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**INSTITUTIONS, SELF-ORGANIZATION, AND
ADAPTIVE EFFICIENCY: A DYNAMIC
ASSESSMENT OF PRIVATE ENTERPRISE**

by

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May, 1986

**INSTITUTIONS, SELF-ORGANIZATION, AND ADAPTIVE EFFICIENCY:
A DYNAMIC ASSESSMENT OF PRIVATE ENTERPRISE**

The lack of consensus about the conduct of economic policy can often be traced to basic disagreement about the merits of private enterprise (capitalism), in comparison with various forms of socialism and government control. In part, the disagreement is due to differences in values about social ends, on which economic analysis has little to say. But in part it is due to differences of opinion about how efficient private enterprise is as the institutional framework of production. While some see in private enterprise the pillar of productive efficiency, on which government intervention has little to improve, others claim that a properly designed system of government control or socialist planning could achieve superior results, through better coordination of production tasks. In principle, such differences of opinion could be reduced by analytical arguments, whose great merit would be to help society reach consensus on at least some policy issues.

The subject of my contribution is the search for such arguments, and for the consequent policy implications. Two questions are central: Does private enterprise have some specific virtues, inimitable by socialism and government control, which endow it with superior production performance? If so, how should economic policy be conducted, in order to take full advantage of such virtues, rather than spoiling them?

The Inconclusiveness of Existing Theories

Surprisingly enough, existing economic theories are not very helpful in this search. As Solow (1980) notes in his presidential address to the American Economic Association, even highly respected members of the profession can strongly disagree about the performance of private enterprise in comparison with alternative institutions. Nelson (1981)

shows in a systematic way that, contrary to what many economists seem to believe, existing theories provide no substantial support for the opinion that private enterprise is the right way to organize production. In Pelikan (1985) I push Nelson's argument a little further, showing that from the point of view of existing theories, private enterprise has no particular virtues which a suitably designed system of socialist planning or government control could not imitate or even improve upon.

In order to explain why this is so, let me divide existing theories into two broad branches, each with its own reason for being inconclusive. The first branch, which I refer to as "mainstream economics", comprises all theories whose attention is limited to resource-allocation among already given firms, through already given markets. In other words, these theories -- which include the entire neoclassical analysis and most of its modern extensions -- regard the organization of the economy as given and immutable. Only price and quantity adjustments are studied, while the essential question of how an economy organizes and reorganizes in the face of an incessantly changing world is simply ignored. Schumpeter was probably first to note this limitation of mainstream economics when he said that "the problem that is usually being visualized is how capitalism administers existing structures, whereas the relevant problem is how it creates and destroys them" (1942; ed. 1976, p.84). According to my argument, it is this limitation which makes mainstream economics overlook the most significant differences among alternative institutions.

The second and recently growing branch, which I refer to as "the organizational dynamics of capitalism", comprises the theories which overcome this limitation by studying how an economy is organized and reorganized -- that is, how its structure is created and destroyed -- by capitalism. This branch includes the theory of economic development by Schumpeter (1934, 1942), the study of the evolution of firms' behavior on markets by Alchian (1950) and Winter (1971), and the evolutionary theory of economic change by Nelson and Winter (1982). Marris and Mueller (1980) survey this branch with an interesting contribution of their own.

Much of the research conducted at IUI also belongs to this branch. Using the term "structural adjustment", Eliasson deals with the

organizational dynamics of capitalism on several occasions (1984, 1985, 1986). This dynamics has been the main subject of the symposium edited by Day and Eliasson (1986).

The reason why these theories are inconclusive about the respective merits of alternative institutions is clearly different from the one of mainstream economics. While they study changes in the organization of an economy, their attention is limited to capitalism, which they try to understand, rather than critically assess in comparison with some feasible alternatives.

To be sure, Schumpeter, and Marris and Mueller do assess capitalism in a critical way, and are from this point of view important exceptions. But their criticism is unconvincing precisely because it is not comparative. Since capitalism is the only institutional framework which they carefully examine, their criticism can be accused of falling victim to what Demsetz (1969) calls "nirvana fallacy". This is the fallacy of assessing one real framework from the point of view of an ideal norm -- the "nirvana" -- rather than by comparing it to feasible alternatives. In this way, one can be misled into rejecting an apparently poor framework without ever noticing that all feasible alternatives might be even poorer.

