2006.

Loomis, C.J. 2006b. “Warren Buffet gives away his fortune”, Fortune Magazine, 25 June 2006. Available at <http://money.cnn.com/2006/06/25/magazines/fortune/charity1.fortune/index.htm> Accessed on 25th July 2006.

Loomis, C.J. 2006c. “The global force called the Gates foundation”, Fortune Magazine, 25 June 2006. Available at <http://money.cnn.com/2006/06/25/magazines/fortune/charity4.fortune/index.htm> Accessed on 25th July 2006.

Machlup, F. 1982. “Austrian economics”, in Douglas Greewald (ed.) *Encyclopedia of economics*: 38 – 43. New York: McGraw-Hill.

Malecki, E.J. 1997. “Entrepreneurs, networks and economic development”, in J.A. Katz (ed.), *Advances in entrepreneurship, firm emergency and growth*, volume 3: 57 – 118. Jai Press: Stanford, CT.

Malecki, E.J. 2007. “Geographical environments for entrepreneurship”, presentation given at The Ohio State University, IECER 2007, Montpellier. Available at http://www.iecer.de/documents/2007_IECER_Key_Note_Speech_Malecki.pdf Accessed on 4th June 2009.

Markose, S.M. 2003. “Computability and Evolutionary Complexity: Markets As Complex Adaptive Systems (CAS)”, Economics Discussion Papers 574, January 2004, University of Essex, Department of Economics. Available at <http://www.essex.ac.uk/economics/discussion-papers/papers-text/dp574.pdf> Accessed on 4th June 2009.

Markus, H. R., & Kitayama, S. 1991. “Culture and the self: Implications for cognition, emotion, and motivation”, *Psychological Review*, 98: 224–253.

- Menger, C. 1871. *Principles of economics*, 2007 Online edition. Ludwig von Mises Institute. Alabama. Available at <http://mises.org/books/mengerprinciples.pdf> Accessed on 17th July 2008.
- Menger, C. 1883. *Investigations into the method of social sciences with special reference to Economics*, Reprint from 1963 English translation from original in German. New York: New York University Press.
- Menger, C. 1892. “On the origins of money”, *Economic Journal*, volume 2: 239-55. Available at <http://socserv.mcmaster.ca/econ/ugcm/3ll3/menger/money.txt> Accessed on 16th July 2008.
- Microsoft. PressPass 24 October 2007. “Facebook and Microsoft Expand Strategic Alliance”. Available at <http://www.microsoft.com/Presspass/press/2007/oct07/1024FacebookPR.msp> Accessed on 6th August 2008.
- Mirowski, P. 1984. “Physics and the marginalist revolution”, *Cambridge Journal of Economics*, volume 8: 367-379, in Blaug, M (ed) .1990. *The history of economic thought*: 145 - 163. Aldershot: Edward Elgar Publishing Limited.
- Mises, L. 1927. *Liberalism in the classical tradition*, 3rd Edition, reprinted in 2000. Irvington-on-Houston, NY: The foundation for economic education and San Francisco, California: Cobden Press. Online edition. Available at <http://www.mises.org/liberal.asp> Accessed on 26th September 2008.
- Mises, L. 1949. *Human action. A treatise on economics*, 1998 Scholar’s edition, reprint of first edition with 1954 index. Auburn, Alabama: Ludwig von Mises Institute. Available at <http://mises.org/Books/HumanActionScholars.pdf> Accessed on 23rd September, 2008.
- Mises, L. 1951 *Socialism: An Economic and Sociological Analysis*. New Haven: Yale University Press. Available at <http://mises.org/books/socialism/contents.aspx> Accessed on 9th July 2009.

