

**Collective Action, Strategic Behavior  
and Endogenous Growth**

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**SUMMARY:** This paper is devoted to exploring the social dynamics of economic behavior--specifically how to encourage endogenous growth. Innovation, the key to successful competition, and therefore growth, must be further understood. The technological aspects of innovation are important, but their presence does not always result in innovation. It will be argued that the organization of the collective is the key to the establishment of the social mechanisms necessary to incorporate change without threatening the system as a whole. The paper concludes with a discussion of policy implications.

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# Collective Action, Strategic Behavior and Endogenous Growth

## Introduction

This paper is devoted to exploring the social dynamics of economic behavior. The thesis is that the crucial aspect of endogenous growth is not a technical problem of innovation, but rather a social and political problem of how a given group reacts to change.

The link between individual behavior and institutional change which is the key to endogenous growth must be examined closely. Here we assume that social norms which are inextricably linked to local and national institutions shape individual behavior.<sup>1</sup> Therefore, the social dynamics of economic behavior refers to the fact that all behavior takes place within, and/or among, groups and these groups have ways of doing things which govern economic behavior. However, this is not to say that there is a one-way causal relationship. In fact, the influence can travel both ways. This becomes especially important when dealing with policy initiatives as shown in the final section of the paper.

Economic behavior, at least in developed countries, is characterized by competition. Those who compete effectively survive. The key to competing successfully is innovation.

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<sup>1</sup> Here 'social norms' include all rules governing behavior, even economic behavior. The 'social' refers to the nature of how the rules come about and how they are enforced, rather than their content.

Change is necessary to gain, or maintain, competitive advantages. Successful incorporation of innovation implies the existence of collective mechanisms coordinating individual responses--that is institutions which are sufficiently 'complex' to allow positive interaction among independent subjects also in the case of 'innovative' individual behavior. The trick, as we will see in more detail in the second and third sections of the paper, is to be able to innovate without threatening the stability of the group.

Endogenous growth is a process of economic transformation generated by the interaction of a group of individuals; this group of individuals is situated in a larger social, institutional, and economic context which shapes it. Changes at the local level are sometimes imposed from the outside, from for example, regional and/or national-level institutions. These are "top-down" policies. However, the focus of this paper is on "bottom-up" approaches. When faced with "bottom-up" innovation, responses of others to the novel behavior becomes more problematic as it does not already have the institutional legitimacy attributed to "top-down" innovation.<sup>2</sup> It is our opinion that "bottom-up" innovation is likely to be more productive as it speaks to specific local needs for change--it is the key to endogenous growth.

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<sup>2</sup>We are grateful to Gilberto Antonelli (University of Bologna, Department of Economic Sciences) for helping us to identify this distinction.

## Innovation as a Collective Process of Change

A rich and heterogeneous literature<sup>3</sup> has recently noted that innovation may be defined as an action on the part of an individual which breaks away from the ordinary course of action. It is the moment when new routines emerge within the firm, within the market, and more extensively, within society as already established routines begin to lose their propulsive function.

Innovation, however, sometimes constitutes an abrupt break with the past that does not always facilitate adjustment. Both within the individual firm and within society at large, this rupture may provoke an overall imbalance in the homeostasis mechanism if there are not sufficient numbers of individuals interacting for selection to leave a sufficient number of them to maintain the institution.

### Selection and Learning

In a market context--i.e. in an institutional arrangement created by the free interaction of a multiplicity of independent individuals, that is, in a polyarchic social context--the innovation undertaken by a single firm has a positive effect on the whole social body if self-regulative mechanisms are activated to define paths of collective adjustment believed to lead to improved individual and collective efficiency.

In this case, in fact, a selective process may be set in motion which, in the presence of new entrants or of a rapid

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<sup>3</sup>For a review of this literature see Dosi (1988).

increase in positively selected subjects, regenerates the collectivity and thus re-establishes an institution on new social norms.

