



HAL
open science

The economic analysis of social norms: A reappraisal of Hayek's legacy

Agnès Festré, Pierre Garrouste

► **To cite this version:**

Agnès Festré, Pierre Garrouste. The economic analysis of social norms: A reappraisal of Hayek's legacy. *Review of Austrian Economics*, 2009, 22 (3), pp.259-279. 10.1007/s11138-009-0083-7 . halshs-00346389

HAL Id: halshs-00346389

<https://shs.hal.science/halshs-00346389>

Submitted on 3 Aug 2009

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

The Economic Analysis of Social Norms: A Reappraisal of Hayek's Legacy¹

Agnès Festré

GREDEG, Université de Nice Sophia-Antipolis

agnes.festre@gredeg.cnrs.fr

and

Pierre Garrouste

CES, Université de Paris1 Panthéon-Sorbonne et

Université Lumière-Lyon2

pierre.garrouste@orange.fr

The works of Hayek regarding the emergence and evolution of social norms have been, and remain today, evaluated in a very contradictory manner. They indeed give rise to debates regarding the coherence and relevance of the Hayekian analysis, and to theoretical

¹ The authors wish to thank the ICER (International Center for Economic Research) of Turin for their financial support. This paper has been written in the frame of an ANR project (INAPOR) coordinated by Pierre Garrouste.

and analytical extensions that tend to validate all or part of Hayek's propositions regarding the emergence of social norms. The debates regarding the coherence and the relevance of the Hayekian approach are based on the notion of group selection. They support the ideas, firstly that a contradiction exists between group selection and methodological individualism, and secondly that the notion of group selection is not relevant. It appears that these two aspects could be clarified further, the first by showing that the Hayekian subjectivism makes it possible to lift the contradiction between group selection and the fact that only individuals act, the second by showing that the reference to the notion of group selection, which is biologically controversial, can be very well founded in social sciences and in particular, economics. This idea, that the notion of group selection makes it possible to take the emergence and evolution of social norms into account is in fact validated by recent economic developments.

This paper is organized as follows: in the first section we will show that the reference to the notion of group selection is not coherent with the other elements of the Hayekian concept. In the second section we will develop the idea that the recent works regarding the emergence and evolution of social norms partly validate the Hayekian propositions in this regard. In the third section we will highlight the weaknesses of Hayek's analysis and propose methods to correct them.

1. The Notion of Group Selection and the Coherence of the Hayekian Evolutionism

The main criticism² against Hayek is that he tries to balance the conception of evolution based on the notion of group selection with an individualist methodology. Vanberg (1986), Hodgson (1991), De Vlieghere (1994), or Witt (1994) believe, using very different theoretical approaches, that this undertaking is doomed to fail, and that this attempt renders his analysis of social evolution incoherent. In fact, the problem is to know whether Hayek proposes a conception of the selection unit that is coherent with the methodological rationale of his evolution theory. This criticism is reinforced by that of the analysis of the changes in Hayek's work. In other words, his analysis of the improvement of the rules of conduct in a society, of the adoption of the best rules by groups that did not put them into action, and the mutation of the rules of conduct are considered unsatisfactory. De Vlieghere (1994) considers the rules of conduct to be abstract, or from a Hayekian perspective, unconscious, since the individuals are not aware that these are the best rules. How is it possible to implement rules if they are unknown by those who must adopt them? As for Ege (1992), he believes that, as Hayek seems to

² For an analysis of other criticisms against Hayek and the notion of group selection cf. Garrouste (1999) and Andreozzi (2005).

believe, that human societies are characterized by the existence of abstract rules, and if the difference between an archaic society and an extended society is related to the distinction between concrete rules and abstract rules, then either the archaic society is not a human society or the nature of the difference between these two types of societies is not relevant.

It is, in fact, tempting to consider that Hayek is unable to balance methodological individualism and the cultural selection of groups. Hence Vanberg (1986) believes that, under the Hayekian conception, there are no mechanisms that can ensure the replication of rules of conduct. For example, a free rider has no incentive to adopt altruistic rules of conduct. De Vlieghere (1991) is more radical when he states that Hayek cannot be considered a defender of an individualist view of the evolution of human societies. Sugden (1993) believes that it is not necessary for Hayek to turn to this notion and, in reality, he does not. Contrarily, Hodgson believes that, if the Hayekian view of evolution is incoherent, it is then necessary to abandon individualism and preserve the idea of group selection by completing it:

“Hayek should be criticized, not for embracing group selection and eschewing a consistent individualism, but for failing to incorporate additional processes of selection above the group level, involving different types of institutions, including both market and non market forms.” (Hodgson [1991], p. 79).

Our objective here is to show that the works of Hayek are not part of what we can refer to as classical individualism and that the individual and collective rules evolve according to different conditions. Hence, Hayek writes:

“[T]he systems of rules of individual conduct and the order of action which results from the individuals acting in accordance with them are not the same thing.” (Hayek [1967], p.67).

In a human society, the same as in an animal society, a certain number of individuals observe the common rules of conduct who, depending on the circumstances under which they live, produce action rules. The criticisms concerning the manner in which Hayek defines the selection unit underestimate the distinction between the social rules and the individual rules, however crucial for Hayek:

“The genetic (and in a great measure the cultural) transmission of rules of conduct takes place *from individual to individual*, while what may be called the natural *selection* of rules will

operate on the basis of the greater or lesser efficiency of the resulting *order of the group*.” (Hayek [1967], p. 67).

The necessity of this distinction is based on the following reasoning (Hayek [1967], p. 68):

- 1) The same group of action rules can be linked to different rules of conduct;
- 2) A same group of individual rules of conduct can, under certain circumstances, result in a certain order of actions, and produce a different order under other circumstances;
- 3) It is not the regularity of the individual rules of conduct that determines the preservation of a group of individuals but rather the resulting order of actions;
- 4) The selection of the different individual rules of conduct is expressed through the viability of the order they produce;
- 5) The abstract rules are characterized by the fact that those who implement them do not know that they are implementing them, on the one hand, and on the other hand, that they allow them to create a social order;
- 6) The concrete individual actions are always the joint product of “internal motivations” and external events acting on individuals’ behaviour (including the actions of other individuals);
- 7) The existence of rules of conduct is not a sufficient condition for the action of individuals, there must be incentives (external) or motivations (internal) to act, and most often a combination of both;
- 8) There is no relationship between what determines individual actions and the result of the coordination of these actions;
- 9) The difference between the prescribed character of society and the regularity of the individuals’ actions of which it is comprised, is also expressed by the fact that the social order can be accompanied by an absence of regularity in the actions of certain individuals.

This reasoning, which constitutes the essence of the Hayekian analysis of the difference between individual rules of conduct and social rules, suggests that the Hayekian conception of evolution is based on a subjective approach more than on an individualist vision. More specifically, Hayek’s proposed analysis of social evolution is based both on a subjective view and the role of social interactions.

