



## Lachmann's Transformation

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### Abstract:

This article analyzes the evolution of the thought of one of the leading economists of the Austrian school, Ludwig Lachmann. We explain Lachmann's transformation, marked by his progressive skepticism about the effectiveness of the price system as part of the learning mechanism in markets, with the aid of a version of evolutionary epistemology. We argue that Lachmann's earlier work, derived from the Hayekian research program, is compatible with a fallibilistic or institutional theory of learning, while his mature view of the market as a kaleidoscope uses a justificationist conception of agent's knowledge.

Key words: subjectivism, justificationist, Lachmann

JEL codes: B25, B31, B41, B53

### Introduction

Ludwig Lachmann was one of the leading economists belonging to the Austrian tradition in the twentieth century.<sup>1</sup> Together with Kirzner and Rothbard, he played a central role in the resurgence of the Austrian School in the 1970s. In his works, Lachmann developed Hayek's ideas on capital and cycles and deepened the misesian conception regarding the implications of methodological subjectivism for economic analysis. These developments culminated in his peculiar version of the Austrian theory of the market process. As is well known, his intellectual trajectory is characterized by progressive emphasis on the creative aspect of human action and growing skepticism about the utility of the concept of equilibrium. The preponderance of methodological subjectivism in the author's mature work led him to defend a quasi-historicist stance on economic theory.

The purpose of this article is to provide an interpretation of this evolution of Lachmann's thought<sup>2</sup>. This interpretation is constructed in terms of the compatibility between his economic ideas and the Popperian philosophy of science, as portrayed by evolutionary epistemology. Specifically, we will argue that the author's change of opinion about the preponderance of equilibrating or disequilibrating forces in market process theory is strongly associated with the adoption by Lachmann of a philosophical conception

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<sup>1</sup> Lachmann was born in 1906 in Germany. He studied at the University of Berlin between 1924 and 1933, where he completed his doctorate under the guidance of Werner Sombart. In the summer of 1926, he first made contact with the Austrian Economics at the University of Zurich. In Berlin, he hired Emil Kauder as tutor, with whom he studied the austrian business cycles theory and the role of subjectivism in economics. In 1933, Lachmann moved to the London School of Economics, where, like Shackle, worked under the guidance of Hayek. In 1948, he moved to South Africa, becoming a professor at the University of Witwatersrand in Johannesburg. He participated in the 1976 conference in South Royalton, which marked the resurgence of the austrian school. After his retirement in Africa, Lachmann taught a semester a year at New York University until his death in 1990. For a more detailed biography of Lachmann, see Lewin (1996), Lavoie (1994) and Grinler (1977).

<sup>2</sup> Lavoie (1994) classifies the work of Lachmann in three periods, according to the residence in England, South Africa and the United States. In the first period he works with cycle theory under Hayek. The following period, marked by the decline of the school, Lachmann develops his most important work - *Capital and Its Structure* [1956] - as well as articles dealing with themes such as expectations, capital theory and subjectivism. In this period, he writes his second book - *The Legacy of Max Weber* (1971) -, outlining his theory of institutions. The final period of his life is marked by the book *The Market as an Economic Process* (1986), when emphasis is placed on the author's "radical subjectivism".

criticized by the Popperian tradition; namely, justificationism, which identifies scientific rationalism with the capacity to obtain proven knowledge.

We believe that Popper's philosophy is important for the interpretation of Lachmann's theses, just as they were important in Hayek's case. Hutchinson (1981) divided the work of the latter into two phases, the second being marked by the acceptance of Popper's methodology from *Economics and Knowledge* (1937). Reversing this procedure and shifting the focus from falsificationism to fallibilism, we postulate the existence of a Lachmann I, whose work is compatible with evolutionary epistemology and a later Lachmann II, characterized by a justificationist epistemology. Lachmann I is characterized by his works in capital theory and Lachmann II by the emphasis on the so-called radical subjectivism applied to the Austrian theory on the market process. Although all his texts are marked by the coherent application of the Austrian principle of methodological subjectivism, there is nevertheless a clear shift of emphasis throughout the author's career. Lachmann I states that in the market process forces leading to equilibrium predominate, while Lachmann II emphasizes the disequilibrating forces. Caldwell (1988), in turn, describes a "Hayek transformation" into a skeptical author about the utility of the concept of equilibrium, something that would have happened from the same article mentioned above. Although such a transformation is disputed, in Lachmann's case we can see a clear change, which allows us to speak in Lachmann's transformation.

This thesis does not imply that the author has been guided in his career by methodological precepts. On the contrary, we believe that the study of the theoretical problems faced by economists is a better source of interpretation of changes in ideas than the alleged adherence to methodological principles. This is so because ideas also have unintended consequences. Lachmann's transformation can in fact be explained by the context of theoretical issues that preoccupied the author, as we will show in the conclusion to this article, his rejection of the notion of equilibrium explicitly makes use of the philosophical argument we will discuss throughout this paper.

Thus, we will show that the Hayekian research program that informs Lachmann's initial work is compatible with evolutionary epistemology, while the methodological beliefs defended by the author at his maturity and used in his works of the period contradict it. But, before visiting Lachmann's writings in order to corroborate our interpretation, it is necessary to make explicit the set of philosophical beliefs that we will use in our work.

### ***Evolutionary Epistemology***

At first it would not be necessary to expose once again the set of basic beliefs associated with Karl Popper's philosophy. However, despite the clarity of the author's texts, we can rarely find in the secondary literature a parallel case of difficulty in exposing an author's main theses<sup>3</sup>. In particular, under the influence of Kuhnian thought, too much emphasis is given to the discussion of some version of falsificationism to the detriment of the examination of the importance and consequences of Popperian fallibilism<sup>4</sup>.

Among the Austrian economists, in turn, Popper's ideas are viewed with little sympathy, largely in reaction to the acceptance of falsificationism by the mainstream of the profession, which usually spouses variations of positivist philosophy. Instead, Austrians tend to adopt the original Misesian apriorism or some philosophy of subjectivist tradition, such as that associated with M. Polanyi or some version of hermeneutics.

<sup>3</sup> Many students of Popper complain about the distortions commonly found in the expositions of the author's work. In *Economics*, the same criticism can be found in Boland (1994).

<sup>4</sup> In the introduction of a volume of his postscript to the *Logic of Scientific Discovery*, Popper (1997, 32) writes: "Am I really the man who had falsificationism at the center of his thinking? ... It happens, however, that the true core of my thinking about human knowledge is fallibilism and the critical approach ..."

