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**Conference Paper**

## The Role Of Negotiation In The Structuring Of Territory: The Case Of Biotechnologies In Toulouse

40th Congress of the European Regional Science Association: "European Monetary Union and Regional Policy", August 29 - September 1, 2000, Barcelona, Spain

**Provided in Cooperation with:**

European Regional Science Association (ERSA)

*Suggested Citation:* Leroux, Isabelle (2000) : The Role Of Negotiation In The Structuring Of Territory: The Case Of Biotechnologies In Toulouse, 40th Congress of the European Regional Science Association: "European Monetary Union and Regional Policy", August 29 - September 1, 2000, Barcelona, Spain, European Regional Science Association (ERSA), Louvain-la-Neuve

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**40<sup>th</sup> EUROPEAN CONGRESS**  
**EUROPEAN MONETARY UNION AND REGIONAL POLICY**  
**BARCELONA 2000**

**The role of negotiation in the structuring of territory : the case of  
biotechnologies in Toulouse**

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**Abstract:**

Our purpose, in this contribution, is to bring to light the impacts of negotiation on territory structuring, and to show the existence of specific territories, characterized by flexibly evolutive negotiated coordinations. In this perspective, negotiation is being considered through a dual approach : resources allocation and resources creation as a vector of territory structuring. So we will define the process of negotiation starting from the following triptych pattern: exchange-negotiation, partition-negotiation, associative-negotiation. As an illustration of this, we propose to analyse the case of biotechnology activities in Toulouse, and more particularly, the Genopole instance. This analysis places in a prominent position the fact that purely distributive negotiation does not lead to resources creation. Indeed, the institutionalization of negotiation, understood as an artificial process of distributive and associative rules selection, proves to be a primary condition to its implementation.

## INTRODUCTION

Our purpose, in this contribution, is to place in a prominent position the impacts of negotiation on territory structuring. Today, local development policies are increasingly aimed at implementing collective strategies of resources creation (Colletis G. and alii, 1999). This means that co-operations between various actors (such as firms, local communities, trade unions, associations, lobbies), whose vested interests may not prove conciliable, is necessary. So these transformations bring about the coming into tangible existence of specific territories, characterized by flexibly evolutive negotiated coordinations. Indeed, we will thus try here to confirm the role of negotiation through a dual approach: **resources allocation** and **resources creation** as a vector of both territory construction and structuring. However if resources creation is a well understood process in economic literature, especially as far as long term endogeneous transformation is concerned (Quéré, 1997; Ravix, 1990, 1996; Colletis, 1998; Boureille and Commerçon, 1998, etc), it does not explicitly integrate the question of resources allocation which seems nevertheless closely dependent on this. So, in this paper, we will endeavour to show that the concept of resources allocation and that of resources creation are not mutually exclusive. Indeed, resources creation seems to be based both on allocative negotiation processes in the short term, and associative negotiation processes in the long term, the interaction of which plays an important part on territory construction.

Although, contemporary economic literature analyzes negotiation by considering it only from the allocative point of view. We will try nevertheless to show that beyond a purely distributive approach, negotiation will fit more comprehensively within the scope of a historical perspective so as to be congruous with a procedural logic. This means that newly issued rules have to be adhered to collectively, which will help bring about a situation where arbitration between actors with asymmetrical interests will prove feasible. In this perspective, I will first define (part I) the negotiation in the light of American institutionalism (Commons, 1931) and in the light of Negotiated Law (Morin M.L, 1998; Supiot, 1998; Ost, 1998). As a matter of fact, the latter develops further the making of negotiation rules, both through an allocative perspective and through the perspectives of deliberation, of confrontation, of new coordination rules selection.

The interest of the institutionalist approach is to integrate agents' volition and experience in the dynamics of conflict resolution. So we will base our work on Commons's approach, which

is very contemporary in that Commons was the first economist to bring to light the notion of artificial selection and has had no followers to this day. This leads us to the question of negotiation institutionalization as an artificial process of interests selection, taking into account global social and economic institutions, and leading to the construction of a “collective” (and not “common”) interest. As an illustration of this, we will analyze biotechnology activities in Toulouse (the “Genopole”). We will see that every negotiation does not lead to resources creation. So, the institutionalization of the negotiation process proves to be a primary condition to its implementation (part II).

## **I –Towards a definition of negotiation between Economics and Law**

### ***1.1 - Negotiation in the economic field: an allocative non-processual perspective***

In neo-classical approaches, negotiation is traditionally associated with a myopic bargaining, where volition and power asymmetries are excluded. The behaviour and decision coherence is postulated a priori, and agents are not able to assess the impact of their own choices and decisions on the other agents decisions, or on prices, which is due to the assumption of atomicity (Cahuc P., 1998). The games theory nevertheless takes partially into account conflicts through the non co-operative models, and more particularly through bargaining models. Both approaches are focused on bargaining mechanisms aiming at an optimal “Pareto efficient” resources allocation. It is therefore a purely allocative approach of negotiation, which leads to rational and optimal solutions within an utilitarian vision of the negotiation mechanisms (Touzard H., 1998). It is however necessary to stress the fact that this treatment of the negotiation is not centered on conflicts resolution, but rather on the formal mechanisms of decision allowing the avoidance of conflict situations. The essential contribution of the Game theory lies indeed in the analysis of the interactions between the strategic decisions of the players, the finality being to lead to co-operation situations. Finally, the Games Theory deals more with the finality of the negotiating mechanisms, than with the rules of negotiation and the way of adhering to these rules.

However, the Game Theory tries today to exceed the need for applying very precise rules ex-ante. Nevertheless, this approach does not allow for the resolving of situations in which the rules of negotiation are integrated in a procedural construction, in which negotiation depends on non foreseeable phenomena (Kreps, 1990; Strauss, 1992). These phenomena can be, for

example, economic or cultural problems which emerge during the negotiation, behavioural practices that modify the players' negotiation power, or incompatible systems of representation that will skew the progress of the negotiation. That's why we characterize it as non-processual. Each game issue is conditioned by the rules distribution and protocols asset forth at the start (Gerard-Varet L.A, 1999) and nothing is said about the negotiations which precede the game and organize these protocols (Kreps,1990).