Hayek’s subjectivism is in the affirmation that knowledge is “essentially dispersed” (Hayek [1988]), and that it is impossible for individuals to communicate all the knowledge they possess. This is the reason why individuals, if they can understand the behaviour of others, are never able to explain it. This phenomenon is related to Hayek’s proposed analysis of the “primacy of the abstract” (Hayek [1978]).

Social interaction, or more generally, interactions between individuals and their environment signify that individuals live in a society: they interact and must take this phenomenon into account when defining the action plans.

Given these considerations, the problem in performing an economic analysis and an analysis of other social sciences is analyzing the coordination of individual action plans that have specific cognitive abilities and that invoke socially defined rules of conduct. As such, O'Driscoll (1977) considers that Hayek's works introduce a change in the object of economic analysis to define it as the problem of coordination of the individual action plans.

Hayek's problem can be presented as follows:

If we presume that:

- 1) Individuals act in accordance with the abstract rules of conduct they learn (in accordance does not mean that a one-to-one relationship exists between the rules of action and the rules of conduct);
- 2) Individuals are subjects; they are specific and a significant part of their knowledge is idiosyncratic, which signifies that it is not transferable;
- 3) Individuals interact with others and their environment;

then:

- 4) How is a social order possible and if it exists, what are the characteristics?

Hayek's answer is that a mutual adjustment process of individual action plans makes it possible to realize such an order.

For such an adjustment to exist requires that individuals have certain common characteristics so that they understand and apprehend exterior reality in a similar manner. A detour using an analysis developed by Hayek regarding the construction and the evolution of individuals' knowledge is therefore necessary.

The Subjective View of Knowledge According to Hayek.

Hayek develops his view of knowledge in a work that is also known by psychologists and neurobiologists as well as economists³: called *The Sensory Order* (1952), in which the author

³ Edelman (1989) affirms the relevance of the analysis made by Hayek regarding the difference between the physical and the sensory orders.

develops certain ideas dating from the 1920s, a period during which he hesitated between studying psychology and economics. He later redoes the analysis in “Rules, Perception and Intelligibility” (1967) and in “Primacy of the Abstract” (1978). In these works, Hayek defends a connectionist⁴ theory and considers that individuals implement production mechanisms for rules of action that are abstract, or in other words, unconscious⁵. The rules make it possible for individuals to “categorize” or “classify” the exterior mode:

“What we call knowledge is primarily a system of rules of action assisted and modified by rules indicating equivalences and differences of various combinations of stimuli.” (Hayek, [1978], p. 41).

“Action patterns” allow individuals to act and implement a process of selection of production mechanisms of these patterns even if we consider that, in general, our actions are related to our mind’s interpretation of the outside world. Individuals understand each other since they are equipped with similar systems for producing action patterns. Therefore, in a given context we can communicate and understand the actions of others “that may be physically different and we are unable to make a comprehensive list but we know that they “signify” the same thing”. (Hayek [1980a], p.62).

Based on this system of abstract rules of action, individuals have experiences that determine their conception. A new conception is due to the fact that an outside event can be classified in an abstract category that subsumes impressions and helps us to bring order to the world. A new stimulus may also require a reorganization of the classification system but in all cases, a stimulus that cannot be classified is not perceived. This conception explains the fact that each individual has unique sensations and makes it necessary to consider it as a subject.

In summary, for Hayek, on the one hand, individuals build mechanisms that produce action patterns and, on the other hand, they choose from these mechanisms those that make it possible to react to stimuli from the environment.

Such an analysis is perfectly reproduced in several more recent works. Edelman, a Nobel prize winner in medicine, and neuroscience specialist, develops theories that validate Hayek’s works regarding the difference between the sensory and physical orders:

“Perception is adaptive rather than strictly veridical.” (Edelman [1989], p. 28).

“A closed universal description of objects is not available to an adaptive creature, even to one with concepts; there is no ‘voice in the burning bush’ telling that animals what the world description should be.” (Edelman [ibid], p.32).

⁴ Cf. Smith (1996, 1999).

⁵For example, in “The Primacy of the Abstract”, Hayek speaks of the relationship between the abstract character of a rule and the fact that it is unconscious.

According to Edelman, individuals implement a hierarchy of directory structures, which are networks of neurons that allow individuals to categorize the world in a similar manner. Moreover, this process cannot be dissociated from degeneracy:

“Degeneracy means that, given a particular threshold condition, there must in general be more than one way satisfactorily to recognize a given signal input. This implies the presence of multiple neural groups *with different structures*, each capable of carrying out the same function more or less well: degeneracy entails that some nonisomorphic groups must be isofunctional.” (Edelman [1989], p. 49)

This possibility that nonisomorphic groups and iso-functionality exist cover what Hayek has in mind when he introduces the idea of “specification by superimposition”⁶, and it is on the basis of such an analysis that he can consider, firstly that individuals who have similar rules of action can understand each other, secondly, that they do not know that they are implementing them and thirdly and finally, that they are unable to tell others what their own unique rules of conduct are.

At this stage of the analysis, we recognize the coherent character of the Hayekian subjectivism. In fact, it makes it possible to show at the same time, that individuals are unique as to their perceptions at a given moment depending on their past perceptions, which makes them difficult to transfer from one individual to another, that the unconscious character of the rules of conduct that guide their actions cannot be communicated and that, despite all, due to their cognitive organization, or methods for the production of abstract rules of conduct, they can understand other individuals’ actions.

In this view, Hayek’s subjectivism is based mainly on the first two proposals with the third making the coordination of individual action plans possible.

In fact, the moment we accept the Hayekian basis of conception of individual behaviour, the problem of coordination of individual actions becomes essential:

“The key question for social scientist is how the various and diverse images of reality that the individual minds develop could ever be coordinated to one another.” (Boettke [1990] p. 41).

Coordinating Individual Action Plans and Communicating Rules of Conduct

⁶ Barry Smith describes this classifying activity as “the central nervous system is an adaptive engine for the constant reclassification on many levels (including conceptual and emotional levels) of the legion of impulses proceeding in it at any moment. We create the world in which we live in the sense that there are, on the side of nerve-excitations, no fixed conceptual units able to mirror or picture corresponding (predetermined) elements of external reality in a one-to-one way. Only insofar as the nervous system has learnt to treat a particular stimulus event as a member of a certain class of events, can this event be perceived at all, for only thus can it obtain a position in the system of sensory qualities.” (Smith [1999], p. 110).

To explain how individuals succeed in producing an order, based on defined individual actions, Hayek uses a notion of mutual adjustment. He also has access to an analysis of an auto-organization⁷ process. In other words, individuals act according to rules of conduct and they understand the actions of others, even if they are unable to explain these actions. They adjust their action plans according to the result of the combination of their actions with those of others.

