

# *Ex Post and Ex Ante Coordination: Principles of Coherence in Organizations and Markets*

David Cayla  
ATOM, Paris 1 University  
[dcayla@free.fr](mailto:dcayla@free.fr)

Centre Atom  
Université Paris 1 Panthéon-Sorbonne  
106-112 Boulevard de l'Hôpital  
75013 Paris - France.  
Tél : +33 (0)1 44 07 83 21

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## Abstract

In the traditional trade-off between internalization and externalization, economists tend to under evaluate the role of intentionality (Williamson 1991) and to accord a dominant place to market coordinating devices (ex post coordination) compared to hierarchical coordinating devices (ex ante coordination). The aim of this paper is to show how the introduction of the concept of coherence, which is frequently invoked by economists in order to apprehend the firm specificities (Holmstrom 1999), may help to reevaluate the trade-off between markets and firms in the advantage of the later. In particular, it will be shown that the attributes of coherence in ex post coordinating devices are fundamentally different from the ones that can be found in ex ante coordination systems.

Key words: coherence, ex post coordination, ex ante coordination, order, rules, abstract rules, concrete rules, Hayek, Bateson.

## Résumé

Dans le débat traditionnel entre intégration et externalisation, les économistes ont tendance à sous-évaluer le rôle de l'intentionnalité (Williamson 1991) et à accorder une place prédominante aux mécanismes de coordination par le marché (coordination ex post) par rapport aux mécanismes de coordination par la hiérarchie (coordination ex ante). L'objet de cette contribution est de montrer que l'introduction du concept de cohérence, qui est régulièrement mis en avant par les économistes pour appréhender les spécificités de la firme (Holmstrom 1999) permet de réévaluer l'arbitrage firme / marché au profit de la première. Nous montrons en particulier que les attributs de la cohérence dans les mécanismes de coordination ex post sont fondamentalement différents de ceux que l'on trouve dans les systèmes de coordination ex ante.

Mots clés : cohérence, coordination ex post, coordination ex ante, ordre, règles, règles abstraites, règles concrètes, Hayek, Bateson.

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*David Cayla<sup>1</sup>*

## 1. Introduction

Oliver Williamson (1991) argued that institutional economics was “vitiating” as it has attached too much importance to spontaneous mechanisms in comparison to intentional governance. As a result, it needs a “symmetrical treatment” of both of them. However, contrary to Williamson’s recommendation, Hayekian approaches proliferated in the 1990s. A shared idea by this school of thought was that the increase of information issues in the firm management would necessary lead to withered authority relations and reduction of centralized hierarchy.

Unfortunately, Hayekian organizational analysis has left us with two questions unanswered. The first one stems from empirical research. As Richard Langlois (1995) noticed, most firms keep their specific organizational management and do not necessarily merge into the market’s spontaneous order or even imitate its way of operating. This fact seems to be partly in contradiction to Friedrich Hayek’s theory. Why do firms prefer a centralized coordination device? Why do they still plan and pay expensive wages to their managers if the best equilibrium should be obtained spontaneously by market relations?

The second question is related to the loss of specificity of coordination devices. While placing spontaneous devices at the centre of the firm analysis, economists have excluded specificity from organizational studies (Favereau 1989; Langlois and Foss 1996; Cohendet and Llerena 1999). The modern economics of organization can be, therefore, considered as a “defensive” (Favereau 1989) or a “frictional” (Cohendet and Llerena 1999) theory that emphasizes the trade-off between organizations and markets. It focuses on the cost side of the equation, instead of considering the specific benefits per se that could appear in organizational structures (Langlois and Foss 1996).

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The introduction of the notion of coherence in the economics of organization may help to answer these two questions. First, organizational coherence may be a specific advantage in certain kinds of transactions and may explain the reason why firms and intentional coordination devices still prevail. Second, the analysis of coherence may help to distinguish market and organization relationships.

The primary goals of this paper include developing and analyzing the notion of coherence. The second section will define the notion of coherence. The third will draw the distinction between ex post and ex ante coordination and investigate its consequences in the analysis of firms and markets.

