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Towards an Austrian Theory of the Firm*

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The Austrian school faces a true ambiguity concerning its ability to develop a positive theory of the firm. Although it never really forms the subject of specific studies, the enterprise nevertheless implicitly appears both in Austrian theories of entrepreneurship—which deal with the market behavior of enterprises facing the problem of knowledge—and in their writings on the microeconomic analysis of the production structure. Both works are important in the Austrian school's research program. But while in the first case the enterprise is unavoidably interwoven with the concept of the entrepreneur, it represents at best, in the second case, nothing more than one of the potential bases for the implementation of a capital structure. It therefore seems fair to label the Austrian view of the enterprise "residual".[1]

This anomaly must be considered in relation to another particularity of the Austrian school, which is the relative separation between the two veins around which Austrian thought has developed, even though both deal with the same problem of coordination. One can only be struck by the few connections between the works dealing with the problem of knowledge coordination with those devoted to the coordination over time of the different stages that compose the production process in an Austrian perspective. It all looks as if Menger's legacy had been strictly shared out within the Austrian family, some authors developing the cognitive and entrepreneurial dimension of Menger's thought through a theory of market processes, such as Hayek (1937, 1945, 1946, 1967), Mises (1949), Lachmann (1986), Kirzner (1973, 1985, 1992), while others investigated the temporal dimension of

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[1]This finding is shared by a number of authors belonging to the Austrian tradition. O'Driscoll and Rizzo explain in the very last pages of their book that: "Surprisingly, there is no subjectivist or Austrian theory of the firm. This is true even though the subjectivist approach is particularly appropriate for analyzing firms as evolved social institutions. Clearly, much more work needs to be done on a subjectivist or Austrian theory of firm behavior" (1996, pp. 123–124). Adopting a similar point of view, Langlois notes that "Hayek's theory of the market is not fully general (...) the business firm is an anomaly or lacuna in his theory of economic order" (1994, p. 2), Loasby even talks of "most obvious deficiency in Austrian economics" (1989, p. 166).

production and capital: Böhm-Bawerk (1889), Hayek (1931, 1939, 1941) Hicks (1970, 1973), Lachmann (1956, 1977).[2]

Yet, taking the production structure into account in the analysis of the coordination of economic activities goes hand in hand with the knowledge, that economic agents already possess concerning these very structures. When criticizing the Smithian explanation of economic progress, Menger considers that it results from the increase in knowledge that individuals possess, concerning the relationship between their needs and the well-ordered set of economic goods. Similarly, according to Böhm-Bawerk, production roundabouts are a direct reflection of human knowledge.

Thus, two phenomena are interwoven. On the one hand, sets of spatial and temporal interdependencies exist, which restrict the decisions of the entrepreneurs, while on the other hand, the entrepreneurs must acquire the knowledge of these constraints in order, if possible, to modify them. We are, hence, facing a process characterized by the fact that the individuals' knowledge of the constraints, as regards the layout of economic activities, affect these constraints, because of the decisions the individuals make.

The object of our paper is, therefore, to fuse in the same analytical framework, the Austrian contribution regarding the study of the production structure *and* the dynamics of knowledge that the individuals have of it. This is done with a view to providing a renewed theory of the firm and, more generally, analyzing the coordination of activities between firms. In discussing the progress of what is usually referred to as the new theories of the firm, our aim is to underline the advantage of focusing on what we have agreed to call an Austrian theory of the firm, which, while bringing together the processual dimension of production and knowledge, offers a detailed analysis of the coordination over time of the enterprises' plans.

The second section of our work is thus devoted to a study of the contributions of the Austrian analyses of production, which are likely to lay the foundations of an Austrian theory of the firm. We shall show that these analyses, by ascribing a crucial role to the concepts of *delays* and of *specificity of the production structure*, allow us to formulate a theory of the behavior of a firm evolving in historical time, which can allow for the emergence of different types of firms according to their means of managing the time constraint.

In the third section, we shall account for the manner by which the Austrian tradition explains and analyzes the role of the entrepreneur. We shall show that this contribution, rooted in Menger, is supported, certainly by Hayek's works, but also by the studies of Schumpeter, Kirzner, Lachmann, Witt and of all those who attempt to elucidate the role of the entrepreneur, based on the assumption of the unequal distribution of the agents' ability to process the information that reaches them. The place devoted to the dynamics of knowledge, to its appropriation and its diffusion is then a key issue.

The fourth section is then, quite naturally, dedicated to the presentation of an analytical construction of an Austrian theory of the firm capable of reconciling all previous elements.

[2] In this respect, it is symptomatic to note that in a recent account of what he describes as a modern microeconomic version of the Austrian theory, Kirzner (1997) never refers to the production side of the Austrian thought. The same short-sightedness can be found regarding the Austrian analysis of the production structure in the recent works of Kirzner (1992), Thomsen (1992), Boettke and Prychitko (1994), O'Driscoll and Rizzo (1996)... We will nevertheless have a chance, in the following pages, to underline the various ways in which Lachmann's work appears to be an attempt to synthesize both traditions.

Based on a reinterpretation of the concept of capabilities, we bring to light the foundations of a general analysis of the coordination between firms that link the division of work to the division of knowledge.

1. Enterprise, structure and genealogy of production

As McNulty (1984) quite appropriately points out, economic theory has mainly developed along the market-allocation axis. One of the many consequences of this was that the nature of the firm, and the question of its role within the economic process, were never really studied. The idea is that the prevalence of the allocation problem, and of the works related to competition as a market structure, would be accompanied by a certain neglect of production—understood as a process of quantitative and qualitative transformation of resources—and hence, of the firm as the site and agent of this transformation. The resulting conception of the enterprise is called *static*, expressing the fact that its activity is similar to an instantaneous market mechanism aimed at combining factors of production that are, for the most part, substitutable. The analysis takes place in a *logical time* with no genuine causality, such that: "At any moment (...), the past is determined just as much as the future" (Robinson, 1962, p. 26). The achieved result is determined *a priori* by a set of exogenous initial conditions, independently of the adjustment process that leads to it (Kaldor, 1933), thus concealing the diversity of the expectations and the behaviors of the enterprises.[3]

Nevertheless, it is well known that one of the specificities of the Austrian approach has its place within the tradition of Menger's work, i.e., the proposal of a detailed analysis of production, and more precisely of the sequence of production processes,[4] based on the idea of the antecedence of the production activity over that of exchange (Menger, 1871).[5] Such antecedence is more particularly expressed in the establishment of causal relationships between the different categories of goods, which lead to the analysis of indirect production methods being accorded central status. Moreover, this genuine distinguishing characteristic of the Austrian theory of production and capital is to be found in the analyses made by Wieser (1927), Böhm-Bawerk (1889), and Hayek (1931).[6]

[3]One can note that the developments of what are nowadays referred to as the contractual theories of the firm (transaction costs, agency theories, incentive theories, etc.), while replacing factor substitutability by the substitutability of contractual forms, haven't allowed for a real improvement in this field.