It should however be noted that the first objective in games theory has never been focused on the rules genesis. The aim lies in fact in the analysis of causality between the rules and the issue of the game, i.e. the effect of the rules and their change on the issue of the game (Guth N, Marchand N, Rullière J.L, 1998; Praskinar V and Roth A.E (1992) ... ). The Evolutionary Game Theory tries to exceed these limits by introducing mechanisms of **natural selection**. This approach introduces procedures of learning and darwinian selection. So it is possible to observe the emergence of behaviour regularities which assume the appearance “of institutions (1) ”( G.Caire,1996, Ben Hammrouda H., 1996) and which are the result of a particular conception of the historical process. Indeed, the Krugman (2) criticism about Evolutionary Game Theory in general is also right for evolutionary models of negotiation (Young H.P., 1992; Ellingsen T, 1997; Skyrms B, 1994): the evolutionist Theory of negotiation focuses on the result of an ended process (concept of evolutionarily stable strategy according to Malaith G.J, 1992) and not on a process in progress, or focuses on an equilibrium where agents maximize their adaptation acting as the other agents (Delorme R, 1997). It thus remains a static view of negotiation. Moreover, if some models postulate a strict anonymity between asymmetrical players, other models go against this assumption to postulate the perfect symmetry of agents. On the contrary, it seems that asymmetry between agents or partial knowledge of the other agents' characteristics is a basic necessary assumption to observe the emergence of new negotiation rules, and to introduce the concept of volition. But evolutionary game theory is beeing confronted with difficulties in endowing agents with cognitive capacities (Vicente,1999). That's the reason why Evolutionary Game Theory doesn't prove successful both in the observation of new rules of negotiation, and in the observation of cooperative and non-cooperative behaviours. It seems therefore that introducing the notions of intentionality and volition requires another conception of selection : **artificial selection**. The main interest of artificial selection is to introduce a purpose in individual and collective action. Action is indeed oriented toward a common objective, which gives a significance to a collective action integrated in an evolutionary environment. But we didn't find any models

activating artificial selection in negotiation behaviours within economic literature. Besides, this idea constitutes a very interesting research perspective which can take place in artificial intelligence programming, and more particularly in approaches focused on neurones networks (Dupuy C, Torre A, 1997, Vicente J, 1999, Tordjman H, 1998 ; Sebag M, Schoenauer M, 1996 etc...).

## **1.2 - Towards an institutionalist approach of negotiation between Economics and Law**

Modelisation in artificial intelligence remains nevertheless in a purely microeconomic perspective. Its main contribution is to place cognitive behaviours in the centre of the analysis, and to understand behaviour evolution within a changing environment. In these decentralised models, institutions are supported by behaviour regularities. They are also defined within the neo-institutionnalist field (North' approach), which considers institutions as rules created by agents at a decentralised level. Our view is different in that sense that we consider artificial selection as a process in keeping with the historical perspective of economic and social institutions. Introducing historical time in this perspective requires defining the notion of institution. To do so, we will subscribe to the Commons (1931) view that considers institution as a collective reference for individual action, as a frame controlling individuals and groups action. So institution plays the role of collective mediation and thus participates to collective action construction (Talbot, 1998) through artificial selection. Commons refers to artificial selection as a selection of rules with a common aim. He refers to artificial selection rather than to a Darwinian selection as developed by Veblen, a theory whose prolongations can be found today among thinkers belonging to the evolutionist trend (Tordjman...). So, the reflection developed by Commons is a very contemporary one. **From this point of view, we will define the institution notion as a reference for individual and collective action, as a frame of rules resulting from an artificial selection and aimed at a common objective. Further, institution participates in and results from the construction of a collective interest.** So we go beyond the notion of common interest to integrate the notion of collective interest which is characterised by the collective creation of new rules.

From this institutionalist point of view, we will define negotiation between Economics and Law as an important mechanism of interest selection and construction. To our mind, negotiation is not solely a distributive mechanism, or a succession of equilibrium states. We will try to show that negotiation takes place in historicity, and in multiple ways of dealing

with conflict resolution (impacts of power relations, coalitional practises...), which conditions both its nature and ends. Negotiation is thus understood as a specific coordination modality, aiming at an intentional resolution of conflicts. It seems conceptually inseparable from the history of legal, institutional and social rules and their impact on economics. In economics theory, history of legal and institutional rules was developed by Commons (1931) and his contemporary followers (Kirat, 1999, ...). From Commons's point of view, negotiation refers to an analysis of volition and intentionality within transaction relationships. These are the major components of the coordination mechanisms when the criterium of allocative efficiency is shelved away, and the negotiating process is considered from a processual and historical perspective, leading to new rules. Nevertheless, this conception of negotiation is not developed further in economics. That's why we choose to associate Law, and more particularly Negotiated Law (Supiot, Ost F, Morin M.L, ...), which develops further a reflexion on negotiation rule, and on negotiation institutionalization.

### ***The interest of establishing points of similarities between Institutionalism and Negotiated Law***

Links between Economics and Law are developed in many research works (Coase RH, 1960; Posner, 1979; Public choices, Justice theory, Law and Economics fields etc...). But negotiation is here often reduced to a simple resources allocation, as an exchange-negotiation or a partition-negotiation, ie as a distributive negotiation. Moreover, the interest of Negotiated Law is to consider negotiation through Habermas' contribution (Frydman, 1998b), integrating the impact of deliberation in the collective establishment of rules. The main interest lies in the progressive recognition of each negotiator specificities, this latter referring to a procedural rationality. In this perspective, negotiation takes place in reference to an institution which is a collectively instituted principle of justice. This refers to the Commons' reasonable value, where the interests of single agents are subordinated to collective interest. At this level, Negotiated Law corroborates the institutionalist approach, as it deals with a process of rules institutionalization by the collective action. Thus, optimal allocation of resources is replaced by institutional arrangement.

Indeed, Negotiated Law fits directly in the field of conflict resolution, and in the production of negotiated new rules. The notion of collective interest takes here an important place and, to our mind, refers implicitly to the notion of artificial selection developed by Commons. As

M.L.Morin (1996) brings it to light, Negotiated Law is a collective Law that defines common rules within a group of individuals, and which is the result of agreements between divergent interests. From this point of view, negotiation isn't solely a bargaining, but also the artificial selection of rules governing the economic and social relations through a procedural perspective. So Negotiated Law appears as a collective law that mediatizes individual and collective relations. It puts in a prominent position the limits of methodological individualism, principally because rules result from collective deliberations. Of course, our objective isn't here to deal with purely legal considerations. The recourse to Negotiated Law is justified by its important analysis of negotiation nature and institutionalization.

***Towards a definition of negotiation at the intersection between heteronomy, deliberation and bargaining***

Considering negotiation at the intersection between heteronomy, deliberation, and bargaining, is one of the most important contributions of F. Ost (1996). In other words, negotiation is not only considered as a simple bargaining, but as a process referring to existing institutions and rules (heteronomous), and acting simultaneously on them by the way of the collective deliberation. One rediscovers here the limits of Game Theory modellings that try to explain social norms from the only point of view of the individual level.

This conception leads to a dual vision of negotiation. The first characteristic is the role of deliberation whom emerge interpretation and adjustment of heteronomous rules to create new one's. And the second characteristic takes place in the analysis of power relations and conflict interests which take the form of a bargaining (Ost, 1998). According to us, negotiation isn't however the exhaustive expression of one another of these two characteristics, but rather the coexistence and the tension between the logic of deliberation and the logic of confrontation.