On the other hand, few Austrian authors welcome the modified Popperianism proposed by Hayek (1967). The latter author accepts Popper's theses on science, but adds that, in addition to the lack of commitment to criticism, the increase in the complexity of the phenomenon studied also results in reductions of the empirical content of theories and this second factor necessarily accompanies the phenomena studied by social sciences.

In addition to the acceptance of Popperian ideas at the methodological level, Hayek's conception of the market process resembles Popper's views about the growth of scientific knowledge. The similarities are such that Bartley classifies both as affiliated to evolutionary epistemology. This latter discipline sees phenomena in various fields as learning processes that exhibit the fundamental elements of the Darwinian explanation of the evolution of living beings. The struggle for the survival of organisms, the competition in markets or the growth of scientific knowledge are different manifestations of processes of learning (or problem solving) by variation and selection. In Popperian philosophy, the growth of scientific knowledge occurs by conjectures and refutations. In the Hayekian economy, the growth of the knowledge of economic agents depends, likewise, on business freedom and the mechanism of error correction provided by the price system.

The appeal to the common evolutionary scheme is not merely metaphorical: the growth of knowledge requires both freedom to try different solutions to the problems and the existence of decentralized mechanisms of elimination of errors in scenarios in which the problems faced are complex and the cognitive capacity of individuals is limited. In this way, fallibilism is the core of Popperian philosophy: recognition of the inability to establish final truths demands freedom and criticism. In the same way, we can say that all Hayek theories, from his conception of the functioning of markets to his theses on the evolution of institutions, explore the relation between the limits of knowledge and freedom. As summarized by the author himself: "It is that the case for individual freedom rests chiefly on the recognition of the inevitable ignorance of all of us concerning a great many of the factors on which the achievements of our ends and welfare depends"<sup>5</sup>.

A key feature of Popperian philosophy, Bartley<sup>6</sup> notes, is the suggestion of a non-justificationist theory of rationality. The earlier philosophies of science commonly identifies the rationalism of science with the capacity to generate proven knowledge, in contrast to mere opinion not justified by reason or facts, as it happens with non-scientific knowledge. Even post-Popperian nihilism, in rejecting normative philosophy of science in favor of descriptive and "naturalized" approach, identifies rationalism with justification when it argues for the impossibility of the latter. Popper, in contrast, develops a non-justificationist theory of rationality: all knowledge, including criticism, is provisional. A mistaken refutation would invite more criticism, not less. The concern with type I errors would only be justified in environments with a central committee for the adjudication of controversies and with memory of the criticized hypotheses immediately erased.

The substitution of justificationist for critical rationalism frustrates expectations. Just as it would be foolish to demand from the theory of perfect competition practical recipes to obtain profit, it does not make sense to demand from the philosophy of science an algorithm for theory choice. Both Popper and Hayek offer instead institutional theories about the growth of knowledge: rules that foster competition between ideas or business plans lead to greater growth than rules that promote monopolies of ideas or goods and services.

The justificationist mentality, however, rejects this refusal to try to establish the veracity of particular propositions: just as the theory of evolution has often been criticized for its supposedly circular character, Hayek's conception of competition as a mechanism of discovery has been criticized<sup>7</sup> for logically precluding ex ante evaluations of the efficacy of competition (it is not possible to know in advance what

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<sup>5</sup> Hayek (1979, p. 29).

<sup>6</sup> Bartley (1964).

<sup>7</sup> Stiglitz (1994).

will be discovered). Likewise, Popper's critics believe that the Duhem-Quine thesis invalidates his philosophy because of the impossibility of knowing whether any particular critique is definitive or not.

Evolutionary epistemology, as an institutional theory of the growth of knowledge, is interested in scenarios that promote competition between ideas. Hence the preference on the part of Popper for the treatment of hypotheses as autonomous, objective entities, which in a certain sense must be separated from their formulators so that their logical and empirical consequences are best explored in the marketplace of ideas. Each theory, seen as an autonomous entity, possesses an infinite number of logical consequences and presents also infinite propositions that contradict it. In this sense, knowledge is unfathomable (Bartley, 1990): no one, including its creators, can fully imagine its implications and meaning. Thus, with the fallibilism amplified by the recognition of the unfathomable character of knowledge, the need for a decentralized learning mechanism by trials and errors is reinforced. The growth of scientific knowledge requires division of labour, competition and criticism. On the other hand, subjectivist epistemologies, by associating the meaning of a proposition with its historical, sociological, psychological or linguistic context of its formulation, tend to ignore the comparison between institutions in terms of their capacity to promote growth. For this reason, Bartley suggests the replacement of the usual sociology of knowledge by the economics of knowledge.

Another important aspect of Popperian philosophy for Austrian economics and for the analysis of Lachmann's work is the belief in realism. Popper's philosophy emphasizes that science stems from problems rather than from observation, that there is no such thing as observation independent of prior theoretical (or innate) conceptions, and that theories, creations of the human mind, are partial and imperfect representations of the world, not direct representations of the external world. In spite of emphasizing the creative character of the scientific theories, Popper believes in the existence of an outside world, independent of the theoretical representations. Although the world does not dictate how hypotheses should be, it limits its arbitrariness through the critical elimination of the explanations most inconsistent with it. Thus, both in the Popperian conception of science and in Hayekian economic theories, both the subjective element represented by the knowledge of individuals and the existence of the external world with which that knowledge interacts simultaneously coexist.

### ***Lachmann I***

Armed with these methodological clarifications, we are now able to explain Lachmann's transformation in terms of a renunciation of the Hayekian theoretical framework compatible with evolutionary epistemology in favor of a justificationist conception of scientific knowledge.

The paper chronologically follows the transformation of the author, although groups texts from different periods when the subject so requires. We will start from his analysis of the market process in the context of capital theory (Lachmann, 1956). This environment is conducive to the development of recurrent themes in his work, such as the study of the role of time, expectations, indeterminism and complexity in economics. These topics are discussed next. Then we will see that a fruit of these developments - radical subjectivism - shapes the author's theoretical efforts in his later work on the theory of institutions (Lachmann, 1971) and his view on the market process (Lachmann, 1986). After describing Lachmann's transformation and philosophical shift towards justificationism, in the conclusion of this paper we will deal with Lachmann's transformation in terms of the theoretical problems faced by the author.