[4]This type of analysis is not truly original insofar as, according to Morishima (1976), Smith was one of the first authors to introduce the idea of a "genealogy of production", that is of a more or less complex sequence of production activities.

[5]The first two chapters of the *Principles of Economics* (1871) are devoted to "the general theory of goods" and to an "economy of economic goods" respectively, and it is only in the third chapter that a theory of value based on exchange is presented. The same structure can be found in Böhm-Bawerk's *Positive Theory* (1959): the author first exposes his view of capitalistic production, in relation to the idea of economic development, before dealing with the analysis of value and prices.

[6]We have, of course, no design here to discuss the distinctions, problems, and limits of the various versions of the Austrian theory of capital and production. Along with Lachmann, quoting Hayek, we consider that the main interest of these approaches is "to discuss in general terms what type of equipment it will be most profitable to create under various conditions, and how the equipment existing at any moment will be used..." (Hayek, 1941, p. 3).

Still, it is true that the implications of this antecedence of production, as regards the theoretical debate concerning the nature and the role of the firm in a market economy, have quite oddly never been investigated, even by the Austrian works dealing with the entrepreneur. This is all the more surprising as, Ravix (1994) points out, Menger considers that it is in the entrepreneur's very nature, to plan and to build up such production processes:

> "according to Menger, in addition to the technical participation of the entrepreneur in the production process, which is a superior service, the entrepreneur's activity comprises of: (a) acquiring *information* about the economic situation, (b) economic *planing* (...) aimed at rendering the production process more efficient (...); (c) the *voluntary decision* through which the higher order goods (...) are assigned to a specific production process; and finally (d) supervising the carrying out of the production plan" (Ravix, 1994, p. 171).[7]

By focusing on the informational dimension of the entrepreneur's prerogatives, the Austrian theory of entrepreneurship has eclipsed the productive dimension. Moreover, it is interesting to note that in a recent critique addressed to the traditional Austrian theory of market processes—the entrepreneurial discovery approach—Rothbard (1994) and Salermo (1993) challenge the idea of market processes conceived as mechanisms of continuous acquisition of knowledge by more or less vigilant entrepreneurs in favor of an understanding which attaches a greater importance to the entrepreneur's ability to (re)deploy, at any moment, his resources towards their most urgent use. And although the object of the critique was not to define an Austrian theory of the firm,[8] it nevertheless suggests that we contemplate, in this perspective, some of the characteristics of the Mengerian entrepreneur, that are traditionally ignored by the Austrian microeconomic approaches.

1.1. The foundations of a temporal analysis of the firm

The idea is then, first of all, to clearly take into account the fundamentally temporal character of the productive activity. The consequence of admitting the existence of vertical relationship between the different goods—indirect methods of production—is indeed to place the analysis in a temporal framework. "Time is an essential feature of our observations" argues Menger, conveying the idea that it is truly impossible to completely eliminate the period of time that exists between the possession of higher order goods and the possession of the corresponding goods of an inferior order (Menger, 1950, p. 68). This idea, which was taken up again and made famous by Böhm-Bawerk through the idea of *period of production*, and also by Hayek through the idea of a *temporal structure of production* leads, in our view, to a modified perception of the firm.

The transition from a synchronic, instantaneous, representation of production to a diachronic analysis indeed involves considering the appearance, over time, of badly, or

[7] Lachmann also explains in a similar perspective that the Austrian theories of production and capital "had to start with the capital combinations of the individual units of productions or 'firms', combinations of buildings, equipment, machines, stock of working capital, and so forth" (Lachmann, 1978, p. ix).

[8] The purpose of these critiques is to show that the occurrence of continuous changes in the external data of the market is incompatible with the idea of convergence towards a long term equilibrium.

unexpected, changes in the market conditions. The enterprises' expectations regarding the future, do not always prove to be accurate, insofar as the production plans implemented by the enterprises take the form of a sequence of actions over time. These more or less unexpected changes call for a study of the different types of behaviors that the enterprises adopt according to different modes of management of the time constraint. It is actually this type of problem that Hicks (1954) confronted in a paper that went unnoticed, in which he proposed to develop a dynamic theory of the firm that unquestionably bears the mark of the Austrian school of thought.[9]

The model set up to study the behaviors of the firms implementing new production schemes, splits economic time into three periods: (1) a *construction* period characterized by the absence of output, (2) a *closed* period during which the enterprise is the only one to produce the product in question, and (3) an *open* period marked by the arrival of competitors (Hicks, 1982, p. 164).

One of the important lessons of this analysis is that it is now necessary to consider that all enterprises, of course, produce goods, but also the corresponding production processes. Investment in a production process—the combination of goods of a higher order—does not in itself create value, it represents a commitment to make a specific product which will lead to future revenues. Once invested, the productive asset results in costs that will be covered by the production and the sales of the considered goods. This last aspect, which is well known, is one of the principal milestones of a neo-Austrian theory of growth (Hicks, 1973; Amendola and Gaffard, 1988), has crucial microeconomic implications of which Hicks became aware very early. Indeed, the enterprise thus faces a problem concerning the management of its activities and resources over time, or in other words, a problem of synchronization of expenditure and revenue flows, which is likely to threaten its short term accounting balance, or even its very existence if the inferior-order good is no longer wanted on the actual production date.[10] The study of the firm's behavior hence obliges us to bear in mind the fact that the enterprise constantly finds a middle course between its short and long term objectives. Formally, this signifies that the enterprise maximizes a combination of short and long term profit: $lg + mG$, where g represents the amount of short term profit; G, the amount of long term profit; and l and m are parameters which account for a number of significant elements specific to each enterprise, such as the expected duration of each period, the rate of time preference and the attitude towards risk.[11]

[9] Even though the relation is never acknowledged in this paper. The relationships between Hicks and the Austrian approaches are nevertheless rather ambiguous: once negatively referred to in the papers of (1935) and (1939), they later became his main source of inspiration (1973) and (1985). The explanation of this ambiguity was belatedly given by Hicks himself: "(...) the tribute to Böhm-Bawerk, and to his followers, is a tribute that I am proud to make. I am writing in their tradition; yet I have realized, as my work has continued, that it is a wider and bigger tradition than at first appeared" (Hicks, 1975, p. 12).