This kind of behavior can, however, have unexpected consequences when the change proposed by an individual or a group of individuals within a larger social group is such that there is the risk that the other individuals will be unable to respond by either generalizing the change or by counter-attacking with sanction-applying measures. This situation becomes more serious as the market becomes more institutionally closed, or when formal access to the market exists, but there are no potential competitors who wish to enter.

Therefore various 'negative' outcomes may result. The first case might be that the innovative behavior by one individual induces the others to leave the market, thus creating a situation of monopoly.

It could equally happen, however, that the selection excludes too many subjects with respect to the size of the collectivity so that, instead of leaving, they establish a new coalition which seeks to apply institutional sanctions against the innovator.

In this latter case of negative selection, which induces non-innovative subjects to form a new coalition with its own internal code, the social body creates a new institution which resists change both by applying collective sanctions to the innovator and by drawing up new general rules for the social group as a whole.

In other words, in all the literature on social behavior

which draws its theoretical base from biology, there is a major emphasis on the positive effects of selection, and the assumption that the defeated (i.e. those negatively selected) will individually exit from the market and die off.

To refer to Hirschman's (1970) well-known thesis, it is the existence of an individual 'exit' option which gives credibility to the existence of a biological evolution where behavioral innovation by an individual activates a process which selects others on the basis of their ability to imitate such behavior.

There is also the possibility, however, that a change which the group regards as too rapid to be generalized will engender an aggregation of conservative subjects which, in the reiteration of collusive forms of behavior generated by a common desire to oppose the innovator, will consolidate into a parallel structure. This will apply its own rules in order to oppose the pre-existing institution by inhibiting the innovative change. In other words, the 'voice' option may lead to sanction-applying behavior which obstructs positive evolution.

An innovative development is therefore more successful the greater the number of individuals and the openness of the group; the more the social regulation of the group is closed and internally rigid, the greater the risk that innovative behavior by an individual will either become monopolistic behavior, with a substantial change to pre-existing social norms, or it will provoke a reaction by a coalition of potential losers who, instead of exiting individually and accepting the change brought by the innovation, will form a coalition which applies sanctions to the innovator in order to preserve the existing structure.

Therefore, the key to incorporating innovative individual behavior which can then be successfully generalized by the collective is the existence of voice. When voice is present, a collective is stable enough to welcome change, even at the institutional level, without jeopardizing the system itself.

### Regressive and Progressive Coalitions

We use the term "regressive coalition" to refer to an aggregation of individuals, united by a common interest in opposing a negative selection process. This aggregation is not, however, capable of inducing alternative forms of the social division of labor. A regressive coalition therefore also unites actors who do not have interests in developing complementary specializations and thus requires a small level of effort since it is enough to oppose the innovator individually, but at the same time it is not able to develop any alternative paths toward a stable social aggregation.

In fact, we have a "progressive coalition" if the process of aggregation of individuals induces a progressive transformation of the capacities and abilities of the individuals such that a relative complementarity of action among them is generated. This ability to adjust the division of labor allows a system to be stable, since the members are interdependent and complementary, without being rigid, since change is incorporated.

Thus, a relationship exists between the presence of progressive coalitions and the relative specialization of

individuals and, likewise, we can argue that there is a relationship between the formulation of regressive coalitions and the existence of a process of relative de-specialization among the individuals present in a collective.

Recalling Adam Smith's postulate will help us understand what these hypotheses mean. Smith assumes that the wealth of nations is tied to the capacity to develop "skill, dexterity, and judgment" of labor and that these productive capacities are connected to the way in which collective labor is organized.

Assuming the existence of an innate propensity to trade, that is toward collective action,<sup>4</sup> Smith claims that this interaction among individuals leads to a process of productive integration, defined as division of labor, which by allowing each individual to specialize himself in a specific series of activities permits the individual to develop his own competencies to the utmost and allows the entire collectivity to realize greater and more articulated production. This division of labor,