Lachmann's first contributions to economics lie in the area of Austrian capital theory. This theory is characterized by the emphasis on the temporal dimension of production and the study of the consequences of capital heterogeneity. Each capital good fits into a structure whose shape and complexity change as the economy grows. Economic cycles, for the Austrians, are then explained by distortions in this structure caused by credit expansion. In *The Pure Theory of Capital*, Hayek seeks to deal with the problems of representing the intertemporal structure of capital in order to preserve its complexity. However, cycle

theory required simplified representations of capital, which made use of the concept of equilibrium. This led the author to leave for a second moment the theory's exposition in terms of the market process<sup>8</sup>. The relevance of capital heterogeneity, however, will be of fundamental importance in situations of disequilibrium, as it occurs, almost by definition, during a cycle. Hence, Hayek intended to write a second volume of his book, in which the analysis of the problems of theory in a disequilibrium situation would be extended. Such a volume, however, was never written, since Hayek turned his efforts to broader questions of social sciences. Lachmann, in *Capital and Its Structure* [1956]<sup>9</sup>, tried to accomplish the task left by Hayek

Let us first consider the complexity of external reality to which agents must adapt. If there is rigidity in production, that is, if capital goods are specific in their use to some degree, then the intertemporal compatibilization of production plans in a scenario of unexpected changes suggests that we examine the structure of capital: "... we must regard the 'stock of capital' not as a homogeneous aggregate but as a structural pattern. The Theory of Capital is, in last resort, the morphology of the forms which this pattern assumes in a changing world "(1956, p.4).

Each element of the structure must be used in order to produce the final goods desired by consumers. At the same time, there must be a "fit" or compatibility between the elements of the structure. Those that do not fit should be grouped by agents with complementary elements in an alternate use or turn into scrap. Regrouped capital goods are like "fossils" from earlier plans: palaces of merchants have seen hotels and theaters see cinemas (1956, ps. 3 and 38). The theory of capital must study the forces that lead to the integration of the structure of capital, as well as the forces that cause disturbances in this structure.

Capital as a structure resembles modern studies of complexity and self-organization: Lachmann seeks to describe the emergence of an order from the interplay of changing elements that connect one another:

The stock of capital does not present a picture of chaos; its arrangement is not arbitrary; there is some order in it. As we saw, capital resources cannot be combined in an arbitrary fashion. Only some modes of complementarity are economically significant. These form the basis of capital order. (1956:4)

To describe this emerging order, the author proposes two definitions of the structure of capital, one static and one dynamic. The former is defined negatively as the absence of regrouping of capital. A capital structure is composed of interrelated units of capital that do not change. The dynamic definition parallels Hayek's definition of equilibrium in terms of coordination of plans and is compatible with a growth situation. It is defined in terms of the agents' correct prediction about changes in the actions of the other agents and in the elements of the structure. To this end, Lachmann distinguishes between consistent and inconsistent capital shifts, whether predicted or not. Inconsistent changes are called structural maladjustments. In addition to adaptation to changes, the capital structure undergoes a process of increasing its complexity, which, although it cannot be measured by a scalar, such as the notion of average period of production, is related to quantities of productive stages and number of connections between them. Just as the division of labor is important to Smith, the "division of capital" is important to Böhm-Bawerk and the Austrians. The progressive complexity of the capital structure makes the problem of knowledge proposed by Hayek increasingly important.

Secondly, let us consider the importance of the subjective element. The concept of capital is not purely material and cannot be dissociated from the plans of entrepreneurs: "The generic concept of capital... has no measurable counterpart among material objects; it reflects the entrepreneurial appraisal of such objects. Beer barrels and blast furnaces, harbor installations and hotel room furniture are capital not by virtue of their physical properties but by virtue of their economic functions" (p. vii).

Entrepreneurial plans determine the shape of the production structure. Such plans are guidelines for human action and should be revised as unexpected changes take place in the economy. Like Hayek,

<sup>8</sup> Lewin (1997).

<sup>9</sup> Before his book, Lachmann deals with capital as a heterogeneous structure in some articles, such as "On The Measurement of Capital" [1941] and "Complementarity and Substitution in the Theory of Capital" [1947].

Lachmann believes that the revision of plans must not be modeled mechanically, but studied according to the evolution of the agents' knowledge. However, the growth of knowledge - related to the formulation and revision of the plans - does not follow any known pattern<sup>10</sup>, that is, one cannot predict future states of knowledge, and expectations, molded by the knowledge of the agents, are not determined by the "data" of the problem.

For Lachmann, the subjectivism of expectations is different from the subjectivism of preferences. The latter can in a sense be considered "given", while expectations involve interpretation of reality and this interpretation is always problematic. In the face of continual change, prices "are no longer a safe guide to action (1956, p. 22)." They transmit information, but imperfectly, requiring interpretation: there may be delays, interferences, changes in the opposite direction occurring at the same time and the same signals can be interpreted differently.

A theory of expectations must deal with the learning process arising from the interpretation of signals generated by the market. Consistent with the research program of evolutionary epistemology, Lachmann draws a parallel between business and scientific learning:

The business man who forms an expectation is doing precisely what a scientist does when he formulates a working hypothesis. Both, business expectation and scientific hypothesis serve the same purpose; both reflect an attempt at cognition and orientation in an imperfectly known world, both embody imperfect knowledge to be tested and improved by later experience. (1956:23).

Let us then consider, thirdly, the learning of agents. For Lachmann, the market process transmits knowledge through learning by trial and error, which leads to the compatibility of the elements of the structure. Capital losses and gains, through revaluation of capital or changes in the monetary reserves of companies, constitute a selection mechanism that tends to integrate the structure of capital.

Agents test their expectations in the market, which results in revisions of these expectations and learning from experience. Different people have different expectations (facing the same objective reality). Hypotheses that survive the market test tend to reflect more accurately the underlying realities or fundamentals of the economy. The market process leads to the adjustment of the production plans in order to bring them into line with the reality of the plans of other producers and consumers. We can say that Lachmann I (1956, p. 62) believes that the equilibrating forces are greater than the disequilibrating forces with respect to the market process situated in the context studied by the theory of capital: "We may thus conclude that via knowledge transmitted through the price system economic change tends, in general, to give rise to expectations consistent with itself." Despite the awareness of inconsistent changes in the structure of capital, derived from factors such as price rigidity and information delays, Lachmann in this book believes in the preponderance of the equilibrating forces resulting from the presence of markets and the price system.