[10] It is thus relevant to consider, following Lazonick, that "The basic challenge that faces the capitalist enterprise is to transform the fixed costs inherent in its investments into revenue-generating products to create value" (Lazonick, 1991, p. 92).)

[11] Using lower case letters for short term variables and upper case letters for the long term variables, the full expression for profit thus becomes: $lg + mG = l(r - c) + m(R - C)$, with r and R, the total expected revenue per unit of time, c and C the total costs per unit of time—the latter are allocated differently over the two periods according to each enterprise's strategy. The amount of product x and X that maximizes profit is thus obtained

The crucial point is that bearing in mind such subjective elements allows the author to set fourth two main types of enterprise behavior: the "Sticker" and the "Snatcher" (Hicks, 1982, p. 168). While the *Snatcher* enterprise is driven by the perspective of rapid profits—the value of l is relatively higher than that of m, the Sticker enterprise is more interested by the creation of a stable and perennial activity—the value of m is higher than that of l.

The succinct nature of this analysis must not hide what is at stake here: the aim is simply to take into account the complex nature of enterprise behavior over time, while not forgetting the constraints inherited from the past, as they are crystallized by the production process, and from the viewpoint of objectives that refer to different time spans. Time, which acts as a constraint, is also subject to choice and, as such, influences the economic outcome. The objective is not only to reach a result as fast as possible—cf. the *praxeological* notion of time developed by Mises (1994); it is above all to manage the necessary time lapses before the production phase results in final consumption, bearing in mind the fact that today's choices transform the conditions under which tomorrow's choices will be made.

This time constraint is, as we shall see, all the more meaningful since the Austrian theory of production and capital attaches a very special importance to the idea of specificity of the production capacity.

1.2. Specificity of the production processes and behavior of the firm

"The very essence of the market economy is the specificity of the capital goods" (Skousen, 1990, p. 155). The concept of specificity represents a crucial element of our project of setting up an Austrian theory of the firm. Indeed, if it is the sequence and order of the inputs, required for the completion of production, that endow it, in the Austrian tradition, with its specificity, the latter acts as a factor of vulnerability if the product, corresponding to the production process that has been set up, is no longer demanded at the actual production date; nothing guarantees that the physical properties, determined at the outset, of the produced goods will *in fine* be exactly in accordance with the demand.

Even so, such vulnerability must, in Menger's view, be kept in perspective. In the author's mind, it is not because the demand for a given good of an inferior order declines, that the superior-order goods lose all economic value. Such value is henceforth determined by their best possible alternative use (Menger, 1976, pp. 65–66). However, this point of view calls for a debate, especially when considering the problems at the level of individual firms.

It may be noticed that Menger's point of view leads *a priori* to undervalue the consequences for the firm of taking into account the complementary nature of capital goods.[12] As Lachmann points out:

> "Once we abandon the notion of capital as homogeneous, we should therefore be prepared to find less substitutability and more complementarity. There now emerges (...) a

when the partial derivatives of the expression of profit, with respect to x and X, are null, that is respectively: $l(r_x - c_x) + m(R_x - C_x) = 0$ and $l(r_X - c_X) + m(R_X - C_X) = 0$.

[12]This does not mean that Menger totally overlooks the complementary nature of the higher-order goods, since the very value of these goods stems from the complementarity that ties them to goods of the same order, but also to goods of all the inferior orders.

conception of capital as a structure, in which each capital good has a definite function and in which all such goods are complements" (Lachmann, 1977, pp. 198–199).

But capital goods are not naturally complementary, they only become so once they are incorporated and interact within a specific production process: "Factor complementarity presupposes a *plan* within the framework of which each factor has a function (...) Factors are complements insofar as they fit into a production plan and participate in a productive process" (ibid., p. 200). It is up to the enterprise to determine a specific organization, i.e., a particular production process that aims at making the best of such complementarities.[13] Complementarity and specificity hence go hand-in-hand and the relationship that binds them together within the firm is of the one-to-one type: it is because the factors are designed to be complementary that one of the main roles of the enterprise is to choose for these factors, a specific arrangement in the area of a particular production process.

However, the logical price to pay for this arrangement is the increased vulnerability of the enterprise, in the case of an expectation error, or the volatility of demand: "Once free capital has been converted into buildings and machinery, any failure of events to conform expectations will upset everything"[14] (ibid., p. 269). And in such a context, it becomes quite a complicated process to revise the enterprise's plans: "The revision of the plans cannot be understood without reference to the stocks of equipment, raw materials, half-finished products and finished products, that are available at relevant dates" (Kirzner, 1966, p. 41).

This, in our view essential, dimension of the analysis of the enterprise's behavior over time, is emphasized by Richardson through what we have agreed to call, the management of the specialization-adaptability dilemma: if an enterprise always seeks specialization, the latter is only the opposite, the "sacrifice of adaptability" (Richardson, 1990, p. 151). Consequently, what is necessary is, to solve the contradiction that exists between the necessary implementation of specialized production processes, and the no less necessary obligation to reconsider these very same production processes at close intervals.

But what Menger's words seem to suggest is that these two objectives are not necessarily conflicting within the framework of the Austrian analysis of production and of the firm. The complete explanation is, once again, given by Lachmann who introduces the idea of "substitutability" of capital goods into the analysis (Lachmann, 1977). This is done in order to explain the fact that capital goods, specific as they may be, and despite the fact that they contribute to specialized production processes, are likely to be redeployed, as expectations are confirmed or refuted, towards new productive configurations connected with new production processes, adapted to the new economic environment. The argument rests on the idea that factor complementarity and substitutability do not represent two mutually exclusive alternatives, but that they "are phenomena belonging to different provinces of the realm of action" (Lachmann, 1977, p. 200). While factor complementarity refers to a

[13] According to Lachmann, the entrepreneur's duty is "to *specify* and make decisions on the concrete form the capital resources shall have" (Lachmann, 1978, p. 16). The capital goods should thus be characterized rather by what they allow us to do, than by what they are; their use over time is an identifying factor as important as their physical characteristics. Their physical homogeneity goes hand in hand with their functional heterogeneity.