In this perspective, the negotiation rule is considered from the point of view of Negotiated Law (and it is a fundamental contribution here) as being not substantial but procedural (Frydman, 1996). Beyond exchange-negotiation or partition-negotiation, we put in a prominent position a new vision of negotiation as a vector of new coordination rules : the associative negociation. So, we will define the process of negotiation starting from the



following triptych pattern : exchange-negotiation/partition-negotiation/associative-negotiation :

- i) **The exchange-negotiation pattern** whose finality is the exchange of goods and the transfer of property rights. The rules which govern the exchange are allocative rules. The exchange-negotiation takes place in the short term.
- ii) **The partition-negotiation pattern** whose finality is the assignment of resources and rights. The rules which govern the partition are also allocative rules in the short term.
- iii) **The associative-negotiation pattern**, which refers to the mechanisms of deliberation, of co-operation, of coalition, that can lead to a reformulation of power relations within a situation of conflict. Here we consider power from the point of view of relational and strategic dependence between actors, according to resources detention (Dockès P, 1999). From this negotiation new coordination rules which we will call associative rules in the long term come to light.

These three kinds of negotiation aren't mutually exclusive, but coexist through a tension between the logic of deliberation and the logic of confrontation. The process of negotiation such as we define it here is characterised by the two essential following components: the first one refers to the management of rights and resources through allocative mechanisms; and the second one refers to the creation of new rules leading to new coordinations. Further, negotiation can be institutionalized through a formal or an informal institution. By formal institution, we understand here: a law, a legal convention, a co-operation or intermediation structure resting on public or private contractual statuses. By informal institution, we refer to informal rules collectively instituted, which are a reference for collective action (cf.supra). **According to this, the process of negotiation institutionalization is an artificial process of rules selection and creation, leading to the constitution of a collective interest.** This collective construction is characterised by the emergence of cooperative behaviours, by a progressive reduction of uncertainty that changes power relations into new configurations.

In the light of these preliminary definitions, the question we ask for is the role of negotiation in the structuring of territory. The involved actors are firms, local communities, as well as social actors (trade unions, associations, lobbies etc). We will illustrate our contribution with a concrete example : the Toulousain Genopole which concerns genomic biotechnological

activities. So we will show that every negotiation hasn't always structuring effects, but can per contra produce structuring effects through the institutionalization of both allocative and associative rules. We will show thus that today, territories structuration is based on negotiation processes that produce new coordination rules, and that participate/take place in the territory history.

## **II - the role of negotiation in the territory structuring : the example of biotechnology activities in Toulouse**

### **2.1 - A starting assumption : the territory construction resulting from a negotiated process of resources allocation and creation**

Whereas economic literature has for a long time considered the territory concept as a receptacle of purely allocative coordinations, the heterodoxy field integrates it today in a different perspective, expressed in terms of resources creation (Gaffard, 1988, Colletis and alii, Longhi and Quéré, etc). In this perspective, territory is not postulated, does not exist a-priori, but is considered as a construction of new coordinations in the long term, aiming at collective creation of new resources. This resources creation refers to an approach of the coordination notion which is based on resources complementarity and strategic mobilization, to create new one's (Gaffard, 1988). Taking in account this literature, our positioning will be nevertheless oriented towards an association of both the allocative perspective, and the resources creation perspective. So, we will try here to show that territory construction results from a dual process of resources allocation and creation, wherein **negotiation** plays a fundamental part. Indeed and according to us, this construction is the result of conflict resolution mechanisms between various and asymmetrical actors. These actors are public actors (public research, local communities, chambers of commerce etc), private actors (firms) or social actors (clubs, associations, trade unions, lobbies). And these actors' multilateral coordinations seem to yield to:

- mechanisms of resources allocation on the short run (assignment of public financings etc...) which refers to the question of resources management (physical or financial resources) in local public policies. One refers here to static distributive rules of negotiation on the short term;

- mechanisms of resources creation/destruction on the long run, that refers to a territorial construction/destruction, and thus to the transformation of the existing rules of coordination. One refers here at the same time to associative rules of negotiation, and to allocative negotiation rules on the short term. The resources creation is inevitably based on allocative mechanisms registered in different temporalities.

But first of all, determining the construction of “a biotechnologies territory” require a preliminary work to define what are biotechnologies. Indeed, one can find many definitions of the word “biotechnology ” in economic and scientific literature. In the perspective to understand what biotechnologies are, we will define them in the light of the Douzou P. and alii (1995) definition in the following way: “biotechnologies are technologies whose object is to exploit industrially micro-organisms, animal or plant living cells” (Douzou P, Durand G, and alii, 1995). The development of molecular biology in the Fifties, and in parallel DNA recombination technologies, proteins engineering, and fermentation techniques, proved feasible the development of high added value products in many sectors (in health with genic therapy, in the field of plants, animals, and environment). In short, the large applications of biological techniques are the following ones (Douzou P, Durand G, and alii, idem): (i) genetic engineering, with the reprogramming and the creation of species characterised by new properties; (ii) biochemical engineering, with the study of the chemical reactions within living organisms ; (iii) microbiological engineering, with the multiplication of micro-organisms through a fermentation process.

In this particular case, the creation of resources will be understood as a collective creation of new scientific knowledges that takes place both in the field of fundamental research (genetic, enzymology, fundamental microbiology), and in the field of engineering research and its valorization. As for an example, the emergence of the Toulouse Genopole is closely dependant with the transfer of technology between public and private-research, which leads downstream to the knowledge industrialization and to the market valorization.

However, we will see that negotiation does not lead irremediably to resources creation. Indeed, a necessary starting condition is the institutionalization of negotiation mechanisms. And however, this institutionalization strongly depends on territory history, and mainly on the economic and social institutions. Indeed, the structuring of biotechnologies in Toulouse takes place at the interface of various logics, returning both to the scientific sphere, the market

sphere, the public sphere, and finally to the fields of regulation and Ethics (cf. GMO : Genetically Modified Organisms; and the bio-ethical european law). And these latter, referring to various appropriation logics, play an important part in negotiation institutionalization processes.

## **2.2 - Every negotiation does not lead to resources creation : the negotiation institutionalization process as an indispensable starting condition**

To show the role of negotiation and more particularly its institutionalization within territory, we will refer here to two cases of negotiation, which played an important part in the evolution of Toulousain biotechnologies **during the Eighties**:

- The tacit **negotiations** between the actors of the public research sector, to obtain financing from local communities. We will see that these informal negotiations led to **the compartmentalization** of health on the one hand, and of plants and animal research on the other hand. This compartmentalization limited the collective creation of new resources.
- the negotiations between the seeds-groups, which led to the creation of a formal intermediation and negotiation structure : ASEDIS-SO. We will see that the latter played thereafter a fundamental part in the creation of a seeds-complexe associating seeds groups and the public local research.