Although somewhat summarized and fragmented, the exposition of Lachmann's theory around three elements - the increasing complexity of the problem of coordination of intertemporal production planes, the dispersed and fallible knowledge of the agents, and the market mechanism of error correction illustrate the Hayekian origin of Lachmann's contribution and consequently its compatibility with evolutionary epistemology. Lachmann's uses of his theory, moreover, fit perfectly into the methodological framework proposed by Hayek (1967): the study of complex phenomena allows only pattern predictions, usually associated with the limitations imposed by the real world on the agents, leaving little space for precise predictions about what agents will actually do, as Lachmann II's methodological program will require.

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<sup>10</sup> This will be a favorite subject in Lachmann's later work. Popper's Preface to Misery of Historicism is used, which shows that it is impossible to predict future knowledge. This proof is a fundamental critique of deterministic models of learning. Boulding (cited in Grinder, 1977) calls the application of this proof in economics "Lachmann's Law".

## ***The transformation***

Let us now see how Lachmann's transformation occurred. In a nutshell, his reaction against the disregard of methodological subjectivism that occurred at the time he wrote led the author to adopt a set of methodological beliefs incompatible with the Austrian research program that informs his work on capital. In criticizing the denial of the autonomy of the human mind typical of the formalist economic theory, Lachmann fails to emphasize the limits to human creativity imposed by non-subjective factors.

### **Subjectivism**

Let us see then how Lachmann develops in some articles the themes that we have already seen in his theory of capital, such as subjectivism, expectations, agents' knowledge and methodology. The development of these themes and the criticism of the neoclassical theory of equilibrium have made our author increasingly skeptical about the preponderance of equilibrating forces in the market. This development reveals an approximation between the work of Lachmann and that of his friend G.L.S. Shackle, marking the transformation of Lachmann I into Lachmann II. The ideas developed here, towards radical subjectivism, will be consistently applied in later theoretical formulations, resulting in a conception of the theory of the market process somewhat different from what we have discussed in the previous section. The examination of the articles on these subjects, however, allows us to identify a transition phase, in which the author's transformation is not yet complete.

We have seen that Lachmann's theory of capital presents us with an economic reality marked by complexity: the author refuses to use averages, aggregated concepts that do not refer to human action, or homogeneous variables such as "the" amount of capital and investment, without considering the complex structures hidden under such averages. Lachmann aptly cites Shackle's (1976, p. 377) characterization of economics as the "science of imprecision, the quantification of the unquantifiable, and the aggregation of the incompatible." In fact, Lachmann (1988, p. 274) states: "The world of markets is one of complexity. Any attempt to present the simplified picture of it found in the pages of the average textbook is bound to lead to the inquirer astray". Faced with dissatisfaction with the development of economic theory, the author criticizes in several articles<sup>11</sup> old and modern economic theories that ignore this complexity: "All analytical thought requires abstraction, but the more inclined we are to concede this need, the more apt we become to forget that which has been abstracted from may become important, if not at present, perhaps at the later stage of our inquiry "(Lachmann, 1978, p. 218). Methodologically, Lachmann warns of the dangers of transferring the simplicity of the models to the complex reality that such models purport to understand.

In particular, Lachmann is concerned with the disregard of subjectivist ideas in economic theory<sup>12</sup>. His work can be seen as a long journey of struggle against what he calls the Ricardian counterrevolution (Lachmann, 1976b), which seeks to deny subjectivism. Lachmann does not focus only on neoricardianism itself, but also on neoclassical microeconomic theory, which, because of the exclusive focus on equilibrium situations, tends to disregard other subjective dimensions of economic phenomena besides preference ordering.

Lachmann quotes several times with approval Hayek's (1955) observation on the role of subjectivism in the history of economic thought: "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." Latter Lachmann (1990) narrates the historical progression according to which economic theories incorporates successively the subjective notions of preferences, plans and expectations. This last advance, for the author, must lead us to emphasize the autonomy of the human mind (choices are not

<sup>11</sup> "A great message in small packs", in Lavoie's (1994) evaluation.

<sup>12</sup> Lachmann (Lachmann, 1990, p. 243) defines subjectivism as: "...a research programme of the social sciences, which aims at elucidating social phenomena in terms of their inherent meaning, i.e. in terms of their meaning to actors.

determined by external variables): since ends are in the future, they are not given, like preferences, but must be actively imagined.

Parallel to these advances in subjectivism, Lachmann (1978) reports the "vicissitudes of subjectivism" throughout the twentieth century: both in micro and macroeconomics<sup>13</sup>, the subjectivist interpretation was lost in the formalization of theories. In the field of microeconomics, Lachmann points out several problems arising from the neglect of subjectivism. In particular, one may criticize the practice of considering the fundamentals of the economies as exogenous, independent of considerations about the active mind and the pursuit of ends. The postulation of a complete space of consumer baskets, for instance, considers the alternatives as given, without reference to individual plans, making the choice illusory: in a world with given alternatives, prices and preferences, what remains to be chosen? This leads us into a rigid determinism that ignores real choices. They become automatic, represented by a conditioned maximization exercise. Human action is reduced to "robotization".<sup>14</sup> Mittermaier (1986) notes that the evolution of Physics was marked by the removal of anthropomorphisms from its theories. Economics, when mimics its methods, ironically excludes from its scope the very essence of the phenomenon to be studied, namely, human action. It could be said that Economics suffers symmetrically from mechanomorphism<sup>15</sup>. For Lachmann, however, choice is an active operation of the mind:

The fundamental flaw of neoclassical methodology lies in the confusion of action with reaction. Man in action is seen as a bundle of dispositions and not a bearer of thought. What difference does it make if we observe rather than ignore these distinctions? In action we reflect on means and ends, trying to fit the former to the latter, make plans and carry them out. As our ends lie in the unknowable (albeit not unimaginable) future, we have to exercise our imagination in reflecting upon them, and such exercise is incompatible with mere 'response to stimulus' or even the 'decoding of signals'. (Lachmann, 1991:289)

In another article, Lachmann [1966] criticizes the macroeconomic theories that disregard subjectivism. Modeling is criticized for systematically excluding human action and individual plans from analysis. Criticism is directed, in this article, specifically to the abuse of the notion of equilibrium. Echoing Hayek, Lachmann notes that this concept, by limiting analysis to situations of prior conciliation of individual plans, disregards any mental activity that would be necessary to explain the emergence of that state. Lachmann calls formalism<sup>16</sup> this disregard of subjectivism.