[14] Lachmann quite symptomatically uses the expression "malinvested capital" (Lachmann, 1978, p. 25) to refer to these expectation errors.

feature shared by capital goods used in view of a joint productive target, the idea of substitutability "is a phenomenon of change, the need for which, arises whenever something has gone wrong with a prior plan" (ibid.). The first case refers to a given situation, the second to a change in the situation.[15] Thus, the enterprise's problem boils down to determining, given the occurrence of unpredictable changes, the best possible compromise between the exploitation of the factors' potential complementarities[16] and the access to combinations that may lead to an increase in the substitutability potential.[17] The problem is naturally all the more complicated since the relations of complementarity are dense and complex, and also because the enterprise faces a volatile demand.[18]

The main improvement of the Austrian analyses of production and capital to a possible theory of the firm, thus, certainly consists of the introduction of time, but more especially, to use Lachmann's words, its main contribution is the introduction of the idea of "complementarity over time"[19]: "Time is relevant here as the dimension of processing, the medium of complementarity" (Lachmann, 1977, p. 205). The analysis is punctuated by the "time of intention" (Curie and Steedman, 1990), that is by a time that, while linking the experiences from the past and the expectations about the future to the objectives targeted by present decisions, represents the main driving force behind the enterprises' behavior. Time is now historical in the sense that any action performed at any point of time results from constraints inherited from the past, crystallized by the state of the capacity of production, and will have consequences over the whole period studied, i.e., the lifetime of the enterprise. The "transformation" dimension of time (Davies and Lee, 1988) becomes the determining factor in the sense that the firm must monitor its own transformation through the adoption of a behavior aimed at securing its objectives of survival and growth according to the time constraint.

An Austrian theory of the firm must therefore look into the consequences on the enterprise's behavior of the need for an *ex ante* coordination, i.e., it must study the conditions of a viable organization of intertemporal complementarities (Amendola and Gaffard, 1992).

At this stage of our work it is important to note that the idea of a production process, as it is described in the foregoing pages, comes under a totally subjectivist reasoning. The concepts of complementarity and substitutability of capital goods are themselves the reflection of a subjective process (Ioannides, 1992, p. 96): while the notion of complementarity refers to the role assigned to each capital good by the plans implemented within the different firms, the idea of substitutability discloses the adjustments of the production structure that were made necessary by thwarted expectations. Consequently, any research directed towards the problem of the coordination over time of the production plans of different enterprises cannot be disassociated from the analysis of the coordination over time of the knowledge that is within the reach of these very enterprises.

[15]The word *flexibility* probably renders more faithfully the author's thought.

[16]These complementarities are not unlimited; they are limited by technological rigidities.

[17]For example, Lachmann recalls the resorting to standardized machines (Lachmann, 1977, p. 201).

[18]This is what leads Lachmann to state that: "A production plan involving a large number of factors and with a complex complementarity pattern is particularly vulnerable in case of any of them breaks down" (Lachmann, 1977, p. 201).

[19]"Böhm-Bawerk's chief contribution to the theory of capital was not the introduction of *time*, but of *complementarity over time*" (Lachmann, 1977, p. 205).

2. The Austrian theory of knowledge, the nature and the role of the entrepreneur

One of the main contributions of the Austrian tradition is to have underscored the role of knowledge in the running and the evolution of the economy. More precisely, according to Austrians, the knowledge that individuals have of their environment is likely to modify, through their actions, its very evolution.

This proposition may sound obvious, but the specificity of the Austrian marginalism actually lies in the consequences of such an assumption (Jaffé, 1976; Garrouste, 1994). In fact, a study of the characteristics of the Austrian analysis of knowledge and of its role allows us to bring to light the bases of Austrian subjectivism. Firstly, we shall explain the gap, concerning the attention drawn to knowledge, between the Austrian tradition and the traditional individualist analysis.

The particularity of the Austrian conception of the firm, or more exactly of the entrepreneurial activity, results from the specificity of the Austrian analysis of knowledge. As Witt observes: "Austrian theory focuses exclusively on the entrepreneur as the organizing power in the process of combination of inputs, the agent who brings together all the components with the idea of selling them in future transactions" (Witt, 1987, p. 191).

2.1. The characteristics of the Austrian analysis of knowledge as a base for subjectivism

The "Austrian tradition"[20] opposes the traditional individualist approach in order to replace it by a subjectivist[21] approach. According to O'Driscoll and Rizzo (1990), such calling into question is expressed by the following four features, which are at the basis of the Austrian subjectivism.

First of all, this analysis uses a method that integrates the way the intellect (*the mind*) constructs itself. Unlike those who hold that individuals are able to accurately forecast future events from past and present informations, the Austrian approach considers that their capacity to process information is limited because it is not independent of contextual facts. This problem can be overcome "by modeling a fictious consciousness endowed by goals, knowledge, expectations and constraints." (O'Driscoll and Rizzo, 1990, p. 335). In this perspective, the neoclassical postulate of utility maximization is out of date insofar as it appears, at best, as a special case of a larger hypothesis. The standard approach indeed considers that the maximization principle always acts independently of the nature of the constraints that influence individual choices. Such an assertion rules out the fact that individuals may follow rules of behavior (Vanberg, 1994). Similarly, Gigerenzer (1996) shows that the hypothesis of the coherence of choices is often violated and that such choices depend heavily on the social context.

Secondly, the construction of a cognitive capacity is indissociable from its placing in real time. "Real time, or more precisely, the subjective perception of the passage of time, is

[20] Whether an Austrian tradition exists or not is questionable and debated. We do not focus on this issue here, which forms the subject of a large quantity of literature.

[21] It is interesting to note that the traditional individualist has progressively taken into account a number of elements that characterize the subjectivist approach.

inextricably linked to ineradicable uncertainty, irreversibility of processes and a continuous flow of information" (O'Driscoll and Rizzo, 1990, p. 335). The learning process, understood as a revision of the individual's cognitive capacities, is hence an important element of the analysis of individual behaviors over time. "Man is not born wise, rational and good, but has to be taught to become so." (Hayek, 1988, p. 21).

Thirdly, individuals are not passively subject to constraints, but because they are assumed to be creative, they can act upon their environment. In other words, they are able to reduce uncertainty by setting up institutions that render the constraints, represented by the behavior of others, more predictable. One of the problems is thus whether these institutions emerge spontaneously or whether they have been deliberately created.

Finally, and this obviously constitutes the most difficult aspect to blend into the economic analysis, "there is a recognition that different individuals have different knowledge" (O'Driscoll and Rizzo, 1990, p. 336). According to this statement, two individuals, when placed in identical contexts, will make different choices because their respective abilities to pick up the information that reaches them, and moreover to process it, are different. This hypothesis is important since information asymmetry cannot convey it (Langlois and Cosgel, 1993).