## 2. A Definition of Organizational Coherence

In a paper published in *Philosophy and Phenomenological Research*, Laura Waddell Ekstrom (1993) proposed a definition of *coherence* based on Bonjour 1985. According to this definition, coherence among a system of items is a matter of how well the components “agree or dovetail with each other, so as to produce an organized, tightly structured system . . . rather than either a helter-skelter collection or a set of conflicting systems” (Waddell Ekstrom 1993, 609). This definition underlines two conditions for a system to be considered coherent: first, the components of this system need to be “organized” and linked; second, these links must not be of conflicting relations.

The first condition seems obvious if a structured whole is taken into consideration and not a simple cluster of components. As for the second condition, the absence of contradiction means either to ignore (but this may contradict the first condition) or to collaborate, or at least to go in the same direction. This implies that coherence should be an attribute of a system where its components proceed to fulfill non-self-contradictory objectives.

But this interpretation has left us with another difficult question—what objectives are we talking about? If we are talking about individual objectives, this would lead us to the proposition that the coherence of the whole would essentially rests on individual attributes, which seems too restrictive. For example, it can be shown that two individuals of conflicting goals can still develop coherent actions.

Let us take the example of a cleaning firm. Suppose that it has two cleaners (A and B) whose functions are complementary in terms of serving the firm’s interest. However, while A’s wage depends on the surface area being cleaned, B’s wage is strictly dependent on the quality of cleaning. Suppose that A and B are self-interest maximizers. At an individual level, A and B should be considered as having conflicting goals, since it is impossible to maximize both A’s

and B's wages at the same time. Consequently, they are expected to contradict each other and exhibit an incoherent collective behavior.

The above conclusion is arguably incomplete and unsatisfactory. From a collective perspective, it does not necessarily imply incoherence if the two cleaners try to maximize the quantity and the quality of the cleaning at the same time, as long as a strategy can be developed to reconcile the contradictory behavior of both agents. In other words, from the firm's point of view, A and B are not necessarily considered to be contradicting the organizational objective by following opposite individual objectives. On the contrary, A and B may appear to have complementary actions if they can manage to negotiate a (quality/surface area) ratio that will give each of them a satisfactory earning.

Similarly, in another example, a financial director of a firm has responsibility to limit spending, while a commercial director in the same firm has an interest in increasing it. Although their behavior may be seemingly conflicting, both the financial director and the commercial director play important roles in the firm's coherent strategy.

As a result, Laurence Bonjour's definition of *coherence* needs to be qualified. The contradiction of the components has to be considered in relation to the objective of the system and not in relation to the individual objectives of the components that compose it.

We may now propose the following definition of *coherence*: A system is coherent when all its components, by their positions, their functions, and/or their actions, are all carrying out the objectives of this system.

This definition brings the analysis of coherence to a collective level. The behavior of a component is not coherent or incoherent with respect to another component but with respect to the system's collective goal. In a coherent system, individual components' action may contradict or oppose themselves while a common objective can be accomplished.

### 3. Ex Ante Coordination, Ex Post Coordination and Coherence

Provided the qualified definition of *coherence*, this section intends to probe how a collective objective is determined. More specifically, three questions have to be answered by the study of coherence in organizations:

1. What brings coherence out of a heterogeneous collection?
2. How does coherence maintain and develop itself?
3. What are the underlying forces of the evolution of coherence?

### 3.1. Rules, Orders and Coherence

The coherence of a system is more closely associated with the relations between its components than with the components by themselves. Understanding coherence does not always require studying the concrete components of a system. Instead, it involves studying the abstract organization of a system, that is, the order. This order needs a unifying principle, a rule or a rule system, which defines the order as one particular state out of an infinite possible set of states. There is, therefore, a logical link between the rule and the order. Every rule system will mechanically produce an order, and every order needs to possess one or several rules as a unifying principle.

There are at least two ways to understand the order. For Gregory Bateson (1972), the order is *ex ante* determined. The rules that make it are *a priori* defined, independently from the system and its components. For example, a row of books on a shelf is ordered if the books are arranged by size or by alphabetic order. It is untidy if the books are placed randomly, without any rule or logical organization. Obviously, there is a large number of different rules according to which a row of book can be organized, for example, the alphabetic order of book titles, the author, or the subject. Regardless the rule(s) employed, the important thing is that for any rule to be chosen, there has to be a superior authority or an individual that makes decision based on his/her taste or other personal attributes.