But what does Lachmann offer instead? In this article Lachmann I still presents an evolutionary theory of market process, consistent with his previous work. The theory must study the inevitable incompatibility of plans, which result in malinvestments, which requires revision of plans. The theory should study the selection mechanism imposed by the market and how this selective process leads to the review of plans. The selective mechanism is provided by capital gains and losses. The analysis of this process leads to the identification of two phases: innovation and imitation. In this analysis of the market process, subjectivist considerations, especially those related to expectations, are of cardinal importance and we will turn to them next.

### Time and Knowledge: the rôle of expectations

Lachmann's subjectivism places the knowledge of agents at the centre of economic analysis: Economics studies human action, reflected in plans, which are the fruit of agents' thinking. Lachmann, as a defender of subjectivism, also follows the path pointed out by Hayek, according to which we must theoretically investigate the knowledge of agents. But by emphasizing the uncertainty of expectations, he denies the possibility of learning and equilibrium. The emphasis on uncertain and subjective knowledge brings the

<sup>13</sup> See Lachmann (1973) for a subjectivist critique of macroeconomics.

<sup>14</sup> Lachmann (1986, p.32) quotes Shackle (1958): Predicted man is less than human, predicting man is more than human.

<sup>15</sup> Lachmann (1950, p 169).

<sup>16</sup> Lachmann (1969, p. 155).

author closer to the ideas of G.L.S. Shackle. In fact, both develop this theme in similar fashion<sup>17</sup>. We will see in this section that the two authors share with Hayek the idea of the central importance of the knowledge of the agents, differing from him, however, in the solution given to the problem.

Lachmann learns from Hayek that economic reality requires interpretation on the part of agents (Lachmann, 1943, p. 73). Again with Hayek, Lachmann I believes in a selection mechanism that leads to a convergence of expectations, compatible with the underlying realities (Lachmann, 1950, 1956, 1966). Later, with Shackle, Lachmann II begins to study the relationship between time and knowledge, which leads him to the concept of divergent expectations and the abandonment of the belief in the preponderance of the equilibrating forces of the market. In this study the justificationist assumptions of his analysis are manifest, as we shall see now.

Economic activity is characterized by choices. However, as noted by Shackle (1972), it is too late to choose the present. Choices refer to alternatives that lie in the future. However, the future is not determined by the objective "data" of the problem: it is the fruit of the choices made by the agents themselves. In a world of unexpected changes, the future is uncertain and must be imagined by the agents. In this sense, choice is original (Lachmann, 1994, p. 247), it creates alternatives. Because different individuals have different worldviews, different expectations will emerge. Hence the term "divergent expectations", which will characterize markets in Lachmann's view, in which little use is left for the notion of equilibrium. From this point on Lachmann replaces in his writings the expression "in a world of continuous changes" by the use of the shacklean metaphor of the kaleidoscope, according to which the market abruptly moves from one complex configuration to another.

But for Lachmann(1966, p.124, 1969, p.161; 1975, p.1977, p.131), futures markets and stock exchanges still have a positive rôle to play, that is, to coordinate these diverging expectations. Different agents do not have to agree on the future, but their actions can be coordinated by the market. Expectations never converge; even a perfect future market would not escape the problem of the divergence of expectations. Those different worldviews clash in markets:

The future is unknowable, though not unimaginable. Future knowledge cannot be had now, but it can cast its shadow ahead. In each mind, however, the shadow assumes a different shape, hence the divergence of expectations. The formation of expectation is an act of our mind by means of which we try to catch a glimpse of the unknown. Each one of us catches a different glimpse. The wider the range of divergence the greater the possibility that somebody's expectations will turn to be right. [...]

The market, of course, cannot diffuse "superior expectations" in the sense in which it diffuses superior knowledge because ex ante no criterion of success can exist. It cannot make bulls and bears change their expectations but it nevertheless can co-ordinate these. (Lachmann, 1976c, p. 236)

This fragment reveals some fundamental points. In the first paragraph, Lachmann recognizes the importance of diversity to increase the likelihood of one of the possibilities being correct. As the author pointed out on other occasions, this is followed by imitation of that better alternative, leading to a equilibrating process. But in the same year he wrote the passage above, Lachmann (1976a) rejects this learning mechanism. The entrepreneur may be wrong in the first three tries, but be right on the fourth, or a successful businessman may err.

Later, in his 1988 article, the author denies that speculative markets can be described as a Hayekian discovery process. On another occasion, Lachmann (1976c) states that the treatment of expectations by Shackle poses a challenge to the Austrian economy advocated by Mises, Hayek and Kirzner, since there would be no diffusion of expectations similar to the diffusion of knowledge: since there is no ex ante criterion of success, there is no transmission of correct expectations. Thus, Lachmann reaches a position known as radical subjectivism, which denies not only the neoclassical concept of equilibrium, but also the

<sup>17</sup> Lewin (1996) says that Lachmann's works generally predates Shackle's. The confusion about who influences who, according to Lavoie, stems from the fact that Lachmann considers himself as a commentator of history of economic thought, not as an original thinker himself. His ideas are systematically presented as if they were formulated by other economists.

use of this concept in the Austrian tradition itself. This marks the transformation of Lachmann I into Lachmann II.

The reasoning outlined above reveals in Lachmann and Shackle a justificationist perspective applied to the clear distinction between the nature of the knowledge of present and future facts. The knowledge of the present facts, according to both authors, is valid, justified, while the expectations are uncertain, therefore not proved or justified.

This, as we have seen, contrasts with Popper, for whom all knowledge are hypothetical and unjustified. Likewise, in the context of the market process, we have seen that the knowledge of the agents, in Hayek's opinion, is also fallible. For Lachmann and Shackle, however, the absence of proven knowledge in the market frustrates and renders illegitimate any attempt to theoretically address knowledge. As our analysis of evolutionary epistemology shows, the retreat to a subjectivist epistemology actually blocks the ways for an effective institutional analysis on the environments conducive to the growth of knowledge.