The bases of this subjectivist approach, which we owe to Menger, have been developed by Hayek (1952, 1978), Lachmann (1978), Kirzner (1992), O'Driscoll and Rizzo (1990, 1996). In *The Sensory Order* (1952),[22] Hayek characterizes the psychological foundations[23] of subjectivism. He underscores the fact that the individual representations and experiences are specific, insofar as they result from a progressive stratification of the whole set of transmitted representations and expectations. This phenomenon implies that:

> "much of the particular information which individual possesses can be used only to the extend to which he himself can use it in his own decisions. Nobody can communicate to another all that he knows, because much of the information he makes use of himself will elicit only in the process of making plans of action." (Hayek, 1988, p. 77).

Lachmann develops a radical subjectivist point of view that broadens the Hayekian analysis by considering that this analysis applies to agents' expectations.[24]

Such a subjectivist perspective has several consequences and justifies the fact that the crucial problem of economics is to study how individuals succeed in coordinating their plans of action (O'Driscoll, 1977; Garrouste, 1994). Indeed, if individuals cannot have perfect knowledge of what determines the actions of others, harmonizing these actions becomes a crucial problem. "The main fact to be explained in economics is how actors with different expectations and knowledge are able to coordinate their behavior despite such differences and despite the anonymity inherent in markets" (Horwitz, 1994, p. 20).

[22]This book is actually a new version of a work dating back to the 1920s, at a moment when Hayek was unsure whether he should take up economics or psychology.

[23]These works could seem outdated. Many psychologists and neurophysiologists nevertheless consider them as important. For example, Edelmann (1989) considers that the Hayekian arguments are of capital importance to understand how individuals perceive reality.

[24]We shall not develop here the differences between Hayek and Lachmann.

The solution to this coordination problem depends mainly on the hypotheses concerning: (1) the degree of knowledge that individuals have about the determinants of other individuals' plans of actions, and more generally the type of uncertainty that the individuals face, and (2) the *ex ante* or *ex post* nature of the coordination of individual plans of action.

The way Austrians deal with uncertainty serves as a base for the definition of the first hypothesis. Such uncertainty stems on the one hand, from the imperfect knowledge of individuals, and on the other hand from the importance that time introduces in the forming and the validation of individual expectations.

Thus in Hayek's opinion, because the rules guiding the behavior of individuals in the society as a whole, are abstract and therefore unconscious, they cannot be passed on. This means that individuals are unable to explain the actions of others; they can only understand them. Therefore, the knowledge held by individuals revolves around the actions, rather than around the beliefs, of others. More precisely, individuals understand the actions of others because the latter act according to a similar mode of categorization of the real world, even though they ignore this mode. This difficulty in accessing what determines the actions of others is strengthened by the fact that individuals being confronted, on the basis of similar behavioral rules, by their environment in specific spatial and temporal contexts, their representations and their expectations are specific. Because of this double phenomenon, individuals can anticipate the actions of others, but are not sure whether these expectations are valid. This analysis, taken up and developed by Lachmann,[25] is essential because it enables us to lay the foundations of the difference between subjectivism of perception and subjectivism of expectation.

The second hypothesis asks whether individuals set up a centralized or decentralized mode of coordination.

If individuals cannot communicate together or anticipate the actions of others, two solutions are conceivable.[26] Either we assume that an omniscient and all-powerful *Deus ex Machina* imposes a centralized mode of coordination on individuals, or we believe in the existence of a spontaneous process, according to which individuals would coordinate without knowing it. This second solution is very close to the Hayekian conception of the *Invisible Hand*.

On the other hand, if individuals have a knowledge, imperfect as it may be, of the actions of others, they may either coordinate *ex post*—that is without communicating together—by mutually adjusting their plans of action through the market, or agree *ex ante* on the details of the coordination of their plans of action.

The two types of coordination thus identified usually distinguish the market and the organization: *ex post* coordination allows the plans of action to be compatible through the market, or more generally by spontaneously making individual plans of actions coherent. *Ex ante* coordination is characterized by the existence of a deliberate will (individual or collective) that submits autonomous plans of action to a centralized conception.

This opposition between market and organization is, in an Austrian perspective, essential. But the significance of the subjectivist analysis involves more than the mere study of the different forms of coordination according to the assumptions of imperfect knowledge and

[25] In view of the precautions signaled in the previous note.

[26] We eliminate the case when such coordination is a matter of chance.

uncertainty. Indeed, the uneven distribution of knowledge between individuals introduces a new dimension and provides a basis for the Austrian theory of the entrepreneur.

2.2. The Austrian theory of the entrepreneur

The theory of the entrepreneur is one of the main element of the Austrian analysis of market processes. This paper does not offer a survey of the literature on this subject.[27] Rather, we will try to extract the main themes of the Austrian analysis of the entrepreneur, in order to explain how it may be, at the same time, fruitful yet insufficient.

In the Austrian theory of the entrepreneur, two elements are interwoven, both of which refer to the subjectivist approach. The first one (1) deals with the question of what makes an individual likely to become an entrepreneur, that is to hold a position different from that of other individuals; the second one (2) refers to the role of the entrepreneur in the coordination process of individual plans of action.

Regarding the first element, the entrepreneur exists, in an Austrian perspective, because knowledge, seen as the ability to capture and to process information, is unevenly distributed. Indeed, if individuals do not have the same capacity to capture, and moreover to process the information that comes from their environment, it is possible to classify them according to this capacity. The "Austrian" answers to this type of problem are numerous, but they all converge on the consideration that the entrepreneur is "selected" according to his capacity for judgment, his caution or his creativity. Various authors have looked into this problem. In order to describe this phenomenon one might, for example, want to take up Knight's (1921) distinction between risk and uncertainty[28] and consider that an individual endowed with an intrinsically greater[29] capacity for judgment than that of other individuals obtains, from these other individuals, the power to organize their activities. In this view, the entrepreneur is selected according to his differentiated capacity to anticipate the evolution of economic phenomena. The relationships between the entrepreneur and his employees adopt a contractual form.

If the entrepreneur needs to have a capacity for judgment that the others do not possess his existence cannot be explained by this sole capacity. Indeed, Witt shows that the entrepreneur needs to have a "cognitive leadership" in order to succeed in making his business successful.

> "On the one hand, such a capacity calls for social skills like communicativeness, persuasiveness, and persistence, as well as fairness, credibility, appreciativeness. Obviously, the agents assuming the role of an entrepeneur may wildly differ in the extent to which they command these skills. On the other hand, the intrinsic features of business conceptions surely play an important role as well for whether or not leadership can be successfully exerted on their basis." (Witt, 1998, p. 9).