These negotiations have to be considered mainly from the point of view of the local biotechnologies history. We shortly present it through three periods (3):

- the years 60-70, which correspond to the development of molecular biology and genetic engineering. The presence of famous researchers in INSA (Pr.G.Durand) and in UPS (Pr. Zalta), who were also working with political and regulatory national authorities, played a fundamental part in the emergence and development of local biotechnologies. During this period, negotiations arbitration was led at the State level, and these negotiations were aimed at the access to public financings.
- the period extending from 1982 to 1997, which corresponds to local-global paradoxes. Indeed, from 1982, the Toulouse aeronautic sector has been principally developed to the

detriment of local biotechnologies. This will not prevent local initiatives in the biotechnologies field, but these latter will take a individualized/compartmentalized form. According to us, that's the reason why emerged an important compartmentalization between the various local public research sectors, and further between local public research and industrialists. Paradoxically, it is mainly in 1982 that are set up large national programs for biotechnologies development, which require a decompartmentalization between public research and private research. Meanwhile, with the decentralization laws, Toulouse Region becomes the central partner both of local and local/State negotiations. From 1986 to 1996, we observe a stagnation of the links anteriorly structured between public and private local actors. However, these individual initiatives committed during the Eighties will form a potential of excellence in biotechnology. This one will however not be activated by a regional collective dialogue, and will remain strongly dependant on the sector-specific compartmentalizations.

- since 1997, we observe a major change in the field of biotechnologies, with the development of a national Genopoles network, the setting up of an innovation law in July 1999, the national and local initiatives for venture capital development, and finally the territorialisation of biotechnology activities within the Genopoles concept. The candidature of Toulouse researchers, to be integrated in the Genopole, played a major part in the structuring and the decompartmentalization of biotechnologies on the local level. Negotiations then mobilized both territorial communities, public researchers, some associations, and some industrial groups (P.Fabre, Novartis, Monsanto, Pioneer, Sanofi).

### ***Tacit negotiations between public researchers during the Eighties***

This case is interesting because it shows the existence of tacit arrangements (cf. Shelling, 1960) for financial resources allocation. That's a static case of partition-negotiation, that didn't lead to a territory structuring. The implicit game consisted, for each involved actor, in obtaining by turns the access to public financings. At the local level, that participated in the compartmentalization of health sector on one side, and agri-business sector on the other side, and limited "de facto" the technological transfers between these sectors. So, this type of tacit negotiation did not lead to a process of resources creation, and rather took part in the destructuration of scientific links between local research actors. However, considering the duration and the stability of this practice over time (several years), one can call it **a tacit institutionalization** of negotiation. In this case there was no preconditions of collective

acceptance to negotiate, nor delimitation of the negotiation game rules. This is the reason why, even institutionalized, this static and purely allocative negotiation didn't lead to any perspective for resources creation.

So, we see that the institutionalization of a purely distributive negotiation is not a vector of new resources creation. That confirms our starting assumption. Indeed, to lead to new resources creation, a negotiation must be characterised both by allocative and associative new rules.

### ***The case of ASEDIS-SO created in the Eighties: toward a formal institutionalization of the negotiation process***

ASEDIS-SO, Association for Seeds Development in French South West, was initiated in the Eighties by South West seeds-groups. Their objective was to collectivize some fields of fundamental research. This federative structure purpose was, and is always, the transfer of technology within **non competitive fields** (such as bioinformatics), the competitive field being varietal creation (seeds, phytopharmacology). Indeed, at the very start of the Sixties, seeds groups and co-operative organizations in South West (Co-operative of Pau, RAGT, Co-operative France Mais, Lesgourgues), were very prospective in the field of hybrid plants, and try collectively to set up licence agreements with American groups (4). Traditionally very cooperative, this industry aimed at local industrial excellence in plant biotechnologies. However, some upstream researches (fundamental researches) proved to be expensive, with uncertainty on investment returns. This led to the creation of this common associative structure, ASEDIS-SO, partly aimed at harmonizing competition cooperation interactive relationships.

In this perspective, we will here bring to light and analyse the importance of negotiations that preceded the real negotiation game. So we will analyse this dual process through the following two phases :

- a first phase, which both concerns the actors positioning relevant to a defined problem, and the way of adhering with, and setting up common rules of negotiation. This informal approach is the result of a long-term common history between involved actors.

- a second phase, which really concerns the negotiation game, and which leads to new associative rules and to an institutionalization of negotiation.

***PHASE 1 : the positioning relevant to a specific problem, and the legitimization of negotiation rules***

The seeds groups in French South West have traditionally always been federated, and that played an important part in the institutionalization of their negotiation uses. For example, in the Eighties, they were confronted to a dual problem. A productive problem, which was concerning the upstream research high cost (with uncertainty on capital returns), and the massive development of biotechnology competition emerging from USA. The resolution of this productive problem took place in the setting up of a common survey of international technological change (within a specific structure), and also by the collectivization of some fundamental research fields. But there was also an institutional problem: the management of the competition-cooperation interactive relationships that had always characterized these industrialists. Indeed, beyond a simple cooperation, this brings to light the necessity to manage behaviours uncertainty, conflict interests, and to set up partition rules when a major scientific discovery is made.

So we consider the positioning relevant to these institutional and productive problems as a mutual recognition process, which is finalised by a preliminary procedure of consultation and by a collective acceptance for negotiation. This concretizes a link between the common history of the involved actors, and the recognition of a common productive and institutional problem, which participates to a collective interest construction. Following this collective positioning, participants then delimit rules for negotiation, and accept to subscribe collectively to them. So this first phase proves determining **a negotiation principle, a negotiation settled rule**. This principle is closely dependant from history of seeds groups, and concerns non competitive fields : molecular marking, micro-organisms resistance etc...Thus, the rule of negotiation is not postulated, as it is the case in Game Theory modellings, but is really a legitimization process, characterized by collective acceptance of rules relevant to a collective interest. This first phase of negotiation is purely **informal**, and concerns associative-negotiation (partners selection, mutual recognition). It is a first phase of negotiation informal institutionalization.

## ***PHASE 2 : from informal institutionalization to formal institutionalization of negotiation***

When the negotiation principle is collectively accepted, the negotiation process can start. It is both an associative and a distributive negotiation, which relates to the decision making, according to institutional environment (5) : future research investigations, profits partition, and creation of a formal negotiation structure to limit behaviours uncertainty and to lead to the collective resolution of conflict interests. This negotiation, by creating new associative rules, settles behaviours in a logic of risks mutualisation.

Then the participants problem is the stability of such a cooperation. That is why these new rules will be settled through the creation of formal structure/association : the ASEDIS-SO. We consider this association as a formal institutionalization of negotiation, which brings to light a common volition to adhere to a collective project, and to settle rules allowing opportunism avoidance. But further, the collective objective is to gain negotiation power, to obtain much more financing from the local communities. Besides, this formal institutionalization of negotiation led to new coordinations, vector of collective resources creation: cooperations with public research (bio-informatics, molecular marking), thesis financings, cooperations with local communities (CESR, SICOVAL), and young researchers engaging to maintain links between fundamental and applied research. The formal institutionalization of negotiation next took part in the structuration of “a seeds pole”. At the local level, this seeds pole played an important part in the official selection of Toulouse as Genopole. So this negotiation institutionalization was a source of new coordination rules leading to new cooperations and to new resources creation.