For the two authors, what confers the unproved character of expectations is their relation to time:

Time is the denial of the omnipotence of reason. Time divides the totality of things in that part to which we can reason about and that part to which we cannot do it. For we can only reason about those things that are complete; and in a world in which time exists, never anything is complete. (Shackle, 1976, p.49)<sup>18</sup>

The book *Epistemics and Economics* can be summarized as the development of the implications of the fact that the passage of time makes the knowledge of economic agents uncertain. Practically in all chapters of this book we can find quotations distinguishing knowledge and expectations in terms of valid knowledge. The same justificationist notion is also found in Lachmann (1966, p.61, emphasis added) with some frequency<sup>19</sup>: “what criteria of valid knowledge are at his [the agent] disposal?”

One noteworthy consequence of this relates to the alleged inconsistency between the autonomy of the human mind and the use of the concept of equilibrium. This last concept, in the Austrian tradition, can have several interpretations, like the one given by Hayek (1967) in his methodological study on complex phenomena. According to this interpretation, scientific forecasts need not have as a goal the determination of concrete values of equilibrium. If we take into account the asymmetry between prediction and explanation that occurs when we deal with complex phenomena, predictions assume a negative character, such as the indication of limits to human action. The mind is creative within the limits imposed by reality. Although human creativity prevents us from anticipating what might happen, we know a lot about what cannot happen, given the external economic constraints. Thus, the construction of equilibrium models can be used to perform "pattern predictions" that take these constraints into account.

However, in Lachmann we have the impression that theory, and in particular the notion of equilibrium, can only be understood in the first sense. Lachmann (1975), for example, denies the utility of the concept of equilibrium, even as a first step in the analysis, and considers the construction of equilibrium as incompatible with the theory of market process. This does not necessarily mean that the author denies the existence of the limits to human action. In the same article, Lachmann actually speaks of action guided by constraints and even states that, in the theory of capital, the equilibrating forces outweigh the disequilibrating ones (1975, p. 208). But for the author, as the idea of equilibrium is associated with determinism and denial of subjectivism, it cannot be used to point out the limits to action recognized by the author.

<sup>18</sup> This is not the original version, to which I have no access. It is a translation of a Spanish version of the book, which reads: El tiempo es una negación de la omnipotencia de la razón. El tiempo divide la totalidad de las cosas en aquella parte a cerca de la cual podemos razonar y aquella parte acerca de la cual no lo podemos hacer. Pues sólo puede razonar acerca de lo que en efecto está completo; y en un mundo donde existe el tiempo, nunca nada está completo

<sup>19</sup> See, for instance, Lachmann (1976c, p.230) and Lachmann (1988, p.273).

## Equilibrating and Disequilibrating Forces

In the previous subsection we show how the impossibility of justifying knowledge about the future leads us to the divergence of expectations in a kaleidic world. Let us now see the implications of this for Lachmann's view on the market process. The analysis would depend on the particular characteristics of each market. We could face different configurations of the resultant vector of opposing forces. For the relevant cases, however, the disequilibrium forces would prevail:

If, with Mises, we reject the notion of general equilibrium, but, on the other hand, do not deny the operation of equilibrating forces in markets and between markets, we naturally have to account for those disequilibrating forces which prevent equilibrium from being reached. In other words, to explain the continuous nature of the market process is the same thing as to explain the superior strength of the forces of disequilibrium (Lachmann, 1971, p. 190).

In the same article, Lachmann discusses the speeds of adjustment and diffusion of knowledge, which will influence the possibility that the equilibrating forces carry out their work in time, in order to generate an equilibrium before further disruptive changes. This article clarifies a little more the nature of the disequilibrating forces: the delay of diffusion can make information irrelevant the instant the agent obtain it or the agent could decide before he acquired important information. The diffusion of information, for Lachmann, would be slow.

Added to this sluggishness, Lachmann's world changes frequently, making learning difficult. At every moment we must have a new beginning (Shackle, 1976), a different pattern that makes previous knowledge obsolete and does not allow inferences from previous knowledge.

Returning to the comparison of learning mechanisms undertaken by evolutionary epistemology, note the equivalence of Lachmann's argument with the Duhem-Quine thesis concerning the inconclusive nature of specific tests of hypothesis in science: in markets, the simultaneous testing of business hypotheses would not allow us to speak in learning if we take as a parameter the justificationist demand for conclusive refutations.

Note, moreover, the absence of the abstract interpretation of the notion of equilibrium, usual in Austrian authors such as Menger, Mises, and Hayek. These authors, echoing Mill, believe that the study of complex phenomena requires the use of abstract laws, that is, laws that generate conclusions that would be valid in the absence of other forces. In this methodological tradition, the notion of equilibrium is useful as an explanation of the principle of market phenomena and not necessarily an explanation that generates empirical predictions about future values of market variables.

From these methodological assumptions underlying the Lachmanian analysis emerges a view of market processes that emphasizes the omnipresence of novelty, but that does not necessarily require the presence of adaptation:

In a kaleidic society the equilibrating forces, operating slowly, especially where much of the capital equipment is durable and specific, are always overtaken by unexpected change before they have done their work, and the results of their operation disrupted before they can bear fruit. Restless asset markets, redistributing wealth every day by engendering capital gains and losses, are just one instance, though in a market economy an important one, of the forces of change thwarting true equilibrating forces....What emerges from our reflections is an image of the market as a particular kind of process, a continuous process without beginning or end, propelled by the interaction between the forces of equilibrium and the forces of change. (Lachmann, 1976, p. 239)

Lachmann emphasizes the autonomy of the human mind. Economic phenomena are not determined by material forces, but are the fruit of inventive action. But if the notion of equilibrium necessarily denies the autonomy of the human mind, what would be the role of economic theory if exact predictions are impossible? Barring the possibility of pattern predictions, it appears naturally for him that the positive tasks left to Economics would be two: understanding of the intentions that shaped economic decisions in the past and the study of institutions as guides to action. Our author, now transformed into Lachmann II, consistently follows this program given by its methodological precepts.

## **Lachmann II**

The work of Lachmann II is exposed in the following order. We will discuss first his defense of a hermeneutical methodology and how this is applied in the theory of institutions. Next, we will exam the application of the same methodological ideas to the study of the market process. The result of this exercise, as we shall see, resulted in a very different account on the same object if we compare it with Lachmann I.

### **Method and the theory of Institutions**

So far we have studied Lachmann's subjectivism applied to capital and expectations. We shall now turn to the writings in which Lachmann explicitly expounds his ideas on the methodological consequences of subjectivism, especially the ideas contained in his book *The Legacy of Max Weber* (1971) and summarized in his article "Austrian Economics: a hermeneutical approach" (1991). The first essay of the book deals with the method of the social sciences, while the second addresses the theory of institutions. The ideas contained in these two essays will inform the particular method that the author will apply in his last book to study the market process, discussed in the following subsection.