Such a process is possible only, on the one hand, if individuals have limited knowledge of their environment, and on the other hand, if they act without having first defined a common objective. This does not signify that common actions are absent from the Hayekian discussions. Hence, “the spontaneous macro-order elements are the numerous arrangements of individuals as well as the deliberate organizations.” (Hayek [1988], p. 37). He adds: “as the spontaneous order grows, so does the size of the units. More and more, these elements will no longer be economies of individuals but rather organizations such as firms and associations, as well as administrative bodies.” Certain rules that allow a social order to exist facilitate the constitution of deliberate organizations. However, the social order cannot be the result of deliberate will, since on the one hand, individuals’ actions are defined by rules of conduct that cannot, for the most part, be communicated because they are unconscious, and on the second hand, individuals have only a limited knowledge of their environment when they define their action plans.

This explains that, for Hayek, the evolution of societies perceived as systems of rules of conduct must be understood as being the result of the integration of two different levels:

“On the one hand the more comprehensive order assisting the preservation of ordered structures on the lower level, and on the other the kind of order which on the lower level determines the regularities of individual conduct assisting the prospect of the survival of the individual only through its effect on the overall order of the society.” (Hayek [1967], p. 76).

Such a process is essential since it tends to make the Hayekian theory of evolution coherent and it justifies that we cannot reduce Hayek’s conception of individualism to a “classic” version.

We must now examine how the rules of conduct are communicated within a society.

According to Hayek, rules of conduct are communicated from individual to individual. From this communication therefore arises the problem of the nature of the acquisition of knowledge. In fact, for him, individuals are not rational, in the sense that they do not respect the axioms of perfect rationality, but learn to become more and more informed:

⁷For a more detailed analysis of the Hayekian reference to the process of auto-organization, cf. Dupuy (1992) and Garrouste (1994).

“Learning how to behave is more the source than the result of insight, reason and understanding. Man is not born wise, rational and good, but has to be taught to become so.” (Hayek [1988], p. 21).

The acquisition of knowledge is related to the fact that individuals have the ability to produce and modify their action patterns and they do so both by imitation and trial and error.

The first type of acquisition of knowledge is the same as that proposed by Menger (1963) when he takes into account the emergence of organic institutions, individuals imitate the behaviour of those who succeed in satisfying their needs the best:

“There is no better way in which men become enlightened about their economic interests than by observation of the economic success of those who employ the correct means of achieving their ends.” (Menger [1976], p. 261).

This process of acquisition of knowledge is characteristic of the self-reinforcement of behaviours, or more generally, a process of positive feedback. Since the rules of conduct are imitated, they become generalized:

“It would seem that the cumulative and self-enforcing aspect of institutions and routines relates to some kind of process of positive feedback. In this respect there is another contrast with orthodox economics, in which the formation of equilibrium relies upon negative feedback processes, such as diminishing returns to scale. Rather than equilibrium, positive feedback can engender such phenomena as lock-in (to use the modern parlance), where outcomes become frozen because of their self-reinforcing attribute (Arthur, 1985, [1989]). Such lock-in phenomena can thus be regarded sufficiently stable units of selection in an evolutionary process.” (Hodgson [1992], p. 293)⁸.

Such a development can be perfectly applied to the Mengerian analysis of the emergence of institutions⁹.

Hayek also believes that imitation is a type of essential learning¹⁰ but it does not reduce his analysis to a single process. It combines it in fact with a learning process of trial and error. This makes it possible

⁸ In this passage, Hodgson makes a reference to the works of Veblen. Ironically, the type of generalization process present for Menger and Hayek is of the same nature as that used by Veblen to explain the selection of thought habits. In fact, on the one hand, in Hayek (1992) we find an opinion for the less negative personality of Veblen and the quality of his services, and on the other hand Veblen firmly criticizes the works of Menger.

⁹ For more developments on this subject, cf. Garrouste (1994). This analysis, for example, was redone in these terms by Klein and Selgin (2000).

to take into account the correction of errors that allow individuals to realize a mutual adjustment process necessary for achieving a given situation.

“This mutual adjustment of individual plans is brought about by what, since the physical sciences begun to concern themselves with spontaneous orders, or ‘self-organizing process’, we have learnt to call ‘negative feed-back’.” (Hayek, 1978, p. 184).

The two learning processes mentioned, imitation and trial and error, allow the existence of a self-organizing process that characterizes both the individual’s action plans and the selection of rules of conduct. First in fact, imitation allows for the transfer of rules of conduct from individual to individual while the second one allows for the adjustment of the action plans and correction of errors. Group selection is then based on the superimposition of two levels of selection: the individual level and the collective level. For the first level, the individual rules of conduct are selected. Using the existence of inherited cognitive abilities (genetic and social) the individuals learn to select efficient behaviour rules, which create a collective level of rules of conduct that are in turn selected to allow the group to survive and develop. The two following quotations seem to validate this analysis:

“It is always some regularity in the behavior of the elements which produces, in interaction with the environment, what may be a wholly different regularity of the actions of the whole.” (Hayek [1967] p. 78)

and,

“If there exist recurrent and persistent structure of a certain type (showing a certain order), this is due to the elements responding to external influences which are likely to encounter in a manner which brings about the preservation of this order; and on this in turn, may be dependent the chances of individuals to preserve themselves.” (Hayek [1967], p. 78)

Therefore, there is no incoherence in the Hayekian conception of social evolution as of the moment this dual selection process, individual and collective, is perceived. The superimposition of the two levels is related to the “strange loop” phenomenon that we find in Hofstader (1990). It also conforms to the Hayekian view of dual autonomy, that of the modern individual, otherwise released from all connection to traditional subordination, the State and society conceived as one and that of society that seems to have its own life and foreign even to those who are part of it. (Dupuy [1992], p. 247).

2. The Relevance of the Hayekian Analysis of Social Norms

¹⁰ “The chief error of contemporary ‘sociobiology’ is to suppose that language, morals, law , and such like, are transmitted by the genetic process that molecular biology is now illuminating, rather than being the products of selecting evolution transmitted by imitative learning.” (Hayek [1988], p. 24).

Recent economic literature on the emergence of social norms, makes it possible to reconsider the Hayekian proposal according to which the most efficient social norms (or rules) for groups are selected. The examination however has its problems.

Firstly, Hayek makes a reference to several forms or types of social norms, which makes the comparison with contemporary approaches, generally more precise regarding the social norms to which they refer (social norms, conventions, individual/collective moral norms etc.), more difficult.

Hayek proposes a taxonomy of the types of collective behaviour rules that make it possible to identify the conflicts of interest between individuals and the group (cf. Andreozzi [2005], p. 234) :

“The question which is of central importance as much for social theory as for social policy is thus what properties, the rules must possess so that the separate actions of the individuals will produce an overall order. Some such rules all individuals of a society will obey because of the similar manner in which their environment represents itself in their minds. Others they will follow spontaneously because they will be part of their common cultural tradition. But there will be still others, which they may have to be made to obey, since, although it would be in the interest of each to disregard them, the overall order on which the success of their actions depends will arise only if those rules are generally followed (Hayek [1973], p. 45)

The first type of rule to which Hayek refers corresponds to the rules that all individuals follow because they systematically emerge as an efficient and unique answer to concrete problems that they face when they are confronted with the same environment. The action of washing oneself everyday can be considered an example of this type of rule. Moreover, we can conclude that when individuals follow this type of rule, it does not result in a “social dilemma” type problem. The principle of profit maximization (in his ‘as if’ version) and the existence of non-social preferences (*self-regarding*) are quite acceptable to describe the generalization process of this type of rule.