### **2.3 - The present structuration of the Toulouse Genopole : the emergence of an institutionalized “negotiating system”**

The selection of Toulouse city as Genopole, in September 1999, is another case of negotiation institutionalization, which “takes support on”, and “is conditioned by” the two processes of negotiation previously described (phase 1 and phase 2). Whereas public research in Midi-Pyrenees was characterized by compartmentalizations between the health sector on a side, and the agri-business sector on the other side, the candidature of Toulouse for eligibility as Genopole changed the local biotechnologies characteristics and organization. That resulted in the emergence of a global dialogue negotiated on the basis of a joint project aiming at

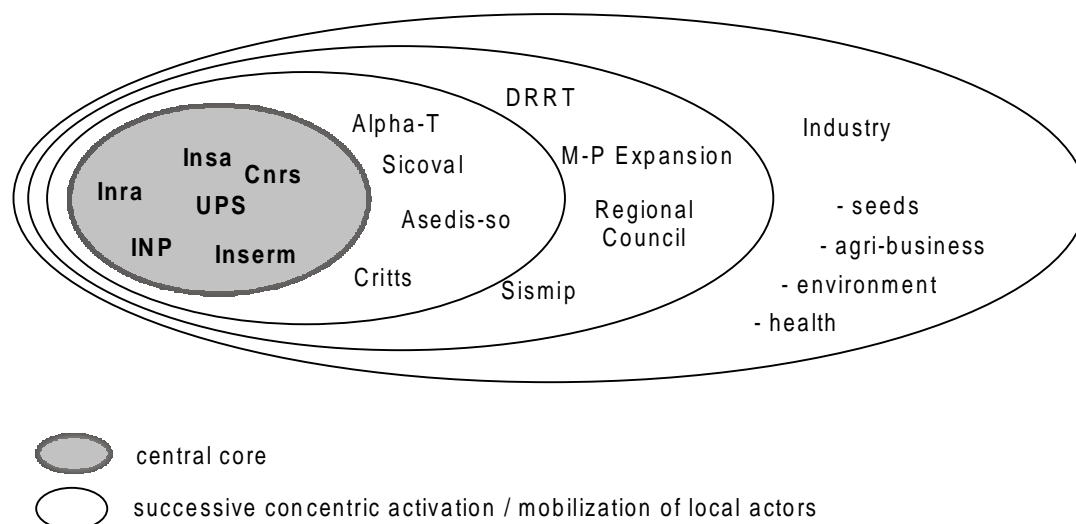


developing local resources combinations, and transfers of technology between public and private research in genomics. We will call “**negotiating system**” these negotiation processes between public, private and social actors, which led to a new organization of the local research. However, we observe today that the appropriation logics of actors remain unclear, and oscillate between an intra-sectorial logic and a trans-sectorial logic of obtaining financing from local communities. So interest logics oscillate between vested interests, and collective interests presupposed by the Genopole project. It seems however that negotiation becomes increasingly associative and leads to the formation of a structured “negotiating system” with new coordinations and new resources creation. We will show this by distinguishing two phases: a first phase concerning the local actors mobilization that preceded the selection of Toulouse city as Genopole; and a second phase subsequent to the selection, characterized by the progressive institutionalization of negotiations, by a reformulation of the local power relations, and characterized by new scientific and industrial resources creation.

***PHASE 1: the emergence of a “negotiating system” controlled by local public researchers***

This first phase takes place in state-policies changes that characterized fundamental research and applied research in the beginning of the Nineties. These changes appeared in 1991 with the setting up of a national program, BioAvenir, which was promoting transverse links between private and public research, for example with the creation of mixed research laboratories (6). So, French State volition was to stop financing public and private research with public funds, **and to promote a logic of “sponsorship” aiming at developing scientific and financial partnerships between public research and industry.** In other respects, during this period, industrial world-wide groups reinforce their presence in the field of biotechnologies, with the objective to appropriate the animal and plant biological material. Monsanto purchases phytobiology firms (Dekalb, Hoden, ...), Rhône-Poulenc develops researches within this field, and purchases firms specialised in animal genetics and in phytopharmacology. Moreover, new scientific techniques allow to characterize genetic material thanks to the development of bio-informatics. The setting up of the Genopoles’ French network thus takes place in this context of changes, aiming at a more competitive biotechnology industry in France. From another source, **the concept of Genopole is very interesting because it is supported by a territoriality of biotechnology activities:** creation of mixed research laboratories, regional incubators creation, contribution to start-ups creation, development of angel funds etc...

So, this first phase of negotiation is characterized by a global mobilization of local actors, who want to adhere to the Genopole project, defined at national level by the MENRT. This period leads to the making of a “negotiating system” controlled primarily by the following local public research actors: Inra, Insa, INP, CNRS, Inserm and UPS. At the beginning, this period wasn’t nevertheless characterized by a strong institutionalization of negotiation. Indeed, these actors fitted more in mutual recognition and mobilization to promote this collective project, than in a real negotiated construction of partnerships. More concretely, this phase corresponds to the collective acceptance of common rules which are: the giving away of each one’s competences, and the revelation of indivisible private informations relating to the following fields: current research programs and techniques activated to their implementation, human and material means within laboratories, partnerships and current contracts elaborated with industrialists, and financings/subsidies allocated both on regional, national and European levels. So we observe the progressive structuring of a negotiating system, resulting both from a project defined by the french State, and from a local “clutch” initiated by public research actors. This phase aims at mutual recognition and at delimitation of a negotiation principle based on the potentialities of existing resources combination, on the real implication and transparency of actors, and on a non-privative appropriation of the future results (financial and scientific) generated by these partnerships. One can schematize this negotiating system in the following way:



**Scheme n°1**

**June 1999 : a negotiating system in the making, controlled by the local public researchers**

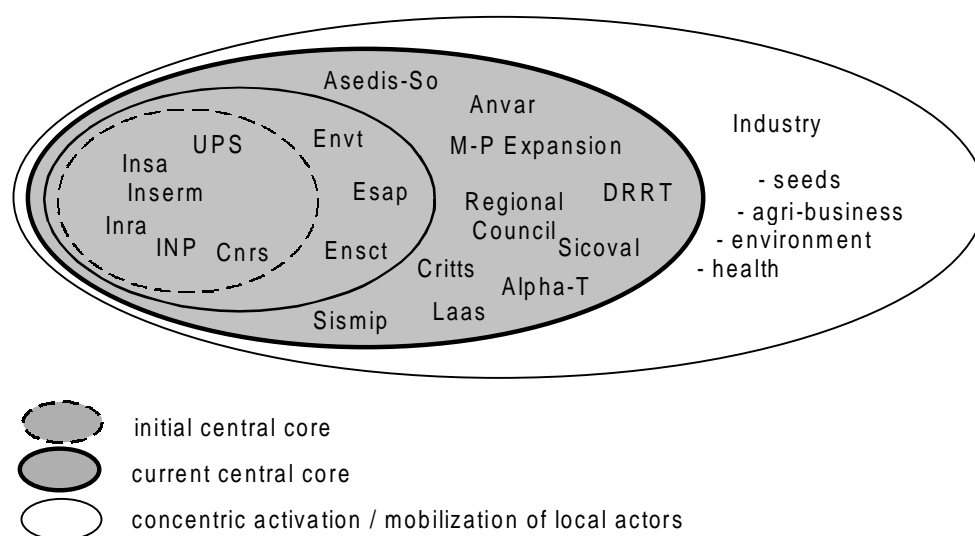
## ***PHASE 2: Intensification of negotiations and initialization of a collective process of resources creation***

The official selection of Toulouse as Genopole in September 1999 marks the beginning of this second phase. But the Genopole notion was first unclear in peoples' mind during the first stages of its implementation, as it doesn't allow for conflict resolution when multiple appropriation logics are involved. Indeed, the creation of the Genopole presupposes more flexible and less confrontational power relations (which are bi-polarized between health on the one hand and agri-business on the other hand). However, one observes an intensification of negotiation relations during this second phase.