Lachmann derives his ideas of methodology from a source that we have not addressed so far: Max Weber. Our author will adapt the historical method of interpretation (*verstehen*), defended by Weber, as the appropriate hermeneutic method for economics. Hermeneutics is originally the science of interpreting the meaning of a text (Lachmann, 1991, p.280, 1971, p.18). In the field of historiography, the researcher seeks to seek the meaning of actions through the study of plans. One of the historian's tasks is to perform consistency tests: to determine whether the purposes assigned to an individual are consistent with each other, forming a broader plan, and whether the execution of a plan is consistent with the individual's other intentions and circumstances (1971, p.20). When we move from the individual to the collective action, one must distinguish between organizations (such as armies) and unorganized collective actions (such as markets). The hermeneutic method can be used without changes in the first case, while in the second one must study the typical elements of the individual plans of the agents involved in the unorganized order. But, is this method applicable to Economics? Lachmann responds in the affirmative. The task of economics would be to study common elements in plans, including norms, institutions, and institutionalized behavior, such as profit maximization. In another article, Lachmann (1966, p.47) defines the basis of this study in terms of understanding of events: "Understanding as a theoretical method, that is, as a method for the interpretation of typical courses of action with the aid of thought designs, for example, economic plans."

Lachmann's proposal in the first essay of his 1971 book is to replace the Weberian concept of ideal type with the concept of plan. The first concept, according to Lachmann, is not necessarily based on human action; It could equally be applied to the animal kingdom (1971, p. 29). The concept of plan, in turn, can be used as a better guide to the interpretation of human action.

In contrast to the method that Lachmann attributes to the natural sciences, which would require the explanation or prediction (these would be synonymous) of observable phenomena - a task that would be impossible in the human sciences due to the impossibility of specifying the knowledge of the agents, Lachmann (1971, p. 37) presents the praxeological method, which affirms the existence of limitations imposed on human action: "Human action is not determinate, but neither is it arbitrary. It is bounded, firstly, by the scarcity of means at the disposal of actors. This circumstance imposes a constraint on the freedom of action."

Faced with the impossibility of strict predictions, the analyst faces two possibilities. We can study the consequences of those limitations to human action or we may seek the explanation of phenomena in the understanding of individual plans. Lachmann emphasizes this second option:

Causal explanation in the field of action cannot hope to attain determinateness, but this does not mean that we must give up all hope of explanation. What we may hope to accomplish here is to be able to show to what ends, means, and obstacles human action is oriented. Orientation thus emerges as a concept as fundamental to praxeological study as determinateness is to natural science. (1971, p.37)

Although prediction is impossible, as close as possible to that ideal one can hope for in the social sciences would be to try to establish the paths taken by human action through the study of individuals' plans. But we do not have access to the minds of individuals to predict their future actions. We can, however, observe their past actions and, by the hermeneutic method, try to understand the intentions that led them to those actions.

Economics should identify what happened or might happen in the future, not point out limits to action, as in pattern predictions. Thus, in methodological terms, the distinction between history and economic theory is very tenuous for Lachmann. For Mises, in contrast, the distinction is clear: he attributed to history only the method of interpreting single events, whereas the theoretical sciences were marked by typical events. It is interesting to note that the Austrian School, which fought historicism in its earliest years with Menger's work, ends up adopting a historicist position in Lachmann's work. This turn to historicism, however, will be complete only in his last book. Here, however, he only seeks to minimize the importance of the possibility of predicting patterns in favor of historical understanding. Indeed, in this book, commenting on pattern predictions, Lachmann simply observes that the study of the unintended consequences of human action say nothing against the correspondence between action and plans (1971, pgs. 31 and 46) and that the study of this correspondence would be more fundamental to Economics.

Lachmann's contribution to the theory of institutions involves elements drawn from the works of Menger, Weber, Hayek, and his own contribution to the Austrian theory of capital. This theory is a natural step in the research program of Lachmann II, given the hermeneutic methodology to which the author has affiliated: the institutions offer points of orientation for the study of plans. The substance of the theory, however, arises from the re-use of the concepts of Lachmann I's capital theory, insofar as it investigates the mechanisms that bring coherence among elements of an institutional matrix. Thus, such a theory is not limited to subjective dimensions, making use of evolutionary explanations, learning processes, and pattern predictions.

This phenomenon is not surprising when we take into account the criticism of subjectivist approaches to knowledge made by evolutionary epistemology: they inhibit the development of institutional theories about the growth of knowledge.

## Market Processes

We will now see how the methodological precepts developed in the previous subsection are applied by Lachmann (1986) in his last book, which systematically organizes the author's opinions on the functioning of markets. This restatement of ideas will allow the clarification of some of the author's positions that will support our interpretation of the author's transformation into Lachmann II. We may attribute certain contradictory or ambiguous ideas in previous works prior to a transitional phase. In this last book, however, Lachmann will unequivocally defend a historicist methodology and deny the task of tracing the unintended consequences of human action as appropriate to Economics. In this book, Lachmann's mode of historicism, which sees the task of Economics as centered on the positive understanding (description) of individual plans guided by institutions, will clearly shape a new way of dealing with market process theory. In this work, the author constructs will identify several historically identifiable ideal types of market and agents. The peculiarities of these markets and agents will determine the different forms that market processes will take.

We will not deal with the way in which the author organizes the ideas we have already seen. Our exposition will, on the contrary, deal with two points: first we will document the historicist turn; then we will see how Lachmann II applies this method to the study of the market process.

For the author, the subjective nature of knowledge prevents empirical generalizations, which forces the analyst to seek other ways that could be found, one can infer, in history. Lachmann states, for example, that one should abandon the search for a theory of business cycles in favor of a historical analysis, in which the study of agents' knowledge plays an important role (1986: 30). On the following page, the author states that we should focus analysis in economic history, since past knowledge is knowable, in contrast to predictions that would require information about the agents' future knowledge:

Our conclusion that economists must confine their generalizations to the knowable past will be deplored by all those who see the main task of economics is the making and testing of predictions. Our answer has to be that the social world, unlike the solar system, is impelled by forces as mutable as thoughts and that no Newtonian model fits it. (1986, p.32).

Further on, Lachmann (p. 112) speaks of moving away from determinism toward something descriptive. To describe the intentional conduct of the agent in an uncertain environment (1986, p.139) is, in fact, seen as the object of Economics.