However, are they concrete or abstract rules? If we consider that for Hayek, abstract rules pre-exist all perception of the qualitative variety of the world and all concrete experiences, in the causal sense of the principle of “primacy of action”, that is to say “in reference to what, within

an explanation of mental phenomena, must come first and can be used to explain the rest” (Hayek [1978], p. 36), then all rules are of abstract nature and only the degree of abstraction varies according to the type of rules.

As we have mentioned above, this approach reverses the traditional conception according to which the mind discovers abstraction and abstract rules (or regularities) based on the prior perception of reality but considers, on the contrary, that the starting point of the mental model is not the physical order of things that is falsely claimed as “scientist objectivism” according to Hayek (Hayek, 1953, chapitre V). In this perspective, it is in fact the combination of a certain number of abstract rules that makes it possible to perceive reality and to produce the details and particularities using a process that Hayek calls “specification by superimposition”. Individuals’ different concrete actions are then specified by superimposition of several abstract rules or dispositions, “which make an organism inclined to respond to stimuli of a certain class, not by a particular response but a response of a certain kind” (Hayek [1978] p. 40). It is the joint effect of several pre-existing dispositions of the organism, that leads to the execution of a movement or a particular action, that is to say the selection among the different possible concrete forms, that which is the best adapted to the situation. If rules necessarily assume a general character, their degree of generality is apt to vary depending on the context and type of rule (more or less abstract) and according to an evolutionary process of rule selection.

Moreover, these rules are often tacit and followed unconsciously; they are therefore hidden and eventually escape all linguistic expression and description. According to Hayek, one of the main characteristics of human behaviour consists of following rules of conduct and this characteristic must be carefully set apart from that of the individual’s knowledge of the effects of their concrete actions:

“Normally following rules of conduct is a completely different ability than the knowledge that our actions will have a certain type of effect. Conversely, they should be viewed for what they are: the ability to slip into - or align ourselves with - a model of which we are barely conscious of its existence and for which we are hardly aware of the ramifications.” (Hayek [1993], p. 109).

The second type of rules concern the rules of conduct shared by individuals having a common cultural tradition. They differ from the latter in the sense that they are characterized by degrees of abstraction and a higher rate of generalities.

The process by which these rules become shared by the members of a same community can be explained, on the one hand, by the existence of a common mental structure of individuals, an assumption that makes it possible to lift the nondetermination relating to the Hayekian subjectivism and the impossibility of communicating and mutually understanding each other that logically results (Garrouste 1999, Birner 1999).

Another possible justification for the sharing of rules reflects what Hayek calls the “social division of knowledge”. According to Hayek, the more a civilization develops, the more the society's knowledge becomes complex and specialized. The fact that knowledge is spread and localized in this manner favours the communities structured around a same tradition. Finally, Hayek admits that an individual's belonging to the same historic or socio-cultural environment favours what we can call shared individual beliefs. This viewpoint can be strengthened by the importance Hayek places on the articulation of innovative and imitative individual choices in the emergence of behavioural regularities. (Arena et Festré [2002], p. 541).

These types of rules can also be interpreted, based on the game theory, as conventions according to Lewis (1969), that is to say, standards to which all individuals of a social group prefer to refer to as of the moment when (practically) all the individuals with whom they interact do the same. The example of a pure coordination game such as driving an automobile (right or left) is an illustration of this type of rule that can also be defined by its self-enforcing character, which, a priori, eliminates the possibility of social conflicts. In return, nothing guarantees that the convention followed by the individuals is Pareto-dominating (in the game of conduct, the two equilibriums are equal). In addition, in a situation of imperfect information, as indicated by Harsanyi and Selten (1988), only the risk-dominating equilibrium is stable. What is more, the convention retained is characterized by strong irreversibility (even if it is not irrevocable).

Finally, these types of rules can be put into perspective using the conformity theory developed by Bernheim (1994) and integrated into recent economic literature on social norms. In fact, this author develops, continuing on the intuitions of Duesenberry's consumption theory based on relative income, the idea that individuals are sensitive and react as result of the relative income of their peers in their choice of consumption. Beyond their real income is

the fact that individuals are also concerned with the social status that their choice of consumption confers upon them. However, social status depends on the perceptions of the individuals regarding the predispositions (and not actions) of their peers. Since predispositions are not directly observable, only actions can "signal" an individual's predispositions to another person and consequently, affect his social status. When preoccupation in terms of status dominates that of income or intrinsic utility, individuals can conform to a rigid standard of consumption, in spite of the heterogeneity of individuals' intrinsic preferences. In return, when the social status is less important, there is no conformity in terms of consumption behaviour. In spite of the analytical and methodological distance that separates Hayek's approach from that of game theorists, this perspective makes it possible to clarify the debates regarding the coherence and relevance of the Hayekian evolutionism.

The third type of rules is by far the most interesting but also the most problematic. In the passage quoted above, Hayek refers to the third type of rules or norms that must be imposed because, although it is in the best interest of each not to respect them, the global order on which the success of each individual's actions depends, can be obtained or realized only if these rules are effectively followed.

What are the characteristics of these rules and what types of difficulties do they present? Firstly, this type of rule, under the actual terms of the game theory, refers to the problem of free-riding. Under these conditions, no mechanisms exist, based on methodological individualism and self-interest, which make it possible for this type of rule to emerge. It is one of the reasons, put forth in Hayek's comments, for which Hayek uses the argument of group selection. Hence, the examination of this hypothesis poses a problem at the moment it is put into perspective with evolutionist literature on group selection in biology. In fact, the most common argument in this literature is the supposition that the groups whose behaviour is characterized by a certain degree of altruism have a greater average ability (fitness) than the others and are therefore destined to outdo the latter, while within each group the non-altruists have a greater ability than the altruists (van Baalen et Rand, 1998)¹¹. This point of view is difficult to reconcile with Hayek's position regarding altruism. In fact, Hayek conceives the

¹¹ Significant literature on biology exists relating to this problem that constitutes a serious matter: "When one individual behaves altruistically towards another, it increases the beneficiary's fitness at the expense of its own. To explain how such behaviour can evolve has long been one of the benchmark problems of evolutionary biology." (van Baalen et Rand [1998], p. 631).

norms or institutions of the extended society as being an altruism economizer as it makes it possible for individuals to cooperate even if the latter are not concerned for their neighbours' welfare. Far from favouring the advent of an extended society, the altruism hypothesis is conversely considered by Hayek as an obstacle to the formation of a social order as well as the source of the often debated unease of civilization (Hayek [1979], p.5, Hayek [1988], p. 64)

Typically, the latter form of rules or norms reflects on the problem of social dilemmas studied as part of the game theory.