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<sup>4</sup>There is some ambiguity in the use of "collective action" here. It is used to refer to two different situations. The first is collective action as a means to achieve a collective good. The group moves together (more or less) to reach a common goal--example, any action on a national level like a war, or on the group level like a specific lobby group's efforts to change legislation. Note that this does not mean that such an action does not also indirectly further specific individual goals. The second refers to collective action which directly furthers individual goals. For instance, to further their own goals all take part in the market and play by the rules established by the collective. They certainly do not do so for the collective good, but rather to directly further individual interests. If they did so for the collective good we would no longer have to worry about problems like free riding and monopoly. We use the second, and more general, definition. Here, the collective good is the web of social norms which governs both group and individual behavior in a given collective. A helpful example of this is what Alfred Marshall (1920) termed the "industrial atmosphere" surrounding aggregations of firms sharing the production process.



which allows the development of individual and collective competencies can become more specific as the number of individuals interacting in a group increases.

Nevertheless, based on these considerations it appears evident that the process of development of the division of labor does not only require further specialization of complementary capacities and competencies. This mechanism can be found in a hierarchical structures as in a firm or a planned economy, or can be developed through an evolutionary mechanism which through a process of progressive adjustment induces the definition of complementary interests and capacities.

In Smith this mechanism can certainly be applied to the production of a specific good, but also to the organization of an entire community. Smith himself develops a series of examples that demonstrate how in a small village there is not enough "social" space in which to express specific productive specializations. Yet in Smith it is evident that on the social level this mechanism must be able to demand the existence of mechanisms of entrance and exit and, above all, some sort of institutional stability which favors the development of reciprocal complementarities. The widening of the extension of the market in Smith is directly tied to the affirmation of a society in which the number of those who can exert their own entitlements, and their productive activity increases. Thus the example of the "invisible hand," which Smith takes from a noted metaphor derived from Newton, does not seem to correspond to the definition of an external force that moves the world, but simply the demonstration that whatever the original impetus, the wealth

of nations depends on free social interaction.

It is in this sense that a relationship between endogenous growth and progressive coalitions exists. In a stable institutional context, forms of interaction among individuals based on the development of reciprocal specializations may evolve. In this sense "institutional context" simply means a situation in which there is a general conviction that all the participants in collective action, that is the members of the community, accept the basic rules, are willing to cooperate, and therefore are capable of comunally sanctioning a possible transgressor or free-rider. In such a hypothesis it is just this development of conditions of complementarity which permits the adjustment mechanisms of institutional stability because the individual has already invested in activity which is non-recuperable (sunk) in the face of sharp variations in the rules of the game.

In the opposite scenario, that is in a situation of uncertainty, the tendency to specialize does not exist. If one does not know if there is the possibility of sanctioning free-riders, and cannot be relatively sure about how other members of the group will behave, one will not assume the risk of investing in sunk activity which would limit his strategic options.

Yet in a context in which there is less interest in relative specialization, there is also less interest on the part of individuals in participating in that group since there are no positive externalities resulting from operating in a context in which the productive forces of labor are developed. This starts a degenerative mechanism which, if it is not halted, leads to

further social disaggregation or the reinforcing of regressive coalitions.

Furthermore, a social context in which there are processes of monopolization, and social blocs based on exclusive rights to resources, the possibility of developing progressive coalitions diminishes, and at the same time, the possibility of activating regressive coalitions which block change without offering alternative mechanisms of relative specialization increases.

### Size and Openness

Therefore, innovative development is more likely to succeed when the population of interacting individuals is large and open. The more closed and introspective the social group, the higher the risk either that the innovative behavior of an individual will translate into monopolizing behavior with a substantial modification of the pre-existing social norms, or that it will result in a reaction on the part of a coalition of potential losers which, rather than exiting or adapting themselves individually and accepting the institutional changes, will group together in a regressive coalition to sanction the innovator in the name of the preservation of the pre-existing institutions.

At first sight this seems to go against Olson's theory that the "larger the group, the less it will further its own interests" (Olson, p.36). However, later Olson explains that this is true only for exclusive groups. The distinction between exclusive and inclusive groups lies in the type of collective good the group is trying to procure. (The same group may be

inclusive in some cases and exclusive under other circumstances.) When trying to gain a zero-sum good, the group members want to keep the group as small as possible to ensure that there is enough of the good to go around. This is the case of exclusive groups. On the other hand, when the good is not clearly divisible, like a new law, the group becomes inclusive since the more members helping to achieve the good the better (Olson, p. 39). It is the nature of the collective good that is crucial. In order to have an inclusive group the collective good must not be zero-sum.