With respect to the second element and based on this idea of the entrepreneur, as endowed with specific capacities that are not available on the market, the problem becomes the

[27] See Casson (1982) and Kirzner (1973).

[28] And this, although Knight proved to be very critical in his review of the translation of Menger's *Principles*.

[29] In the sense of *non contestable*. On this point, see Langlois (1993).

conception of his role, that is, his capacities to intervene in the coordination of individual plans of action. In the way the entrepreneur's role is a twofold one.

First he has to decide what is to be done concerning the information coming from outside, and here his capacity for judgment is to be used. From this point of view, the Austrian analysis of entrepreneurial activity proposes two solutions, respectably ascribed to Kirzner and Schumpeter. The first solution considers that the entrepreneur acts as an arbitrator and stabilizer of the economic activity. The very nature of his activity makes the economy tend towards equilibrium. The second solution considers that the entrepreneur is fundamentally creative and seizes opportunities that the other individuals are not aware of. He is, in this perspective, innovative and destabilizing. This opposition is nevertheless problematic (Boudreaux, 1994). Indeed, on the one hand the range of Austrian conceptions concerning the role of the entrepreneur is not limited to this alternative, and on the other hand, considering the Schumpeterian entrepreneur as a creator and the Kirznerian entrepreneur as a stabilizer does not stand up to a more subtle analysis (Boudreaux, 1994).

Second, the entrepeneur has to deal with the organization of the firm. Indeed as far as the coherence of the firm is concerned, the entrepreneur needs to make the different "interpretative frameworks" (Loasby, 1991) of the members of his organization able to produce a consistant collective action. His role is then to impulse the emergence of collective rules of action, of organizational routines, and to make them changing when the outer environment of the firm is evolving. The entrepreneur has then to fight against the inertia that characterizes the existence of routines of behavior.

Regardless of the oppositions and subtleties of the Austrian understanding of the entrepreneur, his nature and his role are fundamentally rooted in the Austrian subjectivist conception. It is because knowledge is imperfect and unevenly distributed that, in the presence of uncertainty, the entrepreneur endowed with specific qualities, intervenes in the coordination of individual plans of action. The problem posed by the Austrian analysis of the firm—or, more precisely, of the entrepreneur—is to reason solely in terms of plans of action, without specifying the nature of these plans. In other words, the Austrian authors mainly hint at actions that refer to market transactions and generally[30] forget that the entrepreneur must also coordinate production plans. It is by integrating this dimension that we think we are able to offer the elements of an Austrian theory of the firm.

3. Elements for an Austrian theory of the firm and of coordination between firms

The set of foregoing developments brings us to formulate the problem of coordination in very particular terms in view of the way it is traditionally dealt with by the theory of the firm.[31] The question, which it must henceforth be possible to answer, is that which consists in determining how the enterprises are likely to modify their own production plans in order to render them mutually compatible. But as we have already mentioned, the different potential uses of capital goods directly reflect the experience accumulated and the knowledge gained,

[30]We add this nuance because authors such as Lachmann, or even Hayek, have given prominence to this role. See for example Lachmann (1986) or Hayek (1941).

[31]That is, through the contractualist analyses of the firm and of the coordination between firms.

both within the firm and on the markets. As Lachmann (1956) rightly notes, referring to Robinson, it is contradictory to hope to analyze the changes in production plans for a given state of knowledge.

The generic object of an Austrian theory of the firm thus consists in studying the nature of the relationships that exist between the structure of capital and the structure of knowledge in an ever-changing world.[32] Such a theory assumes at once a dynamic perspective, because of both the durable character of capital goods, as well as because "the changes in use which these durable goods undergo during their lifetime reflect the acquisition and transition of knowledge" (Lachmann, 1978, p. xiv).

The analytical categories likely to give an account, within the same analysis, of the elements relative to fields as specific as the configuration of productive activities on the one hand, or the constitution of expectations and the transmission of knowledge on the other, still remain to be determined. This seems to be the role assigned to the concept of *capabilities* by such authors as Foss (1996a, 1996b, 1996c), Langlois (1994, 1993, 1992) or Loasby (1994, 1993).[33]

3.1. Capabilities and the theory of the firm

The idea of capabilities was initiated by Richardson (1972) to designate the set of abilities, knowledge and experience available to each enterprise at any time, and which allows it to undertake a number of activities.[34] Unlike resources, defined as factors of transferable inputs, and thus likely to be freely obtainable on markets, capabilities represent tangible or intangible assets specific to the firm, because they have been created over time through the combination, within the production process, of the resources available to the firm. The capabilities of any enterprise thus result from the configuration, at any point of time, of its own structure of production. The great achievement of the capabilities approach would hence be to represent "a real-time account of production costs in which knowledge and organization have as important a role as technology" (Langlois and Robertson, 1995). Moreover, an author such as Foss indifferently uses the terms of "capabilities" and "productive knowledge" in order to stress the two-dimensional nature of this concept.

However, a closer look reveals that the reason the capabilities approach "Starting from production, rather than from exchange" (Foss, 1996a, p. 9) is to better abandon the productive component by reducing it to an invariant physical support that allows the accumulation of knowledge. Thus, Foss very symptomatically writes:

> "... productive activities are not best understood as a matter of applying commonly accessible explicit knowledge ('blueprints') in the instantaneous profit maximizing combination of factors of production. Rather, such activities involve processes of accumulation of partly tacit knowledge through various largely incremental learning-processes

[32] Hayek (1941) introduces the case of regular changes, but this case is of no interest in view of the situation of unexpected changes.

[33] See also Langlois and Foss (1996).

[34] In Richardson, the *activities* refer to different stages of an elementary production process.

(learning by doing, by using, by searching). This tends to make the firm's course of development path-dependent. It is ultimately these properties that make firms differ" (ibid., pp. 17–18).

The firm is then quite logically understood, not as the place where the factors of production are combined, but as the place where the capabilities are built and modified. These capabilities, viewed as knowledge and know-how that are more or less incorporated in the equipment, thus become the support for collective routines and serve as the basis for a training process, itself collective. Such training is then oriented and supervised by these capabilities. This results in a better adjustment of the firm to its environment, but at the same time in difficulty in facing radically new changes in this very environment. On the one hand, the properties of knowledge and of the capabilities of the firm enable collective training, and on the other hand they limit its very scope, by defining its orientations and its content.