- Mises, L. 1957. *Theory and history*, reprinted in 2000. Yale University Press: New Haven, Conn. Online Edition Ludwig von Mises Institute. Available at <http://mises.org/th.asp> Accessed on 10th April 2006.
- Mises, L. 1969. *The historical setting of the Austrian school of economics*, 2003 Online edition by the Ludwig von Mises Institute. Available at <http://mises.org/etexts/histsetting.pdf> Accessed on 18th August 2008.
- Mises, L. 1976. “Epistemological problems of economics Scale of values”, Chapter 5, Part 2, Online edition. Available at <http://mises.org/epofe/c5sec2.asp> Accessed on 4th April 2006.
- Moss, L.S. 1994. “Geoffrey M. Hodgson, Economics and Evolution: A review article”, *Marshall Studies Bulletin*, 4: 33 – 49. Available at <http://www.dse.unifi.it/marshall/moss.htm> Accessed on 22nd May 2009.
- Muhanna, E. 2007. “Conceptual analysis of determinants of entrepreneurship: a South African perspective”. Available at http://findarticles.com/p/articles/mi_qa5417/is_200701/ai_n21285872/pg_2/?tag=content;coll Accessed on 2nd June, 2009.
- Murrel, P. 1983. “Did the theory of market socialism answer the challenge of Ludwig von Mises? A reinterpretation of the socialist controversy”, in Blaus, M (ed) 1990. *The history of economic thought*: 291 – 304. Aldershot: Edward Elgar Publishing Limited.
- Mwenda, K. 2000. “Benevolent and enlightened dictators and standards of human rights in Africa”, *ELaw*, Murdoch University Electronic Journal of Law, volume 7, number 4, December 2000. Available at http://www.murdoch.edu.au/elaw/issue/v7n4/mwenda74_text.html Accessed on 2nd June 2009.

- Nijkamp, P. 2009. "Entrepreneurship, development and the spatial context. Retrospect and prospect", United Nations University, Research Paper No. 2009/8. Available at http://www.wider.unu.edu/publications/working-papers/research-papers/2009/en_GB/research_papers_2009 Accessed on 4th June 2009.
- Özel, H. 1998. "Methodological individualism in Carl Menger: an evaluation". H.H. İktisadi ve İdari Bilimler Fakültesi Dergisi, Cilt 16, Sayı 1-2. Available at <http://yunus.hacettepe.edu.tr/~oze/Menger.dpf> Accessed on 22nd February 2006.
- Parker, S.C. 2007. "Introduction", in Parker, S.C. (ed), *The life cycle of entrepreneurial ventures*: 1 -11. NY: Springer US.
- Pavlik, J. 2001. *On Hayekian "False Individualism" and its New Sources*, E-Logos 2001. Available at <http://nb.vse.cz/kfil/elogos/ethics/pavlik1-01.htm> Accessed on 15th March 2010.
- PC Magazine 13 August 2007. "Social Networking". Available at <http://www.pcmag.com/article2/0,2817,2169354,00.asp> Accessed on 6th August 2008.
- Plauche, GA. 2006. "On praxeology and the question of Aristotelian apriorism". Unpublished paper. Available at <http://www.veritasnoctis.net/docs/aristotelianapriorism.pdf> Accessed on 8th June 2007.
- Porter, M.E. 2001. "Strategy and the Internet", Harvard Business Review, March 2001: 62 -78.
- Quantcast. 2010. "Facebook", data update 01/2010. Available at <http://www.quantcast.com/facebook.com> Accessed on 8th February 2010.
- Reinert, H. and Reinert, E.S. 2006. "Creative destruction in economics: Nietzsche, Sombart, Schumpeter", in J.G. Drechsler, W. (ed.), *The European Heritage in*

Economics and Social Sciences. Friedrich Nietzsche (1844 – 1900), Economy and Society: 55 – 85. Backhaus. US: Springer.

Reynolds, R.L 2000. “The Physiocrats: an outline”, unpublished paper. Available at http://www.boisestate.edu/econ/lreynol/web/pdf_het/physiocratsoutline.pdf Accessed on 10th September 2008.

Rizzello, S. 1999. *The economics of the mind*. Cheltenham, UK: Edward Elgar.

Rothbard, M.N. 1976. “Praxeology: the methodology of Austrian economics”, in Dolan, E. (ed), *The Foundations of Modern Austrian Economics*: 19 – 39. Kansas City: Sheed and Ward. Online edition available at <http://www.econlib.org/library/NPDBooks/Dolan/dlnFMA.html> Accessed on 26th September 2008.

Rothbard, M.N. 1985. “Professor Hebert on entrepreneurship”, *The journal of libertarian studies*, volume VII, number 2, Fall 1985. Available at http://mises.org/journals/jls/7_2/7_2_6.pdf Accessed on 7th October 2008.