Another characteristic of exclusive groups is that the members are more concerned about how the other group members will react in response to what they do. This is caused by the need for 100% cooperation in any type of collective action because of the threat of free-riding. Olson considers the market to be an exclusive group in which each member is not only a rival, but also a collaborator (Olson, p. 42).

A further distinction should be made. When speaking about the existence of a market, one needs to specify which market. For example, the market for a certain product, such as washing machines is a relatively stable market. A group of firms competing with each other to sell washing machines is an exclusive group. However, when considering a national, international, or world market in general we cannot use the concept of exclusive group. True, those who participate in these markets are interested in profit, but as they are all selling different goods they are not necessarily competing with each other, and 100% collaboration is certainly not required for

collective action. The distinction becomes more clear if we divide the market into sectors. Within each sector, the profit is relatively zero-sum, unless new market niches are developed. Thus, sectors are exclusive groups. However, the market in general is an inclusive group.

It is helpful to turn once again to Adam Smith (1776). In the third chapter of The Wealth of Nations, he explains that the division of labor is limited to the extent of the market. The division of labor increases as the market increases, and so does the amount of work. It should be noted that for Smith the market means the power of exchanging in general, and therefore is an exclusive group.

Social differentiation is fundamental to economic policy and integration processes. The French sociologist Emile Durkheim's idea was that "social differentiation is the peaceful solution to the struggle for survival." In other words, through differentiation consensus may be achieved.<sup>5</sup>

#### A New Approach to Industrial Policy

These considerations are of particular importance in the formulation of public policies. A policy designed to promote

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<sup>5</sup>Durkheim (1947) takes the problem of size and the division of labor a step further. Although for Durkheim "division of labor" refers to "social differentiation," he lists three crucial variables: volume, material density, and moral density. By volume, Durkheim means the number of individuals. Material density means the number of individuals in a given space, and moral density means the intensity of interaction among these individuals. When these factors are present we have social differentiation of which the economic division of labor is a reflection.

innovative behavior must be accompanied by social action aimed at regulating the openness of the social body to ensure that the selection process thus activated does not transform itself into 'negative' institutional changes which favor monopolizing solutions or conservative reactions.

One should ask oneself, therefore, what happens in cases where there are not enough individuals interacting to a degree sufficient to activate an evolutionary mechanism. This is the case, in fact, in those countries whose economic backwardness manifests an 'underdevelopment' of relations where rapid change may introduce, not social evolution, but institutional breakdown and the creation of parallel institutions which form to counteract change. An example of this is provided by the EEC structural policies in less-developed areas of Southern Europe or in developing countries where, at the local level, either there are too few entrepreneurs or those entrepreneurs that do exist are constrained by non-market relations which cause rigidity in the system.

As the national systems of innovations are still very different throughout Europe, the EEC decided in the late 1980s to reverse the convergence process from top-down to bottom-up, by introducing programs which are aimed at stimulating the creation of networks of innovators. This approach was clearly influenced by the debate on industrial districts and by the more general debate on innovation diffusion. It is based on the possibility of favoring the aggregation of firms, research institutes, universities, framed in their own national contexts, but forced to cooperate in producing innovation. The positive

result is not limited to the innovation "per se", such as a patent or a book, but it is the capacity to induce individuals and institutions to modify the existing routines in order to "work together" with individuals and institutions rooted in different frameworks.

This idea is clearly based on an evolutionary, neo-institutionalist approach: because the interaction among people creates norms for collective action, which induce subjects, which are rooted in different institutional contexts, to come together to work on a specific project. It is clear that university systems in Europe cannot be driven to converge in terms of "to become the same", but it is possible to promote a scheme of compatibility among different countries, and in the meantime, to induce universities and firms to cooperate in specific projects.