Hayek responds to this problem by invoking the sanction strategy, the application of which would reveal the existence of an extra-individual coercive constraint¹²:

“A few observations may be added [...] on certain peculiarities of social orders which rest on learnt (culturally transmitted) rules in addition to the innate (genetically transmitted) ones. Such rules will be presumably less strictly observed and it will need some continuous outside pressure to secure that individuals will continue to observe them. This will be in part effected if behavior according to the rules serves as *a sort of mark of recognition of membership of the group*. If deviant behavior results in non-acceptance by the other members of the group, and observance of the rules is a condition of successful cooperation with them, an effective pressure for the preservation of an established set of rules will be maintained. *Expulsion from the group is probably the earliest and most effective sanction or 'punishment' which secures conformity (...)*” (Hayek [1967], p. 78, *underlined by us*)

In this passage, Hayek refers to the notion of sanction or punishment. One of the results of the developments of the game theory was to show that the punishment strategy only displaced the problem of free-riding previously evoked to a higher level. In other words, new possibilities

¹² Meanwhile, the conditions for the existence of an agency specializing in the implementation of sanctions is of secondary interest for Hayek, as illustrated in the following passage:

“[w]e are interested in any rules which are *honored in action* and not only in rules enforced by an organization created for that purpose. It is the factual observance of the rules which is the condition for the formation of an order of actions; whether they need to be enforced or how they are enforced is of secondary interest. (...) [I]f society is to persist it will have to develop some methods of effectively teaching and often also (...) of enforcing them.” (Hayek, [1973], p. 96, *underlined by us*)

for social conflicts and therefore, strategic manipulation emerge during the effective implementation of the punishment strategy as the latter is costly.

Certain recent models of evolutionary games (Witt 2001, Sethi and Somanathan 1996) show however that social norms presenting a problem of free-riding can be maintained thanks to the threat of punishment or reprisal even in the absence of reputation effects, which is typically the case with large anonymous groups. One of the reasons why only a fraction of the population of cooperative-aggressive agents – determined to implement (costly) reprisals in the case of another agent's defection – survives resides in the fact that, in equilibrium, there are no agents in default in close relation to a cooperative-aggressive agent (cf. Andreozzi [2005], p. 238).

However, neither the reward – punishment system, nor the imitation process or conformism explains the beneficial character of the norms¹³.

Moreover, additional considerations in terms of reputation and self-reputation are also mobilized by Hayek, as suggested in the previous quoted passage, the notion of social acceptance or non-acceptance, which is to be linked to self-esteem:

“All morals rest on the different esteem in which different persons are held by their fellows according to their conforming to accepted moral standards. (...) Like all rules of conduct prevailing in a society, and the observance of which makes an individual a member of the society, their acceptance demands equal application to all. This involves that morals are preserved by discriminating between people who observe them and those who do not. (...) I doubt whether any moral rule could be preserved without the exclusion of those who regularly infringe it from decent company – and even without people not allowing their children to mix with those who have bad manners. It is by the separation of groups and their distinctive principles of admission to them that sanctions of moral behavior operate.” (Hayek [1979], p. 1971).

These intuitions are also corroborated by recent works in experimental economics. In fact, Fehr and Gächter (2000) as well as Carpenter, Bowles and Gintis (2006) jointly show, as part of an experience on the contributions of the members of a group to a public good, that cheating is costly for the agents and that the punishment strategy works (the agents tend to contribute more when the threat of punishment is real). The authors interpret this enigma in

¹³ “While punishment and reward can stabilize group beneficial norms, they can also stabilize any behavior.” (Boyd et Richerson, 2002, p. 288). Sugden (1993) also asks this question: “What is *good* about spontaneous order?” (p. 394)

the following terms: on the one hand, the agents' determination to punish cheaters cannot be explained only by its direct effects on cheaters' behaviour; it is also motivated by the desire to impose a norm, even if it means incurring the cost, on a cheating individual with no expectation of a material benefit, whether personal or for another agent, which the authors qualify as an example of strong reciprocity. On the other hand, the reaction of the cheaters to the threat of punishment cannot be explained solely by the fear of having to bear a reduction in their income in the case of effective punishment; it is also guided by the feeling of shame on the part of the cheater in the case of non respect or violation of a social norm.

Here, we can also refer to economic literature on social norms that attempts to provide an integrated analytical framework of the different motivations of economic agents (intrinsic motivations, extrinsic motivations or incentives, reputational motivations) making it possible to explain certain pro-social or anti-social behaviours considered enigmatic until now (Bénabou and Tirole [2006]).

It is quite strange to note that, judging by the previous quoted passages, the explanation provided by Hayek for the reasons individuals adhere to norms, in no way refers to the notion of group selection. This idea is corroborated by Hayek and quoted by Sugden (1993), who seem to indicate that the principle of group selection does not play such an important role as generally claimed in his belief system:

“ It would however be wrong to conclude, strictly from such evolutionary premises, that whatever rules have evolved are always or necessarily conducive to the survival and increase of the populations following them. We need to show, with the help of economic analysis, how rules that emerge spontaneously tend to promote human survival. Recognising that rules generally tend to be selected, via competition, on the basis of their human survival-value does not protect those rules from critical scrutiny.”
(Hayek [1988], p. 20)

Moreover, Hayek paradoxically never considers the opposite possibility, that is to say, a case where the social norms can emerge because they benefit the individuals and not necessarily , the groups.

According to Hayek, one of the elements that explains the ambiguity or the vague and imprecise character of the notion of group selection resides in the singularity of his methodological approach.

This approach is based on distinction, clearly emphasized by Hayek and already stated, “between the systems of rules of conduct that guide the individual members of a group (or the elements in any order) on one side, and the order or the structure of the actions that result for the group taken as a whole (...). » (Hayek [1967], pp. 66). He adds that “in order to understand animal and human societies, distinction is particularly important since genetic transmission (and, to a great extent, cultural as well) of rules of conduct is done from individual to individual, while what we must call the natural selection of rules would function on the basis of the more or less great efficiency of the order that would result for the group”. (Ibid, pp. 66-7)

The order of actions emerges from a logic of spontaneous order and takes on all characteristics: following rules, general predictive character, non predictiveness from a more specific viewpoint, division of knowledge (cf. Sugden [1993], p. 395).