Rothbard, M.N. 1987. “Breaking out the Walrasian box: the cases of Schumpeter and Hansen”, *The Review of Austrian Economics*, volume 1, number 1, December, 1987: 97-108. Available at <http://www.springerlink.com/content/w7r285k8n3g37835/> Accessed on 4th July 2007.

Rothbard, M.N. 1995. *Economic thought before Adam Smith*. Bodmin, Cornwall: Edward Elgar.

Rothbard, M.N. 1999a. “A.R.J. Turgot: Brief, Lucid, and Brilliant”, in Holcombe, R. (ed.), *15 Great Austrian Economists*: 29 – 44. Alabama: Ludwig von Mises Institute, Auburn University. Available at <http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24 June 2009.

- Rothbard, M.N. 1999b. “Ludwig von Mises: the dean of the Austrian school”, in . Holcombe, R. (ed.), *15 Great Austrian Economists*: 123 – 166. Alabama: Ludwig von Mises Institute, Auburn University. Available at <http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24th June 2009.
- Rothbard, MN. 2004. “What is entrepreneurship?”. Available at <http://www.mises.org/story/1530> Accessed on 7th June 2007.
- Russell, B. 1946. *History of Western philosophy*, reprint 2005. London: Routledge.
- Sachs, J.D. 2006. “The social welfare state, beyond ideology”. *Scientific American Magazine*, October 16, 2006. Available at <http://www.sciam.com/article.cfm?id=the-social-welfare-state> Accessed on 18th July 2008.
- Salerno, J. 1999. “Biography of Carl Menger: the founder of the Austrian school”, in Holcombe, R. (ed.). *15 Great Austrian Economists*: 71 – 100. Alabama: Ludwig von Mises Institute, Auburn University. Available at <http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24th June 2009.
- Salerno, J. 2008. “The entrepreneur: real and imagined”, *The Quarterly Journal of Austrian economics*, volume 11: 188 – 207.
- Selgin, G. A. 1990. “Praxeology and Understanding: An Analysis of the Controversy in Austrian Economics”. Auburn, Alabama.: Ludwig von Mises Institute, Auburn University. Available at <http://mises.org/books/prax-and-understanding.pdf> Accessed on 12th March 2010.
- Shackle, GLS. 1983. “An Interview with GLS Shackle by Richard Ebeling”, *The Austrian economics newsletter*, Spring 1983. Available at <http://mises.org/journals/aen/shackle.asp> Accessed on 8th June 2006.

- Sherief, SR. 2008. "Entrepreneurship as an economic force in rural development", Africa Economic Analysis. Available at <http://www.AfricaEconomicAnalysis.org> Accessed on 2nd June 2009.
- Schumpeter, J.A. 1909. "On the concept of social value", Quarterly Journal of Economics, volume 23, 1909 – 9: 213 – 232.
- Schumpeter, J.A. 1939. *Business cycles: a theoretical, historical and statistical analysis of the capitalist process*, volume I. 1st Ed.. New York: McGraw-Hill Book Company Inc.
- Schumpeter, J.A. 1942a. "Creative destruction", in Schumpeter, 1975, *Capitalism, socialism and democracy*: 82 -85. New York: Harper. Available at <http://transcriptions.english.ucsb.edu/archive/courses/liu/english25/materials/schumpeter.html> Accessed on 31st March 2005.
- Schumpeter, J.A 1942b. *Capitalism, Socialism and Democracy*. London: Routledge.
- Schumpeter, J.A. 1954. *History of economic analysis*. New York: Oxford University Press.
- Schumpeter, J.A. 1955. *The theory of economic development*. Cambridge, Massachusetts: Harvard University Press.
- Smith, B.S. 1997. "The connectionist mind: a study of Hayekian psychology", in S.F Frowen (ed.) *Hayek: economist and social philosopher: a critical retrospect*: 9-29. London: Macmillan, 1977. Available at <http://ontology.buffalo.edu/smith/articles/HAYEK.HTM> Accessed on 10th June 2005.
- Smith, V. 2005. "Hayek and experimental economics", *The Review of Austrian Economics*, 18:2: 135–144. Available at http://www.gmu.edu/rae/archives/VOL18_2_2005/1_smith.pdf Accessed on 15th August 2005.