This concept of convergence (not to be the same, but to be compatible) can be supported by the creation of funds to finance the creation of networks of research institutions and productive firms. There are a variety of programs which are entitled to support research and industrial cooperation throughout Europe. In particular the SPRINT program is devoted entirely to developing networks of innovators, favoring aggregation of firms and institutions, taking into account both the territorial and the technological aspects of productive organization. These programs are structural policies aimed at creating new relations of production among industrial leaders, which are part of local systems of production, in order to make the industrial

atmospheres (IAs)<sup>6</sup> of specific districts more innovative and to encourage a process of integration among them.

In this sense, the new approach of industrial policy, experienced by the EEC, underlines two areas of intervention. On the one hand, there is the possibility of intervening on the costs of the relations themselves, divided into costs of information and costs of coordination. On the other, there is the possibility of intervention on those collective intangible assets which characterize the territory and the group of firms, which are linked by common knowledge.

These considerations enlarge the normative relevance of this new approach, based on the possibilities of addressing the institutional framework and intervening on the social externalities provided by the common knowledge and collective norms of a group of firms and local institutions, and applying this approach in a variety of specific conditions. Inducing firms and institutions which are involved in local networks to work together on innovation means intervening in both the industrial relations and the specific competences of the different agents. Creating linkages between local leaders means to encouraging compatibility among local networks and thereby increasing the possibility of redefining the division of labor and the specialization process in light of a wider context.

With regard to interventions in already existing districts experiencing periods of crisis, such as in the European textile

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<sup>6</sup>Alfred Marshall's notion of "industrial atmosphere" refers to the common knowledge and social norms which shape behavior within a group of firms working together in a limited geographic area. See Marshall (1920).



districts, industrial policies must be aimed at renewing the IAs themselves by working backwards to rebuild the technological foundations of the firms, and by lowering the costs of information and coordination. These interventions have to create new linkages between these local districts and new sources of innovation, and to establish connections between existing districts in order to develop relative specialization within Europe.

In the case of pre-existing districts, interventions such as the setting up of production service centers can become a means of carrying out the selection and promotion of leading agents operating in different areas and can serve to modify the existing productive relations, transforming the existing local system into a wider system under the leadership of a limited number of agents chosen by means of this selection process. These centers, can be constituted at the local level by taking advantage of national systems of innovations. This means using the national research laboratories, the local universities, or private facilities, which are well-established as technological leaders in their national frameworks. A variety of SPRINT interventions can be indentified as public policies aimed at redefining the IA framing the transnational network of innovators.

In the case of interventions in local systems, or in a group of firms, or institutions, not characterized by a pre-existing IA such that it cannot already be considered as a network of innovators, the structural intervention will consist of several integrated actions:

-action aimed at making the system itself explicit, encouraging agents to see themselves as part of an integrated system;

-actions which give direction to the specializations of the agents in order to permit greater division of labor based on mutual reliability;

-action concerning costs of coordination, which can be shared by the creation of a "collective project", even by means of public support.

Several experiences promoted by European programs could be analyzed as policy aimed at favoring the creation of networks of innovators: the FAST experiences, but also the Human Capital and Mobility program, which is aimed at supporting research projects among European universities is based on the concept of creating networks of innovators.

In any case, the final aim of these policy actions is the acceleration of the innovation process, without breaking the existing national and local networks, but rather, integrating them in a wider context. It is to allow the openness of the local systems without the dispersion of the accumulated knowledge. In fact, this industrial policy leads to systemic adjustments which necessitates the integration of pre-existing agents with agents which have traditionally been outside the cultural and territorial area covered by the district.

In the end these actions will also change the national systems of innovation. This approach induces an integration process which moves from the bottom-up: it creates linkages between local leaders, which have to change their traditional

procedures of interaction within their own national framework. The cooperation program establishes new procedures of relations between firms and public institutions, which are compatible at the European level.

To conclude, public policy cannot be action merely aimed at encouraging technical innovation. It must be directed at guiding the processes of social organization to ensure the existence of the collective mechanisms needed to effectively handle and incorporate change which occurs on the local level. In this way policies encouraging endogenous growth may be implemented.