The task proposed by Hayek - tracing the unintended consequences of human action through pattern predictions - is explicitly denied in this book. We have seen before that Lachmann did not deny such a possibility, even considering it as the most interesting one, after the task of mastering the theory of intentional action. Now (pp. 32-33, 115) this is considered impossible, since, according to the author, it could only be done under restrictive *coeteris paribus* conditions, especially with respect to expectations.

However, what is the difference between theory and history, according to him? Lachmann criticizes the Misesian definition based on the distinction between typical and unique events and offers a response echoing his book on Weber's legacy: the economist must deal with conceptual schemes in the form of ideal types - the economist produces and the historian uses them (p. 34).

How does Lachmann apply this methodology in the study of the market process? For him, different markets are characterized by the interaction of different classes of agents, with different interests and acting under different constraints. A diverse range of market processes thus arise. Therefore, one should not study "the" process of the market, but, by constructing several ideal types of agents, one should speak in market processes, in the plural. This results in the construction of a taxonomy of market processes and ideal types of agents. Lachmann distinguishes between intramarket, intermarket and macroeconomic processes; Between economies of production and exchange; Between cooperative and entrepreneurial economies, and between rigid and flexible prices economies. As for the agents, the author distinguishes the arbitrator, the speculator and the innovator.

The main conclusion deriving from all these distinctions is to point to the diversity of market processes, implying an equivalent variability of results of these processes. Lachmann seeks to describe the characteristics of each market process identified in the above taxonomy. The study of which forces prevail - those of equilibrium or those of disequilibrium - must be done on a case-by-case basis: the more expectations diverge, the greater the preponderance of disequilibrating forces. Expectations, in turn, differ to a greater or lesser extent depending on the complexity of the market and the type of institutions that emerge in that market environment.

This series of classifications of market types and ideal types of agents presented by Lachmann is a coherent application of the methodological path that the author has chosen: the positive description of formats that a market process can take. We no longer speak of the process of the market in general, but of several processes that differ from each other as the institutions in which these processes are immersed vary. Thus, the hermeneutical methodological prescription, the theory of institutions and the study of market processes (in the plural) are closely linked, forming part of a coherent research strategy by Lachmann II.

We cannot fail to note at this point the lack of theoretical results that follows the taxonomic efforts of every historicist enterprise. This phenomenon is explained in this article with the aid of evolutionary epistemology. The unattainable demand for proven knowledge rejects a "merely" institutional theory of the growth of knowledge, which only compares environments in terms of their capacity to foster progress,

rather than provide an unequivocal algorithm for of choice. This methodological point of view leaves as an alternative only the description of particular concrete phenomena, providing no guide of navigation in the midst of the complexity of the phenomena studied.

### ***Conclusion: a hermeneutical reading of Lachmann***

We now have to provide an interpretation of this caleidic set of ideas. What did he intend and plan to show? Beyond that, what were the unintended consequences of the author's theoretical choices? Finally, is there an alternative to the problems inherent in this choice?

The answer to the first question is not trivial. Lewin (1996), for example, considers that Lachmann sounds more radical than necessary: when he states that prediction in Economics is impossible, in fact he meant that perfect prediction is impossible, agreeing that there might be less rigorous kinds of prediction. For Rizzo (1996), Lachmann's work deals with the balance between equilibrating and disequilibrating forces. He considers that the subsequent emphasis on the latter kind of forces reflects the audience to which the author addressed: in speaking to a neoclassical audience, one must emphasize disequilibrating forces. This is a possible explanation of Lachmann's transformation, different from our own.

In the light of this, we will now try to understand the author's message. Such a message can be summarized by the title of the appendix of his latest book "The Market is not a Clockwork". In this appendix, Lachmann (1986, p. 159) states: "The neoclassical paradigm, in part, rests on an astonishing lack of ability on the part of many of its adherents to realize the limits of determinist as a form of economic thought."

Economic theory should deal with human action, not reaction. Lachmann's work can be seen as a battle against the determinism and mechanicism of economic theory, both in its classical and neoclassical forms. The author aggregates both under the label of plutology or neoricardianism. In this combat, the weapons used were two, available in the core of the Austrian research program: the complexity of the economic problem and subjectivism behind every economic phenomenon.

The emphasis on the complexity of capital, with its changing pattern of structural relations, the focus on the complexity of the market process in general, with its chains of actions and interactions that creates many path dependent phenomena and finally the idea of treating economic agents as scientists who formulate hypotheses about such complexities, promise to constitute the most important elements in the legacy left by Lachmann.

To emphasize the importance of subjectivism is a very important task to correct most of the deficiencies found in modern theories. The overemphasis on this task - radical subjectivism - nevertheless presents unwanted unintended consequences. By emphasizing subjectivism, one runs the risk of denying the realities underlying the market process. Lachmann does not intend to deny such realities, but the direction of his thinking leads in practice to such denial. This negation takes the form, for example, in the disregard of the error in Economics:

For the new view the objects of action lie in the future. 'Choice is made amongst the invented, subjective creations of thought' and thus provides no criteria of error or truth. In the older view men, impelled by tastes and constrained by obstacles, make choices which are the outcome of the interaction of these forces. Choice is the result of the impact of constraints on human dispositions. In the new view, choice is not a result of anything, but a creative act. (Lachmann, 1986, p.55)

The theory of equilibrium is thus viewed as a threat to the autonomy of the human mind. This only occurs, however, when we interpret this theory from a methodological point of view which does not allow the possibility of pattern predictions and uses the notion of equilibrium accordingly. In a theoretical framework compatible with evolutionary epistemology, such as the Hayekian research program, actions are both creative and limited. Lachmann II, as we have seen, does not accept this possibility. This led the author to consider equilibrium theory only in a sense - to predict quantities and equilibrium prices -

disregarding the other possibility - to show the limitations of human action imposed by scarcity and other constraints. It follows that economic science should proceed in the sense of describing what agents actually do and think. We thus have the historicism that marks the work of Lachmann II, which results in the author's view of the market process.

On the methodological level, in our opinion, the development of the Austrian theory of the market process involves the substitution of subjectivist conceptions about knowledge by evolutionary epistemology, already present, for example, in Hayek's work. The exploration of this Popper legacy opens the way for the construction of an institutional theory on the growth of knowledge. This allows us to escape the false dilemma between mechanicism and historicism.

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