That is concretized first of all by the rise of cooperative reconciliation trends aiming at creating common research fields. The most striking agreement connects aeronautical research and genomic research. Electronics, robotics and engineering of processes developed in the field of aeronautics participate in the development of bioinformatics, biorobotics and nanotechnologies. In this perspective, the LASS develops DNA biochips. The objective is to create bio-industrial concentration of interconnected skills, and thus to promote trans-sectorial transfers of technology, starting from activities such as informatics, robotics and electronics. The creation or the development of platforms with common partners (functional genomics, bioinformatics, nanotechnologies) requires more and more negotiation. This aims at the common use of material resources, and at the sharing of the research gains resulting from new combinations of resources.

So, these negotiations are structuring because they lead to the decompartmentalization of the three large research fields: (i) fundamental and applied microbiology; (ii) biology of development, physiology and pharmacology; and (iii) genetics of eucaryote organisms. In addition, these negotiations participate in a dual "organization" of the technology transfer. The first one is an intra-sectorial-specific transfer which is developed by Engineering Schools (INSA and ESAP starts-ups incubators), and by transfer structures such as ASERIS-SO, SISMIP-CCTM or CRITT. But moreover, the transfer of technology increasingly takes a trans-sectorial form, with the setting up of common platforms in genomics and in bioinformatics, platforms that suppose the combination of existing resources for the creation

of new one's (for example DNA biochips). That also lead to a reformulation of the power relations. Whereas interdependencies between researchers were strongly compartmentalized in sectors (agro-alimentary, seeds, agriculture, health, environment), these interdependences are today inter-sectorial and much more flexible. Besides, the increasing number of involved actors decreases their respective power, and no "key-actor" appears really. However this reformulation of the power relations remains unstable, and oscillates between the privative appropriation logic (vested interests) which prevailed in the past, and the collective appropriation logic (collective interest) presupposed by the current process of resources creation. According to us, this instability can be explained by the fact that the Genopole is not formally institutionalized as a GIP (Groupement d'Intérêt Public: Public Interest Group according to French law) in accordance with the starting project. It would seem that the formal institutionalization of negotiation is a necessary condition to maintain the dual process of resources allocation and creation, and to perpetuate this territorialized structuring negotiation. The following scheme is an updated state of this negotiation process:



### Scheme n°2

**June 2000 : an enlarged negotiating system**

## **CONCLUSION**

Our objective was here to develop a renewed vision of the territory, this latter being perceived as the result of a dual negotiated process of resources allocation and creation. The analysis of

“biotechnology territory structuring” brings however to light the fact that purely distributive negotiations don’t lead to resources creation mechanisms. Indeed, beyond a purely distributive perspective, we show here that negotiation leads to resources creation only if it is integrated in a processual logic of new rules creation, which participates to a collective interest construction. So, we show that these rules and collective interest partake of its institutionalization. The case of Toulousain biotechnologies shows that one can analyze this process of institutionalization through two phases:

- a phase of adhesion to a common principle of negotiation. This process is prior to the negotiation and results from the delimitation of the negotiation framework by the very actors taking in part in it. These actors thus delimit the rules for future negotiation, relevant to a given institutional and/or productive problem. In Toulousain biotechnologies, this first phase of informal institutionalization of negotiation is strongly related to the history of the local/global actors and institutions. So, this first phase corresponds to the processual construction of a common principle and framework **of behaviour rules**.
- In reference to this common framework of behaviour rules, the negotiation which is then established concerns **decision taking**. It relates simultaneously to allocative and associative rules. By creating new coordination rules that are collectively accepted, it settles behaviours in a logic of risk and uncertainty mutualization. So, negotiation is here the real sign of a mutual recognition, of an agreement institutionalized over time.

This institutionalization does not actually guarantee stability, and the example of the Toulouse Genopole shows that logics underlying the interests of the various actors involved oscillate between individual appropriation and collective interest. However, when we consider Toulousain biotechnologies evolution over the past 30 years, we note that phases of resources creation which have thereafter played an important structuring part were in fine characterized by a formal institutionalization of negotiating process:

- Either through a bilateral or multilateral contractual form: as is the case for partnerships between P.Fabre group and CNRS/Inserm, which were finalized by the creation of common mixed laboratories.

- Or through the form of a common and formal structure such as an association (the ASEDIS-SO case), a GIP (PIG: Public Interest Grouping), a structure for technological intermediation (ex. The bio-processes CRITT localised in INSA), or a formal deliberation and negotiation structure.

So, the formal institutionalization of the negotiation process appears to be an additional source of stability and durability leading to resources allocation and creation, and playing an important part in territory structuring.

### **NOTES :**

- (1) With a neo-institutionalist signification, ie understood as game rules created by agents which interact at a decentralised level.
- (2) Citation of Delorme R.(1997)
- (3) Cf. I.Leroux (1999) for a historical analysis of biotechnologies in Toulouse.
- (4) Coopérative de Pau with Funk, RAGT with Dekalb, France Mais with Pioneer, Lesgourgues with Cargill.
- (5) For example, the part played by GMO lobbies, Ethics lobbies, and social demand.
- (6) In Midi-Pyrénées, two mixed research laboratories have been created in health sector: the *Centre Jean-Louis Alibert* with researches on epitheliums (P.Fabre group, UPS-CHU, INSERM), and the *Centre de Criblage Pharmacologique* (Cnrs-IPBS, P.Fabre group).