Sorensen, C. The Star. 7 March 2008. "Has Facebook fatigue arrived?". Available at .
<http://www.thestar.com/printArticle/310272> Accessed on 19th August 2008.

Steele, G.R. 2002. "Hayek's Sensory Order". Theory & Psychology, volume 12,
number 3. Available at
<http://www.lanacs.ac.uk/staff/ecagr/sensory%20order.pdf> Accessed on 10th
July 2008.

Steyaert, C. 2005. "Entrepreneurship: in between what?: on the 'frontier' as a
discourse of entrepreneurship research", Int. J. Entrepreneurship and small
business, volume 2, number 1. Available at
<http://inderscience.com/storage/f101285492111396.pdf> Accessed on 4th July
2007.

Swaminathan, N. 2008. "CES Special: A chat with Microsoft's Bill Gates", Scientific
American, 8th January, 2008. Available at
[http://www.sciam.com/article.cfm?id=ces-special-a-chat-with-bill-
gates&print=true](http://www.sciam.com/article.cfm?id=ces-special-a-chat-with-bill-gates&print=true) Accessed on 18th July 2008.

te Velde, R.A. 2001. "Schumpeter's theory of economic development revised",
unpublished paper presented at the Future of Innovation Studies Conference:
Eindhoven University of Technology, the Netherlands, 20-23 September
2001. Available at http://fp.tm.tue.nl/ecis/papers/iii_7_4.pdf Accessed on 17th
July 2008.

Tehran Times, 3 December 2007."Li Ka-shing invests 60 million dollars in Facebook:
report". Available at
http://www.tehrantimes.com/index_View.asp?code=158391 Accessed on 6th
August 2008.

Thornton, M. 1999. "The origin of economic theory: A portrait of Richard Cantillon
(1680 – 1734)", in Holcombe, R. (ed.), *15 Great Austrian Economists*: 13 –
28. Alabama: Ludwig von Mises Institute Auburn University. Available at

<http://www.asiaing.com/15-great-austrian-economists.html> Accessed on 24th June 2009.

Vise, D.A. and Malseed, M. 2006. *The Google story*. London: Pan Books.

Weber, M. 1922. *Economy and society*, Guenther Ross and Claus Wittich (eds.), reprint 1968. Berkeley: University of California Press.

Weglarz, J.A. 2008. “Bernardino of Siena: earlier defender of the entrepreneur”, History of Economics Society Conference, June 27 – 30, 2008, York University, Toronto, Canada. Available at <http://historyofeconomics.org/Conference08/papers/weglarz.pdf> Accessed on 11th Feb 2009.

Wood, J.S. 2005. “The development and present state of the theory of entrepreneurship in product and asset markets by Knight, Hayek, Schumpeter, Mises, Kirzner, Shackle, and Lachmann”, paper presented at the Austrian Scholars Conference 2005, March 16, 2005. Available at <http://mises.org/journals/scholar/wood.pdf> Accessed on 16th September 2008.

Xenophon. c 400 BC. *The economist*. Online edition available at <http://onlinebooks.library.upenn.edu/webbin/gutbook/lookup?num=1173> Accessed on 2nd September 2008.

Yeager, L.B. 1987. “Why Subjectivism?”, *Review of Austrian Economics*, 1: 5-31

Yunus, M. 1997. “Lo que nos enseñan los economistas”, speech delivered during the acceptance of the prize “Help to self-help” from the Stromme Foundation, 26 September, 1997, Oslo, Norway. Available at <http://www.eumed.net/cursecon/textos/yunus-economia.htm> . Accessed on 12th March 2010.

Yunus, M. 2002. “Conferencia magistral del Profesor Muhammad Yunus, director y fundador del Grameen Bank de Bangladesh”, cConference given on the 18th

November 2002 at Fundación Rafael del Pino, Madrid, Spain. Available at <http://www.iacat.com/10-Sociopolitica/yunus/ConferenciaMagistral.pdf>
Accessed on 29th August 2008.

Zuniga, G.L. 1998. "Truth in economic subjectivism", *Journal of Markets & Morality* 1, no. 2 (October 1998): 158-168. Available at http://www.acton.org/publicat/m_and_m/1998_oct/pdf/mm-v1n2-zuniga.pdf
Accessed on 5th June 2007.