In contrast, Hayek (1937, 1945, 1952) thought of order as a semi-permanent system of relations between components. This conception concerns both his economic conception (the economic order) and mind conception (the sensory order). In *The Sensory Order* (1952), Hayek emphasized the fact that all mental sensations are connected to each other in a uniting and nonhierarchical whole. He went on argue that, therefore, the order does not exist because it has been previously determined by a superior principle. Rather it exists due to the fact that it develops connections between components that belong to the same level.

The Hayekian order can be defined as a structure, an ordering which is *ex post* determined after an endogenous process. It distinguishes itself from Bateson's order in the respect that it does not possess an *ex ante* defined principle. Moreover, it is a nonhierarchical system where each component or class of components may be associated with another component or class.

### 3.2. Ex Ante and Ex Post Rules

When they are applied to economic studies, Hayek's and Bateson's conceptions of order imply different ways of conceiving organizations. Bateson's approach suggests that the rules of an organization have to make the actions of its members compatible in order to achieve a previously defined objective. A firm can give itself a charter, a procedural code, so as to fulfill

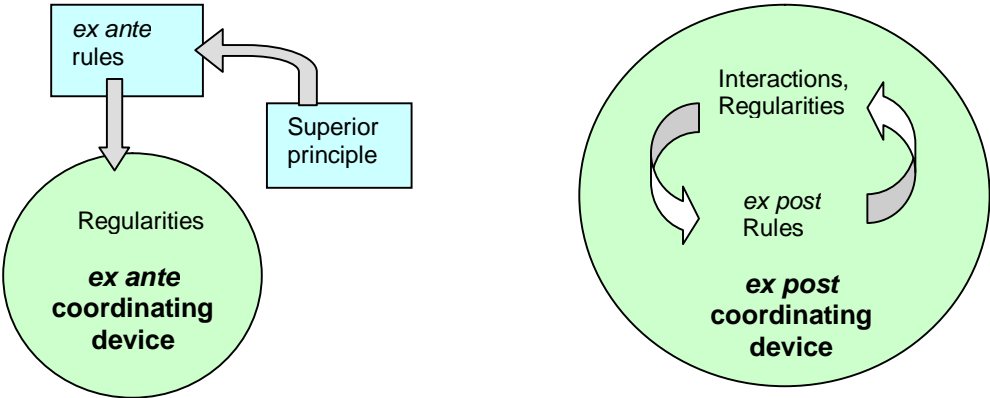
the expectations of its clients or shareholders. By contrast, the rule system of a Hayekian order does not necessarily have any precise objective. It can coordinate itself with inexplicit procedures that rise spontaneously. For example, a habit or a routine may naturally appear without fulfilling any particular objective, simply as a consequence of the regular repetition of an event.

In economic literature, these two kinds of rules are distinct, and each of them is associated with specific kinds of organizations. In particular, Hayek (1973) differentiated the “concrete rules,” such as laws and regulations which are explicit and come from a central authority, from the “abstract rules,” which are imposed spontaneously by the users in a decentralized system. This distinction was used by Hayek to draw the contrast between the centrally planned economic system and the market economic system. It is, however, possible to extend the implication of such distinction by taking into account the Coasian opposition between market and organization (Jensen and Meckling 1992; Langlois 1995).

A simple typology is provided as follows to present the two kinds of coordinating devices.

1. Bateson’s ex ante coordinating device. This type of coordination rests on a rule system that has been determined upstream in order to fulfill an objective given by a superior principle. The principle is superior due to two reasons: first, it is exogenously given and it is on the base of the whole set of rules, and, second, it can make the rules evolve in accordance with its own evolution.
2. Hayek’s ex post coordinating device. In this device, rules are determined autonomously as the consequence of an interindividual coordinating process. These rules do not fulfill any particular objective but are the consequence of repeated interactions. See figure 1.