## **REFERENCES :**

- AMENDOLA-GAFFARD (1988), La dynamique économique de l'innovation, Economica, Paris.
- ARROW K.J, HURWICZ L. (1977), Studies in resource allocation processes, Cambridge University Press, 482 p. Manu HB 135ARR.
- BAZZOLI L.(1994), Action collective, travail, dynamique du capitalisme : fondements et actualité de l'économie institutionnaliste de J.R.Commons, Thèse de Doctorat sous la direction de J.H.Jacot, Lyon.
- BAZZOLI L., DUTRAIVE V. (1996), Dynamique technologique et institutionnelle dans la pensée institutionnaliste américaine : les enjeux de la maîtrise sociale, in Changement institutionnel changement technologique, coordonné par M.Baslé, D.Dufourt, J.A Héraud et J.Perrin.
- BERNARD P, TALBOT D., WALLET F.(1997), Pouvoirs, Proximités et apprentissages : une relecture des relations par la dynamique interaction / action, Colloque Proximité et Coordination Economique, Lyon, 5 et 6 mars.
- BINEMORE K, MORGAN P., SHAKED A, SUTTON J. (1991), Do people exploit their bargaining power? An experimental study, Game and economic behavior, vol 3, August, pp.295-322.
- BOUREILLE B., COMMERCON N. (1998), Proximités et aménagement du territoire, in Les approches multiformes de la proximité, Bellet M., Kirat T., Largeron C, Hermès, 343p.
- CAIRE G.(1996), Institutionnalistes, régulationnistes, conventionnalistes : n'est pas hétérodoxe qui veut, Economies et Sociétés, série D, n°2, 9/1996, pp.225-232.
- CAHUC P (1998), L'interdépendance des décisions : l'approche néoclassique, in Décisions économiques, textes réunis par A. Vinokur, Economica, pp. 109-127.
- CAMERON H., LE BAS C. (1999), Knowledge dissemination, collaboration between agents, and intellectual property : new evidence for science and technology policy, Economie appliquée tome LII, n°2, pp. 237-266.
- CARPENTIER C. (1999), Droits de propriété et élaboration de nouvelles connaissances, in La rupture technologique, J.Bourlès éd., Economica.
- CASSIER M (1997), Compromis institutionnels et hybridation entre recherche publique et recherche privée, Revue d'Economie Industrielle, n°79, 1er trim, pp191-212.
- COLLETIS G., GILLY J.P., LEROUX I., PECQUEUR B., PERRAT J., RYCHEN F., ZIMMERMANN J.B. (1999), Construction territoriale et dynamiques productives, Revue Sciences de la Société, n°48, Octobre.
- COLLETIS G., PECQUEUR B. (1995), Les facteurs de concurrence spatiale, Colloque Dynamiques industrielles dynamiques territoriales, Toulouse, sept.
- COMMONS J.R (1931), Institutional Economics, American Economic Review, vol.21, pp 648-657.
- CROZIER M., FRIEDBERG E. (1977), L'acteur et le système : les contraintes de l'action collective, coll. sociologie, Editions du Seuil, Paris.
- DELORME R.(1997), Evolution et complexité, Economie Appliquée, tome L, n°3, pp.95-120.
- DOCKES P. (1999), Pouvoir et autorité en économie, Economica.
- DOUZOU P, DURAND G, KOURILSKI P, CICLET G (1995), Les biotechnologies, PUF, Que sais-je, 125p.
- DUPUY C., TORRE A. (1999), La morphogénèse des relations de coopération dans les systèmes locaux de production : un jeu évolutionniste avec algorithme génétique, European Journal of Social Science.
- ELIASSEN G., ELIASSEN A. (1996), The biotechnological competence bloc, Revue d'Economie Industrielle, n°78, 4ème trim., pp. 7-26.
- ELLINGSEN T.(1997), The evolution of bargaining behavior, Quarterly Journal of economics, 112(2), may, pp.581-602.
- FORAY D. (1991), Repères pour une économie des organisations de recherche-développement, Revue d'Economie Politique, vol.101, n°5, septembre-octobre, pp. .
- FORAY D.(1991), Dynamique économique et nouvelles exigences de l'investigation historique : learning to love equilibria, Revue Economique, n°2, vol.42, mars, pp.301-314.
- FREEMAN C.(1991), Innovation, changes of technico-economic paradigm and biological analogies in economics, Revue Economique, n°2, vol.42, mars, pp.211-232.
- FRYDMAN B (1998a), Négociation ou marchandage? De l'éthique de la discussion au droit de la négociation, in Gérard P., Ost F., van de Kerchove, Droit négocié Droit imposé, Publication des Facultés Saint Louis de Bruxelles, pp. 231-254.
- FRYDMAN B. (1998b), Les nouveaux rapports entre droit et économie : trois hypothèses concurrentes, Colloque Le droit et l'économie : quelles rencontres?, Lyon, Maison Rhône-Alpes des sciences de l'homme, 28 et 29 septembre.
- GENET C (1997), Quelles conditions pour la formation des biotechnopoles : une analyse dynamique, Revue d'Economie Régionale et Urbaine, n°3, pp 405-424.
- GERARD P., OST F., van de KERCHOVE, (1998), Droit négocié Droit imposé, Publication des Facultés Saint Louis de Bruxelles.
- GERARD-VARET L.A.(1999), Théorie des jeux et statut des règles, in Traité de philosophie économique, Leroux A. et Marciano A. (sous la direction de), collection Ballises, De Boeck Université.
- GILLY J.P, LEROUX I. (1999), Vers une approche institutionnaliste de la dynamique des territoires : le cas de Lacq, RERU, n°1.
- GILLY J.P et PECQUEUR B. (1997), "Regulation and territory : an approach to local institutional dynamics", Colloque de l'American Geography Association, Dallas, Mars.
- GUTH W, MARCHAND N, RULLIERE J.L (1998), Equilibration et dépendance du contexte : une évaluation expérimentale du jeu de négociation sous ultimatum, Revue Economique, vol.49, n°3, mai, pp.785-794.
- HIRSHLEIFER J. (1991), The technology of conflict as an economic activity, American Economic Review, vol. 81, n°2, may, pp.130-134.
- HURWICZ L. (1977), The design of resource allocation mechanisms, in ARROW K.J, HURWICZ L., Studies in resource allocation processes, Cambridge University Press, pp. 3-37. Manu HB 135ARR.
- JOLY P.B., de LOOZE M.A.(1999), Copropriété des brevets et coopération en R&D : une analyse dans les biotechnologies, Economie Appliquée, tome LII, n°2, pp.183-197.
- KIRAT T. (1999), Economie du droit, Repères, La Découverte, 119p.
- KREPS D.M. (1999), Théorie des jeux et modélisation économique, Economica, translation of Kreps D.M.(1990), Game Theory and Economic Modelling, Oxford University Press.
- LEROUX I. (1999a), Un essai de caractérisation du rôle de la négociation à l'échelle territoriale : une problématique basée sur le double concept d'allocation/création de ressources, Ecole-Chercheur INRA, Le Croisic, les 8,9 et 10 décembre.
- LONGHI C, QUERE M (1993), Systèmes de production et d'innovation et dynamique des territoires, Revue Economique, n°4, Juillet, pp.713-724.
- MALAITH G.J.(1992), Symposium on evolutionary game theory, Journal of Economic Theory, 57, pp. 259-277.

**MIGNOT J.P et PONCET C.**, De la technicisation des connaissances : une lecture de l'histoire des sciences de la vie, Cahiers d'Economie et de Sociologie Rurale, n°46-47, pp.184-206.