But the important point is that nothing is ever said in these approaches about the productive component of these capabilities, or in other words, the reasoning is put together for a given production structure.[35] If this point of view is acceptable when it comes to proposing a (new) explanation for the existence and the nature of the firm, it is hardly convincing in view of elaborating a theory of coordination that is supposed to articulate the productive and cognitive aspects. Yet, this last ambition is far from being neglected by the originators of a conception of the enterprise in terms of capabilities: "the capabilities view of the firm suggests that the boundaries of the firm are determined (at least in part) by the relative costs of developing ancillary capabilities internally or purchasing them externally through contracts with other firms" (Langlois and Robertson, 1995, p. 31). The main feature of these costs, labeled *dynamic transaction costs*,[36] according to which the arbitrage is carried out is, however, to evolve uniquely according to the learning abilities of the firm comparatively to those of the market, i.e., according to the knowledge component of capabilities held by the enterprises (Langlois, 1992). The conditions of production are considered as long term phenomena, so that their analysis "tells us less than we want to know about the boundaries of the firm, that is, about ownership of the various stages of production and the nature of the contractual relationships among them" (Langlois and Robertson, 1995, p. 25).[37] What follows is that the production aspect of the idea of capabilities is literally neutralized: the attention given to the conditions of production, and especially to the problems related to the management of intertemporal complementarities, is not considered as a relevant issue. It is one thing to recognize the two-dimensional character of the concept of capabilities, it is another to infer a theory of coordination that restores both dimensions.

[35]This is particularly blatant in a recent work by Langlois and Robertson (1995, pp. 20–23) in which these authors are engaged in the characterization of the required capabilities, according to the nature of the capital intensity as it appears in the different modes of organization of production processes described by Leijonhufvud (1986).

[36]The dynamic transaction costs cover prospecting, persuasion, training and coordination costs linked to the use of an external supplier (Langlois, 1992).

[37]Foss explains in no less ambiguous terms: "(...) it is the heterogeneity of the flows and stocks of knowledge within firms—not their physical sources—that gives each firm its unique character. Essentially, this is because physical resources can normally be acquired and combined by, in principle, anybody, whereas knowledge assets, such as routines and capabilities, are difficult to transfer, sell, communicate, etc." (Foss, 1996a, p. 18).

The use made of the idea of capabilities by the works which are united around the theory of dynamic transaction costs and the economics of competence, thus leads to a theoretical deadlock symmetrical to that criticized, in his day, by Lachmann, and that we echoed in the previous pages. These analyses are indeed aimed at studying the changes in the field of knowledge, for a given state of the production plans or, in other words, in the productive conditions of the steady state. We consider, however, that it is possible to break free of this deadlock; as we shall see, this requires that we adopt a different perspective and restore, by means of an analysis of the decision of investment, the productive dimension of the capabilities.

3.2. Investment, information and coordination over time

We mentioned earlier that Richardson fathered the concept of capabilities in an article of the *Economic Journal* of 1972.[38] It is useful to briefly go back over both the context in which the author develops his analysis, and the aims of this work.

Richardson indeed explains that his article of 1972 was written while he had become involved in research in applied economics and was working as a consultant. 'The Organization of Industry' thus reflects the author's desire to provide an analytical representation of a whole set of industrial phenomena, until then ignored by economic theory, i.e., "the dense network of co-operation and affiliation by which firms are inter-related" (Richardson, 1972, p. 883).

Thus, and although this does not mean that we should overlook the theoretical contribution of the article, the fact remains that, in this text, Richardson is more worried about stressing the need to think about this mechanism of coordination of economic activities—by showing that co-operative agreements are a phenomenon worthy of economic analysis—than about producing a general theory of coordination. And he does so by mobilizing analytical categories, the first of which are capabilities and activities, based on arguments developed in his work of 1960, in which is presented—according to the author—an analysis that is mainly theoretical.[39] Hence, if there is no true change in the set of themes and the problem studied between the works of 1960 and 1972—both works are dedicated to the study of the coordination of capacities of production between firms—the problem is attacked from a different perspective. In 1960, Richardson considers the question of the firms' coordination of their capacities of production through the decision of investment, whereas in 1972 the capacities are, for the purpose of the analysis and in view of the targets aimed at, completely constituted. The contribution of 1972 presents the different forms of coordination between firms at a certain moment in time, whereas the work of 1960 develops a general and dynamic analysis. The capabilities thus appear as the embodiment, at a moment in time, of the decisions of investment taken by the enterprise, and the problem of coordination depends mainly on the latter.

The point is then to consider that any decision of investment implemented by any enterprise that chooses to modify its production process is not only constrained by the composition

[38]The author says he drew his inspiration from Penrose's (1959) work.

[39]All this is mentioned by Richardson in the introduction to the second edition of his book *Information and Investment* (1990).

of the stock of capital that prevails in the economy, but will also affect the whole complex network of capitalistic relationships that connect the enterprises to each other.[40] In Richardson's words, this means that any firm that modifies its capacity of production, be it in quantitative/qualitative terms, must take into account the fact that this investment is at the same time complementary to and in competition with other investments that have been, are, or will be made within the economy by other enterprises.[41] What is at stake is hence to determine what Lachmann calls "the best mode of complementarity" (Lachmann, 1978, p. 6), i.e., the optimal combination that enables us to render compatible the different plans implemented by the enterprises with interrelated activities. So,

> "the 'best' mode of complementarity is not a 'datum'. It is in no way 'given' to the entrepreneur who, on the contrary, as a rule has to spend a good deal of time and effort in finding out what it is. Even where he succeeds quickly he will not enjoy his achievement for long, as sooner or later circumstances will begin to change again" (ibid., p. 3).

At this point, the question of the coordination of investment plans takes an informational[42] turn, or more exactly, informational and cognitive;[43] and this for two main reasons:

— firstly, because the objective becomes to bring out the modalities of access to information that is likely to sharpen the expectations of the entrepreneurs. Naturally, the type of information looked for and exchanged is different, depending on whether one is interested by the competitive or by the complementary aspect of investments. In the first case, the aim is to obtain market information, i.e., information relative to the activities planned by the others within the system—mainly the consumers and the competitors—whereas in the second case, the point is to acquire the technical information relative to the feasibility of the projects implemented by enterprises linked together through technological complementarities (Richardson, 1990).[44] But the transmission of both types of information "is often delayed and sometimes faulty" (Lachmann, 1978, p. 22). When the delays of transmission are too important, and differ from one market to another, and when the economy is subject to an important number of simultaneous changes, it becomes difficult to reconstitute the chronology of events that have given rise to the obtained information, so that the latter is of relatively little use to be for action.

[40] The use, in what follows, of Richardson's analytical categories is left to our own responsibility.