It is also described as having a certain autonomy towards its constituents, that is to say the rules of conduct that lead to its emergence. This same type of autonomy is the basis for how the mind operates with regard to the operating rules:

“The mind does not fabricate more rules than it is composed of action rules; that is to say a complex of rules that it did not create but that in the end guides the actions of individuals because when they are applied, their actions are more efficient, more successful than those of individuals or rival groups. [These rules] have flourished because the groups who practice them prospered more than the others and repressed them.” (Hayek [1980b], vol. 1, p. 21)

This dual autonomy makes articulation between the two levels of rules complex, on the one side, the entire set of individual rules of conduct and on the other side, the entire set of action rules. Hayek’s analysis is based on the two levels of selection: an inter-individual selection of individual rules of conduct that ensure the survival of individuals and benefit them personally; a selection among the action orders that may result from individual rules. The articulation between these two levels is characterized by complex relationships rising from a logic of interlocking or an interwoven hierarchy. In the first place, this articulation is contextual so as a same set of individual rules of conduct can lead to varied social orders. Secondly, the inter-individual selection of the rules of conduct through a learning process of trial and error

(negative feedback) and by imitation (positive feedback) is dependent on the viability of the social order to which it contributes to produce (cf. Garrouste 1999 : 94). Thirdly, there is a gap between the strictly individual motivations of agents and the criteria which allows them to prefer one social order over another:

“Most of the rules of conduct that govern our actions and most institutions produced from this regularity are as much adaptations to the impossible for anyone to consciously take into account all the distinct facts that comprise the society’s order.”
(Hayek [1980b], vol. 1, p. 15).

In other words, neither the existence of rules of conduct shared by individuals, nor the learning mechanisms by trial and error and by imitation are sufficient to determine the resulting one-to-one social order.

If the analysis of the articulation between two levels of selection of rules makes it difficult to conclude on the dynamic properties of the resulting social order, it appears, *a fortiori* very daring to try to show the optimality of the market order as does Hayek.

If Hayek’s merit is indisputable for having asked the fundamental question in social science, namely, understanding how social order exists and is maintained, and in particular how individuals’ actions can spontaneously be coordinated and give rise to a stable order or structure, nothing guarantees a priori that the different individual actions resulting from the different systems of rules of conduct of individuals will be adjusted and coordinated so as to result in a stable social order.

As specified by Sugden (1993), Hayek’s analysis regarding the notion of spontaneous order lets us conclude on the feasibility conditions for human behaviour and social interaction and not on what is or should be desirable.

Returning to the problems raised by several commentators regarding Hayek’s group selection, Sugden suggests that it could be more relevant to situate the unit of selection with the conventions or norms rather than with the levels of social groups. His argument is based on the idea that as part of the extended society as seen by Hayek, the historical or ethological origin of norms or conventions place less importance on mechanisms or conditions for their emergence and their distribution within and between social groups:

“as soon as there is peaceful interaction between groups – for example, through trade or intermarriage – it become possible for conventions to spread from one group to another. And then the ‘fitness’ of a convention – its ability *itself* – becomes detached from the ability of human groups to replicate *themselves*.” (Sugden [1993], p. 402).

This mutation of the analysis of the emergence and distribution of norms makes it particularly possible to make a link with several recent works on conventions already pointed out. It is true that in light of these works, the Hayekian theory of optimality of the spontaneous order has been challenged, for example in the blatant case of the QWERTY keyboard:

“If we analyse how conventions establish themselves, and how one convention encroaches on another, we find that the processes of evolution favor those conventions that are best adapted to the transient conditions that prevail when no single convention is firmly established. These need not be the conventions that are most beneficial when universally followed.” (Sugden [1993], p. 401).

Nevertheless, if these models for selection of norms or conventions tend to invalidate Hayek’s theory regarding the selection of the most efficient norms, they generally retain a unique homogenous population for analysis purposes of which the members are chosen at random. Hence, this framework does not seem to satisfactorily reconstruct Hayek’s view, according to which cultural evolution is the joint product of continuous learning by trial and error and experimentation in fields where several rival social orders confront each other (cf. Andreozzi [2005], pp. 234 et 240).

One of Hayek’s more constructive criticisms consist rather of reconstructing originality, the scope and the actuality of his analysis of the emergence and distribution of norms that today are the subject of varied approaches in the field – for which we must emphasize the great heterogeneity – of the game theory or in particular the experimental economics theory.

3. The Limits of the Hayekian Conception of Social Norms and the Resulting Perspectives.

The limits of Hayek's theories regarding the evolution of social norms take root on the one hand in the difficulty he has in thinking intentionality, and on the other hand, and consequently in his affirmation of the non intentional character of the emergence and evolution of social norms.

The first limit has as a consequence a difficulty or even an impossibility of considering that social norms could be the result of intentional actions and it is otherwise for this reason that the best way to formalize the emergence of social norms and to use the initial models of the evolutionary game theory where individuals, programmed to play given strategies, are or are not selected. In this framework, they possess no intentionality.

Hayek indeed has difficulty thinking intentionality *as part of* his analysis of the constitution of cognitive abilities. This comes from Hayek's connectionist approach "that does not have the means to take the conscious and deliberate thoughts into account (or reasoning as a logical process)." (Smith [1999], p. 110). In addition, "*The Sensory Order* system leaves no room for planning, self-control or self-modeling of the conscious subject (no place, in fact, for a self or any ego or for a conscious unit). (ibid., p 111). This difficulty is found in the manner in which Hayek takes market operations into account.

"Regarding the mind, such as the market system, the quantity of explicit knowledge (conscious) required by the agent so that he can react appropriately to changes affecting his circumstances is remarkably small. In the mind as in the market, the most essential information is conveyed in the form of abridged "signals" (that is to say, respectively in the form of neuronal impulsions and contextually situated prices)." (Smith [1999], p. 113)¹⁴.

We therefore understand why society, the same as the mind, is necessarily opaque to the individual. This opacity is itself the consequence of Hayek's theory regarding the construction of cognitive abilities that are extended to the operation of the market and society. This explains why Hayek focuses his attention on the self-organization processes to the expense of voluntary creation mechanisms.

Hence, if we consider that, for Menger, the mechanism is at the basis of the emergence of currency as an organic institution, it is necessary that a group (maybe quite small) of individuals become aware that indirect barter (exchange of one good for another with higher exchangeable value) would be more beneficial than direct barter (exchange of one good for another that is needed). In this regard,

¹⁴ Cf. also A. Gifford Jr.: "In the brain, specialized areas contain specialized but decentralized knowledge that is coordinated by neural mechanisms in a manner similar to that done by markets and prices in economy." (2007, p. 270).

Menger's constant reference to the notions of knowledge and power (of realization and not constraints) illustrates that the conscience of the efficient action is an important element to be taken into account as soon as we try to explain the emergence of something new. Hayek does not use this solution since he supports the analysis of the idea that the intrinsic ignorance of individuals is not only of their environment but also towards themselves (Aimar, 2007). This does not mean that Hayek does not introduce the idea of individuals' innovative will but he cannot deduce it logically¹⁵ from the construction he proposes in *The Sensory Order*.