**MONSAN P.** (1999), Vingt ans de biotechnologie en France, Biofutur, n°194, Novembre, pp. 23-27.

**MORIN M.L.** (1998), Droit négocié et droit imposé, regards à partir du droit des salariés à la négociation collective en France, in Gérard P., Ost F., van de Kerchove, Droit négocié Droit imposé, Publication des Facultés Saint Louis de Bruxelles, pp. 643-676.

**NELSON R. Et WINTER S.**(1982), An evolutionary Theory of Economic Change, Belknap Press of Harvard University, Cambridge, Mass.

**OST F.** (1998), Au carrefour de l'autonomie et de l'hétéronomie, de la délibération et du marchandage : la négociation, in Gérard P., Ost F., van de Kerchove, Droit négocié Droit imposé, Publication des Facultés Saint Louis de Bruxelles, pp.7-17.

**PELAEZ V. et PONCET C.** (1998), Stratégies industrielles et changement technique : essai sur la logique de diversification de Monsanto, Séminaire franco-brésilien de Florianopolis, Mai.

**PELIKAN P.** (1988), Can the imperfect innovation systems of capitalism be out performed?, in Technical Change and Economic Theory, Pinter Publishers, London and New York, pp.371-398.

**PERRAT J.** (2000), Districts industriels et territorialisation du rapport salarial : quelques enseignements des réalités italiennes et françaises, Colloque ASRDLF, Crans Montana (Suisse), 6-9 Septembre. (à paraître).

**PRASKINAR V., ROTH A.E** (1992), Considerations of fairness and strategy : experimental data from sequential games, Quarterly Journal of Economics, Août, pp. 865-888.

**QUELIN B** (1996), Coopération interentreprises et création de ressources, in Coopération entre les entreprises et organisation industrielle, coordonné par J.L. Ravix, CNRS Editions, Paris, pp.111-139.

**QUERE M** (1997), Relations science - industrie et institutions innovatrices, Revue d'Economie Industrielle, n°79, 1er trim., pp.213-232.

**RALLET A** (1995), Libéralisation de l'économie, problématique de développement régional et routines institutionnelles : le cas de la Tunisie, in Région et Développement, 1995-2, L'Harmattan, pp.115-138.

**RAMSTAD Y.** (1990), The institutionalism of J.R. Commons : theoretical foundations of volitional economics, Research in the history of economic thought and methodology, volume 8, pp. 53-104.

**RAMSTAD Y.** (1991), From desideratum to historical achievement : J.R. Commons reasonable value and the negotiated economy of danemark, Journal of Economic Issues, June.

**RENAULT M** (1997), Pragmatisme et institutionnalisme : des fondements épistémologiques et méthodologiques pour l'évolutionnisme en économie, Economie Appliquée, tome L, n°3, pp.23-52.

**RICHARDSON G.**(1972), The organization of Industry, Economic Journal, 82, pp.883-896.

**ROCHET J.C.**(1988), Théorie de la négociation : une sélection de quelques résultats récents, Annales d'Economie et de Statistique, n°12, pp. 1-25.

**ROTILLON G** (1998), Dilemme du prisonnier, tragédie des ressources communes et aporie de la "théorie dominante", in Décisions économiques, textes réunis par A. Vinokur, Economica, pp. 145-168).

**SCHUMPETER J.A.** (1954), History of Economic Analysis, Oxford University Press, Inc., traduit en français, Histoire de l'Analyse Economique, Editions Gallimard (1983).

**SHELLING T** (1960), The strategy of conflict, Cambridge (mass.), Harvard University Press.

**SKAPERDAS S.** (1991), Conflict and attitude toward risk, The American Economic Review, vol. 81, n°2, pp.116-120.

**SKAPERDAS S.** (1992), Cooperation, conflict, and power in the absence of property rights, The American Economic Review, vol.82, n°4, pp. 720-739.

**SUPIOT A.** (1998), La loi dévorée par la convention?, in Gérard P., Ost F., van de Kerchove, Droit négocié Droit imposé, Publication des Facultés Saint Louis de Bruxelles, pp.631-642.

**TORDJMAN H.**(1998), Evolution : history, change and progress, in Advance in self organization and evolutionary economics, Lesourne J. et Orléan A., Economica, pp. 9-36.

**TOUZARD H.** (1998), De la théorie des jeux à la négociation, in Psychologie économique : théories et applications, Roland-Lévy C. et Adair P. (ed), Economica, pp. 231-243.

**VICENTE J.** (1999), Les modèles décentralisés d'interactions productives et spatiales face à la géographie industrielle contemporaine : une revue de la littérature, XXXVème colloque ASRDLF, Hyères, 1-3septembre.

**WALLERSTEIN I.**(1991), A theory of economic history in place of economic theory?, Revue Economique, n°2, vol.42, mars.

**WILLIAMSON O. E.** (1985) : The Economic Institutions of Capitalism, The Free Press, New York.

**YIN X., ZUSCOVITCH E.** (1999), Appropriation and cooperation : research joint venture with limitation of technology transferability, Economie appliquée, tome LII, N°2, pp. 199-220.

**YOUNG H.P.**(1992), An evolutionary model of bargaining, Journal of Economic Theory, vol.59, N°1, february, pp.145-168.

**ZUCKER LYNNE G., DARBY M.R., BREWER M.B.** (1998), "Intellectual human capital and the birth of US biotechnology enterprises", American economic review, 88(1), march, pp.290-306.



## **LIST OF ACRONYMS**

**ASEDIS-SO** : Association pour le Développement des Semences du Sud Ouest / Association for Seeds Development in the French South West.

**CHU** : Centre Hospitalier Universitaire / University Hospital Center.

**CNRS** : Centre National de Recherche Scientifique / National Scientific Research Center.

**CESR** : Conseil Economique et Social Regional / Regional Social and Economic Council.

**CRITT** : Centre Régional d'Innovation et de Transfert de Technologie / Regional Innovation and Technology Transfer Center.

**DRRT** : Direction Régionale de la Recherche et de la Technique / Regional Department for Research and Technology.

**GIP** : Groupement d'Intérêt Public / Public Interest Grouping (according to French law).

**INSERM** : Institut National de la Santé et de la Recherche Médicale / National Institute for Health and Medical Research.

**INP** : Institut National Polytechnique / Polytechnic National Institute (school for higher education in engineering).

**INRA** : Institut National de la Recherche Agronomique / National Institute for Plant Research.

**INSA** : Institut National des Sciences Appliquées / National Institute for Applied Sciences (engineering school).

**LAAS** : Laboratoire d'Automatique et Architecture des Systèmes / Automation and Systems Architecture Laboratory.

**MENRT** : Ministère de l'Education Nationale, de la Recherche et de la Technique /, Ministry of National Education, Research, and Technology.

**OGM** : Organismes Genetiquement Modifiés / GMO : Genetically Modified Organisms.

**SICOVAL** : collective structure for local communities action, localised in the south area of Toulouse.

**SISMIP** : Syndicat des Industries de la Santé en Midi-Pyrénées / Trade Association for Health Industry in Midi-Pyrenees.

**UPS** : Université Paul Sabatier / Paul Sabatier University