[41] Investments are said to be competitive when "the profitability of investment made by one producer will be reduced by the implementation of the investment of others" (Richardson, 1990, p. 3). Investments are said to be complementary when "their combined profitability when taken simultaneously, exceeds the sum of profits to be obtained from each of them, if taken by itself" (ibid., p. 7).

[42] This remark is rightly made by Malmgrem (Malgrem, 1961, pp. 402–411).

[43] "In general, the more durable the goods traded in a market, the more important are expectations or it (...). In a modern market economy, in which there are markets for permanent assets, such as shares in capital combinations which outlast capital goods, farming part of them, expectations matter more in these markets than in those markets than in those far single capital goods, first or second-hand" (Lachmann, 1986, pp. 18–19).

[44] This distinction between two types of information is used again by Malmgrem through the concepts of "controlled information" and of "secondary information" (1961, p. 408).

— secondly, because the fact that it is possible to capture information in a situation of uncertainty does not solve the problem faced by the entrepreneur. Indeed, Hayek's works show that it is necessary, on the one hand to distinguish between knowledge and information, and on the other hand not to limit this distinction to an opposition between a stock and a flow. Considering the presentation that we have made of Hayekian subjectivism, knowledge is understood, not as a receptacle, which refers to the problem of being able to capture information, but rather as a structure (Langlois and Garrouste, 1997), which renders the ability to process information essential.

Besides, it is important here to stress how much the problem of knowledge, as it has just been formulated, has a true meaning only when referring to a diachronic analysis of production: taking into account the delays of transmitting and processing information goes hand-in-hand with considering the delays of construction. It is because the production processes are subject to complementaries over time that the question of knowledge becomes so important. The enterprises are basically unaware of the evolution of their own production process, because the latter itself depends on the evolution of those implemented by other enterprises facing the same difficulties. It is because production is subject to delays, and because these delays are specific to each firm that the harmonization of the plans arises in such complex terms: *the time of production generates ignorance*. The risk for the enterprise is that the continuity of the construction and of the use might be hindered or even stopped before the process enters the phase of use. The objective of any enterprise, thus, becomes to develop its technological and informational abilities i.e., its capabilities in order to face such ignorance; success depends directly on its propensity to access an informational advantage relative to its field of production with a view to render its production plans coherent, with respect to those of the other firms, over time.

The choice of a mode of coordination naturally takes on, in such a context, a crucial dimension. The selected mode of coordination must indeed enable us, on the one hand to access the relevant information necessary to the development of specific production processes i.e., to the coordination of investment over time, and on the other hand to authorize revisions and redeployments in an economic world characterized by continuous change.[45]

The market—in a common sense i.e., that of the theory of equilibrium—brings this problem of coordination back to a process of resource allocation, that is to a succession of synchronic interactions and anonymous relations between agents with no organizational specificity. Price variations then act as the instrument of transmission of information through the whole system. But the question of the coordination of economic activities refers, as we have seen, to phenomena that happen over time and which cannot make do with an analysis that assumes trivial relationships between agents. The information conveyed by the price is not only largely incomplete in the face of the complexity of the problem met by the enterprise, but it also becomes more than insufficient when one admits the existence of delays in information transmission. Moreover, it is for this same reason that the consideration of the

[45]Lachmann explains in a similar perspective that: "The results of past mistakes are there not merely to provide lessons, but to provide resources. In revising our expectations we not only have the knowledge, often dearly bought, of past mistakes (our own and others') to learn from, but also their physical counterpart, *malinvested capital*. Malinvested capital is still capital that can be adapted to other uses" (Lachmann, 1978, p. 25).

processual dimension of the market does not allow us to solve the problem of coordination either. Kirzner admitted recently that the occurrence of expectation errors explains that the latter, far from generating a problem of market coordination—an imbalance—result on the contrary in the production of a subsequent endogenous change in market data—prices—that make new profit opportunities appear, themselves leading to a new equilibrium (1992, pp. 29–30). But once again, the analysis does not stand up to the introduction of the existence of delays, more precisely delays of information transmission: "mutual compatibility of individual plans over time requires convergent expectations among those who are engaged in exchange (otherwise their plans would be based on inconsistent premises)" (O'Driscoll and Rizzo, 1996, p. xxii).

Taking into account the existence of complementarities over time between firms consequently requires that we turn to *ex ante* forms of intentional coordination, i.e., to forms of coordination over time. Coordination itself becomes a specific process that is built over time. The enterprises have the power to build, and thus to choose the configuration of their system of relationships by benefiting from the effects of experience and learning. They are therefore brought to establish "market connections" (Richardson, 1990), "proximity of agents" (Lachmann, 1986, p. 3) that may take various forms, ranging from the simple exchange of technical and/or competitive information to integration, through a close coordination of their investment-cooperation.

The arbitration between these different modes of coordination depends basically on: (1) the nature of the investments brought into play, (2) the learning capacities relative to the firms and the markets, as well as (3) the degree of instability of the final demand. Regrouping of activities (Lachmann, 1978) and integration thus seem particularly appropriate to coordinate complementary investments within a systemic innovative process, providing that the final demand is relatively stable,[46] whereas various forms of inter-firm cooperation will be chosen to organize the production processes, be they complementary or competing, from the moment that instability of the environment requires continuous adjustments (Dulbecco, 1998).

Of course, the status and role of the market therefore happen to be modified. Markets indeed become "one of the forms of organization which aid knowledge (...) it becomes possible to compare market forms not only in respect of the relative costs of transacting, but also in respect of their relative capacity to generate value through improvements" (Loasby, 1993, p. 9). The factual nature of market relations is moreover greatly influenced by the firms and their targets. Markets cease to be exclusively considered as the places where the division of labor is exploited *a priori*, but represent the places where the firms set up a division of work. From then on, markets can be perceived in their more or less organized diversity (Loasby, 1993), and are dedicated to specific activities (Okun, 1981). "Entrepreneurs meet different circumstances in different markets. Accordingly, we shall have to distinguish between types of markets. In general, markets not the market, are our theme" (Lachmann, 1986, p. 116).

The crucial point is probably that the enterprise and the market no longer appear as alternative modes of coordination—the distinctive mark of the enterprise is the elimination of the price system—but complementary.

[46]Capital regrouping and integration indeed show the downside of sacrificing adaptability.

4. Conclusion

The Austrian tradition has never proposed a theory of the firm although all the ingredients necessary for its construction were nevertheless present in the initial works of Menger. In this paper, after identifying the main improvements made by the Austrians in the fields of the structure and the genealogy of production, and the analysis of the entrepreneurial activity, we have paved the way for such a theory, the main interest of which is precisely to articulate the structure of production and knowledge in the economics of time and ignorance.

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