This difficulty in logically passing from the analysis of the individual's cognitive abilities to conscious action is revealed by Gifford (2007) who shows that consciousness of oneself is absent from *The Sensory Order* but appears in *Law, Legislation and Liberty* through the idea that individuals are responsible for their actions. This analysis, that is quite relevant, however does not solve the problem of the signification to be given to the isomorphic character of the analysis of the constitution of cognitive abilities and the coordination of individual action plans, nor that of moving between the first and second. Hence, this isomorphism is essential since it makes it possible to justify the fact that social norms appear as resulting from a spontaneous process. If this was not the case, this isomorphism would have a limited interest and would be only accidental. Hence, if we can believe that a neuron has no awareness of itself or its actions, it is difficult to formulate the same hypothesis regarding individuals. This does not challenge the coherence of the Hayekian approach but questions its relevance.

If we can easily consider social norms, contrary most often to institutions, do not require organisms or organizations that ensure the implementation and proper functioning; there is nothing to affirm *a priori* that individuals' will is excluded from their emergence and evolution. It is the idea developed by Sugden (1993) when he considers, surprisingly enough, that Hayek instills "contractualist" elements in his theory of spontaneous order. This highlights the necessity of an agreement (even assumed) between the individuals.

The works of Avner Greif on the emergence of the coalition of Maghrebian merchants in the middle ages follows this same direction. They show, first of all, that this coalition is the result of the conscious actions of merchants and their agents, secondly is not linked to the existence of any authority or organization (it is self-enforced), and thirdly it is not part of any set of written rules.

¹⁵ This agrees with the viewpoint of Sugden (1993) : "Hayek's approach to social theory is not, I think, a logical implication of his theory of mind ; but there is a clear analogy between the two." (p. 415)

Using a reputation model (therefore of repetitive games), Greif provides a proposal that shows the efficiency of the multilateral punishment system:

“In general a multilateral punishment strategy support cooperation when a bilateral punishment strategy fails to do so, due to the ability of each merchant to commit himself to rehire an honest agent by decreasing the probability that a cheater will be rehired.” (Greif [2006], p. 80).

This allows Greif to falsify the idea of necessary spontaneity in a social order:

“Yet, this private order was not, as advocates such as Friedrich A. von Hayek and Milton Friedman would have us believe, a result of ‘spontaneous order’ among economic agents. Rather, it was a product of intentional and coordinated efforts by many individuals – who were often economic as well as political agents with coercive capabilities.”

Such an idea makes it possible to reintroduce the conscious character of individual actions in the emergence of social norms. Therefore, two modes of emergence of social norms exist, one is non intentional and completely in agreement with the Hayekian conception of spontaneous order, the other one is based on the will of individuals to constitute them without having an organism to implement them. This idea is strengthened by works relating to institutional design (Hurwicz, 1994) that defines the institution 1) as the emergence of rules of the game (North) or 2) as the equilibrium of a super game (Schotter) of “specific cases” of a mechanism conceived as a field of strategies to which we apply an income function to take the allocation of gains into account.

The limits of the Hayekian analysis of social norms open a certain number of paths for research.

The first is to study the specific modes of emergence of norms as being both the fact of individuals that intentionally attempt to construct rules to guide their behaviour and the (more or less) non intentional result of their actions. It is interesting to show that certain norms are voluntarily implemented as shown in the works of Avner Greif, secondly that others emerge non intentionally as defended by Hayek, and thirdly that hybrid forms of norms exist and result from the first two emergence modes. This would allow to emphasize the possible existence of phenomenon of complementarity or substitutability between the modes of emergence traditionally identified.

The second is related to the notion that the emergence of norms could be independent of all individual characteristics, for example, altruism or kindness. In fact, several works show that individuals do not necessarily defend their own interests but can be others-regarding. The fact that the results of laboratory experiences of a game of ultimatum are not compatible with the perfect equilibrium in a sub game recently required the introduction of an altruistic hypothesis regardless of the manner in which this hypothesis is introduced. Even if altruism is not conceived as an intrinsic individual motivation, altruists can invade the egotistical population (van Baalen and Rand, 1998), and therefore altruism becomes a norm even if this strategy is not individually viable in a one-stroke game or in a classic evolutionary game. The path questions the altruistic economy defended by Hayek.

The third path is based on the Hayekian difficulty of introducing individuals' will and conscious into his connectionist cognitive conception. This point is essential because it is the subject of recent works in neuroeconomics and psychology. Kahneman's theories regarding the brain is comprised of two systems: one is intuitive and the other controlled, showing that part of human actions are unconscious. We find similar results for the answer in terms of remuneration efforts as they are not consciously perceived. (Pessiglione et al., 2007) . Gifford (2007) also gives an account of neurological results that reveal the often unconscious character of human actions. All these works emphasize the challenge of the analysis of arbitrage between the conscious and the unconscious in individual decision-making.

Conclusion

In this article, we have shown on the one hand that the Hayekian analysis of the emergence and evolution of social norms is coherent with his methodological principles and has been the subject of several theoretical and empirical validations. Meanwhile, we have developed the idea that this analysis poses a problem of relevance regarding certain hypotheses and mechanisms on which it is based. The emphasis of these weaknesses, that is to say 1) the problem of the absence of the logical relationship between the Hayekian vision of the constitution of cognitive abilities and his analysis of the social order; 2) the difficulty that his connectionist analysis leads to a belief of intentionality and individual will; 3) and his refusal to accept the intentional character of the emergence of social norms, has allowed us to identify new paths of research that are both important and promising.

References

- Aimar, Thierry (2007) Self-ignorance: Towards an extension of the Austrian paradigm”, forthcoming in *The Review of Austrian Economics*.
- Andreozzi, Luciano (2005) Hayek Reads the Literature on the Emergence of Norms, *Constitutional Political Economy*, vol. 16, pp. 227-247.
- Arena, Richard et Agnès Festré (2002) Connaissance et croyances en économie : l'exemple de la tradition autrichienne, *Revue d'Economie Politique*, vol. 5, pp. 635-57.
- Arthur, Brian (1989) Competing technologies, increasing returns and lock-in by historical events, *The Economic Journal*, vol. 99, pp. 116-131.
- Bénabou, Roland et Jean Tirole (2006) Incentives and prosocial behaviour, *American Economic Review*, vol. 96, n°5, pp. 1652-78.
- Bernheim, B. Douglas (1994) A theory of conformity, *Journal of Political Economy*, vol. 102, n° 5, pp. 841-77.
- Birner, Jack (1999) The surprising place of cognitive psychology in the works of F.A. Hayek, *History of Economic Ideas*, vol. 7, n° 1-2, pp. 43-84.
- Boettke, Peter J. (1990) Interpretative reasoning and the study of social life, *Methodus*, vol. 2, n° 2, pp. 35-45.
- Carpenter, Jeffrey, Samuels Bowles et Herbert Gintis (2006) Mutual monitoring in teams: Theory and experimental evidence on the importance of reciprocity, Working Paper IZA.
- De Vlieghere, M. (1994) A Reappraisal of Friedrich A. Hayek's Cultural Evolutionism, *Economics and Philosophy* vol.10, n°2, 285–304.
- Duesenberry, James (1949) *Income, Saving and the Theory of Consumer Behaviour*, Cambridge (MA), Harvard University Press.
- Dupuy, Jean-Pierre (1992) *Le sacrifice et l'envie, le libéralisme aux prises avec la justice*, Paris : Calmann-Lévy.
- Edelman, Gerald (1989) *Neural Darwinism, the Theory of Neural Group Selection*, Oxford, Oxford University Press.