Fig. 1: Main Attributes of Both Coordinating Devices



Consequently, two systems are defined by the nature of their distinctive coordinating device. The ex ante coordinating device is directed by a superior principle and controlled by a rule system that has an exogenous objective. The rules are created in order to respond to this principle, and the organization will need to be centralized. In contrast, the ex post coordinating device works autonomously. Because of their spontaneous appearance, rules are more the result of a social trade-off than the consequence of an explicit purpose.

### 3.3. Hybrid Coordinating Devices

A coordinating device may have a hybrid character if it is made of both ex ante and ex post coordinating devices. An example can be found in teams that have the attributes of an autonomous structure as well as the components of a bigger organization that functions as an ex ante coordinating device. Such a system possesses the attributes of an autonomous system in its subsets and those of an ex ante ruled organization at the same time. Configurations of this kind may be of much more general scope than a “pure” ex ante coordinating device. In fact, it would be very unlikely to find an organization that would be under the unique control of a formal rule system.

It is also possible to imagine an ex post coordinated system that would integrate ex ante coordinated subsets. For example, a non-atomistic market is partly determined by the behavior of centralized organizations. As a consequence, these organizations may join their forces and influence the “spontaneous” character of the market evolution process.

Last, how should we understand a deliberately implemented market that would be under the control of a regulation authority (i.e., an electricity market)? In this case, we can say that this market should be considered as an ex ante coordinating device since it fulfills an ex ante defined objective, even though in the process to achieve this objective it works as an ex post coordinated system.

### 3.4. Coordinating devices and principles of coherence

This subsection integrates the foregone analysis of coherence to answer the three questions raised at the beginning of this section.

As mentioned earlier, a coherent system is defined as a system in which components are all fulfilling the system objective. In an ex post coordinated system, however, the collective objective is not obvious as nobody has implemented the organization and its goals. The collective objective merges in conjunction with individual objectives. Consequently, the

coherence of a system ruled by an ex post coordinating device depends on the way it facilitates the fulfillment of each component’s individual objectives.

A notion related to the present discussion is the Hayekian definition of *equilibrium*. For Hayek (1937), the equilibrium rests on the compatibility between individual plans in their relation to each others. However, this definition of coherence does not contain the notion of efficiency, because there is no superior principle to define its criteria. The prisoner dilemma type of Nash equilibrium is a result of a coherent ex post coordinated system, and it is sub-optimal.

On the contrary, in an ex ante coordinated system, the collective objective is well defined by an exogenous authority, and coherence is not a matter of individual plans. Instead, it is a matter of how compatible the collective behavior of the community can be with this objective. Efficiency, here, has criteria. In the case of the prisoner’s dilemma, if the objective of a regulation authority is to maximize the prisoner’s earnings, the results given by the Nash equilibrium are not compatible with the objective.

The degree of coherence can vary from one system to another. An ex post coordinated system will become more coherent as the compatibility between individual plans improves, that is, when individuals have more objectives and preferences in common. Moreover, an ex ante coordinated system will become more coherent if the principle that determines it is clearly defined and if the rules are well respected. In a centralized organization, individuals do not need to look alike to strengthen the coherence, because the rules they follow do not depend on their preferences.

Table 1 provides a brief summary of the main attributes of coherence in the two coordinating devices.

*Table 1: Attributes of coherence in coordinating device.*

	EX POST COORDINATION	EX ANTE COORDINATION
What is coherence?	Compatibility between individual plans	Compatibility of the collective behavior with the system objective
What makes a system coherent?	Shared abstract rules	A concrete rules system
How does coherence maintain itself?	By the similarity of individuals in the system	By the respect of the system rules

#### 4. Conclusions

In summary, this paper has considered two important issues on coherence. First, it has put Williamson’s suggestion of attaching more importance to intentionality into context. It shows

that intentionality is an attribute of firms and ex ante coordinating devices, whereas spontaneity is an attribute of markets and ex post coordinating devices. Second, this paper has discussed the evolution of coherence. In an ex ante coordinating device, change is a top-down process, which must come from the authority that controls the rule system. In contrast, it is a bottom-up process in an ex post coordinated system, which can only be initiated from a collective change of the individual components.

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