Ege, Ragip (1992) Emergence du marché concurrentiel et évolutionnisme chez Hayek, *Revue Economique*. 43(6) : 1007–1036.

Fehr, Ernst and Simon Gächter (2000) Cooperation and punishment in Public Goods Experiments, *American Economic Review*, vol. 90, n° 4, pp. 980-94.

Garrouste, Pierre (1994) Carl Menger et Friedrich A. Hayek à propos des institutions : continuité et ruptures, *Revue d'Economie Politique*, vol. 104, n° 6, pp. 851-872.

Garrouste, Pierre (1999) Le problème de la cohérence de l'évolutionnisme hayékien *Economies et Sociétés*, Hors Série, vol. 35, n° 1, pp. 91-105.

Gifford Jr., Adam (2007) The knowledge problem, determinism, and The Sensory Order", *The Review of Austrian Economics*, vol. 20, pp. 269-291.

Greif, Avner (2006) *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*, Cambridge and New York, Cambridge University Press.

Harsanyi John C., and Selten, Reinhard (1988) *A General Theory of Equilibrium Selection in Games*, Cambridge (MA), MIT Press.

Hayek, Friedrich A. (1952) *Sensory Order. An Inquiry into the Foundations of Theoretical Psychology*, London, Routledge & Kegan Paul.

Hayek, Friedrich A. (1953) *Scientisme et sciences sociales*, Paris, Payot. Traduction française partielle de *The Counter-Revolution of Science: Studies on the Abuse of Reason*, Glencoe, Illinois: The Free Press, 1952.

Hayek, Friedrich A. (1967) *Studies in Philosophy, Politics, and Economics*. Chicago, University of Chicago Press.

Hayek, Friedrich A. (1973) *Law, Legislation and Liberty: vol. 1: Rules and order*, London, Routledge.

Hayek, Friedrich A. (1978) *New Studies in Philosophy, Politics, Economics and the History of Ideas*, London, Routledge and Kegan Paul.

Hayek, Friedrich A. (1980a) *Individualism and Economic Order*, Chicago, University of Chicago Press.

Hayek, Friedrich A. (1980b), *Droit, législation et liberté*, vol. 1 : Règles et ordre, Paris, Presses Universitaires de France. Traduction française de *Law, Legislation and Liberty*, vol. 1: Rules and Order, London, Routledge & Kegan Paul, 1973.

- Hayek, Friedrich A. (1988) *The Fatal Conceit, the errors of socialism*, edited by W.W. Bartley III, Routledge.
- Hayek, Friedrich A. (1992) *The Fortune of Liberalism; Essays on Austrian Economics and the Ideal of Freedom*, London, Routledge.
- Hayek, Friedrich A. (1993) *La Présomption Fatale, les erreurs du Socialisme*, Paris, Presses Universitaires de France. Traduction française de *The Fatal Conceit, the errors of socialism*, edited by W.W. Bartley III, Routledge, 1988.
- Hodgson, Geoffrey M. (1992) *Thorstein Veblen and the post-Darwinian economics*, *Cambridge Journal of Economics*, vol. 16, pp. 285-301.
- Hodgson, Geoffrey M. (1991) *Hayek's Theory of cultural evolution: an evaluation in the light of Vanberg's critique*, *Economics and Philosophy*, vol. 7, n° 1, pp. 67-82.
- Hofstadter, Douglas R. (1980) *Gödel, Escher, Bach, an Eternal Golden Braid*, New-York, Vintage Books Editions.
- Hurwicz, Leonid (1994) *Economic design, adjustment processes, mechanisms, and institutions*, *Economic Design*, vol. 1, pp. 1-14.
- Kahneman, Daniel (2003) *Maps of bounded rationality: psychology for behavioral economics*, *The American Economic Review*, vol. 93, n° 5, pp. 1449-75.
- Klein, Peter G. et George Selgin (2000) *Menger's Theory of Money: Some experimental Evidence in John Smithin (ed.) What Is Money?*, London, Routledge, pp. 217-34.
- Lewis, David K. (1969) *Convention: A Philosophical Study*, Cambridge (MA), Harvard University Press.
- Menger, Carl (1963) *Problems of Economics and Sociology*, Urbana, University Press of Illinois.
- Menger, Carl (1871) *Grundsätze der Volkswirtschaftlehre*, vol. 1, Vienne, W. Brumüller. Traduction anglaise (1976) *Principles of Economics*, New-York and London, New-York University Press.
- North, Douglas C. (1991) *Institutions*, *The Journal of Economic Perspectives*, vol. 5, n° 1, pp. 97-112.
- O'Driscoll Jr., Gerald P. (1977) *Economics as a Coordination problem: The contributions of Friedrich A. Hayek*, Kansas City, Sheed Andrews and Mc Meel, Inc.
- Pessiglione, Mathias et al. (2007) *How the Brain Translates Money into Force: A Neuroimaging Study of Subliminal Motivation*, *Science*, vol. 316, pp. 904-6.

Rizzello, Salvatore (1996) *Economic Change, Subjective Perception, and Institutional Evolution*, Quaderni di Ricerca QR 91 N.01, Università degli Studi di Torino.

Schotter, Andrew (1981) *The Economic Theory of Social Institutions*. Cambridge, Cambridge University Press.

Sethi, Rajiv et E. Somanathan (1996) *The Evolution of Social Norms in Common Property Resource Use*, *American Economic Review*, vol. 86, pp. 766-88.

Smith, Barry (1997) *The connectionist Mind: a Study of Hayékien Psychology* in S. Frowen (ed.) *Hayek the Economist and Social Philosopher: A Critical Retrospect*, London, MacMillan. Traduction française (1999) *L'esprit connexionniste : une étude de la psychologie de Hayek*, *Intellectica*, vol. 28, pp. 93-114.

Sugden, Robert (1993) *Normative Judgements and Spontaneous Order: the Contractarian Element in Hayek's Thought*, *Constitutional Political Economy*, vol. 4, n° 3, pp. 393-424.

Vanberg, Viktor (1986) *Spontaneous Market Order and Social Rules: A Critique of F.A. Hayek's Theory of Cultural Evolution*, *Economics and Philosophy*, vol. 2, pp.: 75-100.

Van Baalen, Minus et David. A. Rand (1998) *The Unit of Selection in Viscious Populations and the Evolution of Altruism*, *Journal of Theoretical Biology*, vol. 193, pp. 631-48.

Witt, Ülrich (1993) *Evolutionary Economics: Some Principles* in Witt, Ü (ed.) *Evolution in Markets and Institutions*, Würzburg, Physica, pp. 1-16.

Witt, Ülrich. (2001) *Institution, social cognitive learning, and group selection*, *Papers on Economics and Evolution* 0110.