In the case of Schumpeter (1942), this accusation may seem surprising, for he does discuss both capitalism and socialism. As witnessed by the above quotation, however, what he really asks in the area of organizational dynamics is how structures are created and destroyed by capitalism. As to socialism, he seems to come close to the naive marxist thesis that once efficient structures have been created by capitalism, they can simply be taken over and efficiently administered by socialist managers. When discussing the performance of socialism, he focuses on productive efficiency (p.189), omitting to examine how the problem of creative destruction would continue to be solved after the socialist takeover. This is a serious omission, for it is precisely to this problem that, according to my argument, socialism does not have any satisfactory solution.

Regarding Marris and Mueller, the "nirvana" character of their criticism is more obvious. Their entire analysis deals with modern (corporate) capitalism, letting socialism and government appear, as a deus ex machina, only in their conclusions. I shall return to their

argument later, showing that when comparison is made, it is capitalism which comes out as the least imperfect solution.

An Alternative Research Program

There is an additional reason why the article by Marris and Mueller is an important reference for my present discussion. They introduce into economic analysis the concepts of self-organization and adaptive efficiency, which are particularly suitable for the proposed search. The former refers to the process through which an economy "...can and does modify its own structure and programming in the course of and as a result of its own operations" (p. 33). "Adaptive efficiency" denotes the abilities of an economy to self-organize -- that is, to suitably modify its structure.

Using these concepts, I now recapitulate the reasons why existing theories are inconclusive about the respective merits of alternative institutions. Whereas mainstream economics ignores the key problems of self-organization and adaptive efficiency altogether, the organizational dynamics of capitalism, which does deal with them, is not comparative. Consequently, an alternative research program, which appears particularly promising, is to engage in what may be called the organizational dynamics of alternative institutions, or comparative studies of self-organization, focusing on the question of how alternative institutions mutually compare in terms of adaptive efficiency.¹

It is this program that I propose to follow. Having already taken a few steps in this direction (cf. Pelikan [1985a, 1985b, 1986, and forthcoming]), here I wish to outline my approach and summarize my main findings. First, I shall briefly argue that adaptive efficiency is an important but neglected policy issue which, when properly taken into consideration, can disclose many commonly recommended policies as socially harmful. I shall then outline the conceptual framework and the type of analysis which I have found most promising for comparative studies of self-organization. Finally, I shall indicate some specific results, including some elementary policy implications, to which my analysis appears to lead.

Adaptive Efficiency and Policy Issues

In order to be adaptively efficient, the economy must, in essence, allow new production organizations to form, induce existing organizations to keep adapting to economic and technological changes, and force the organizations which cannot adapt to dissolve.

Of course, adaptive efficiency can hardly be counted among final social goals, immediately contributing to social welfare. On the contrary, efficient self-organization often causes short run losses of social welfare. These include the costs imposed on the firms which are forced to close down, and on the people who must seek new jobs, possibly in other professions and/or regions. In other words, these are the negative social effects of creative destruction, as Schumpeter saw them.

It should be emphasized, therefore, that adaptive efficiency is an instrument of social welfare, or social subgoal, important in the medium run and decisive in the long run. Like an organism which has lost its immunological defence, even the richest and most efficiently administered economy today would eventually decay, with catastrophic consequences for social welfare, if its adaptive efficiency were insufficient -- that is, if its structure could not properly develop, adapt to changing circumstances, and neutralize the ever present tendencies to pathological bureaucratization.

The instrumental nature of adaptive efficiency defuses much of the usual controversies about desirable objectives (values) of economic policy. It provides an additional justification to Nelson's (1981) proposal to focus policy analysis on the performance of production, while largely abstracting from the final demands which production should meet. The reason is that for a wide spectrum of policies concerning final demand -- ranging from full consumer sovereignty to an extensive paternalism of a welfare state -- adaptive efficiency of production is equally crucial. The common problem clearly is how the production apparatus can keep best adapted to whatever demands it should meet.

Since adaptive efficiency is so important, but ignored in standard analysis, there is a great risk that many policies approved by such analysis have hidden perverse effects, harming the economy by unconsciously damaging its adaptive efficiency. But to cope with this risk is not without difficulties, for the relationship between adaptive

efficiency and the usually studied allocative efficiency is far from simple. While on some occasions the two types of efficiency may go hand in hand, on other occasions they must be traded off against each other. Obviously, it is on the latter occasions that the risk is greatest, calling for particularly careful revisions of standard policy recommendations .

To discover how to make such policy revisions can be seen as the ultimate purpose of the proposed search. Later I shall indicate some of the currently applied policies with perverse effects on adaptive efficiency, as well as the revisions to be made. But before I do so, let me outline the analysis on which my argument is built.

Institutional Rules and Organizational Structures

The first problem which such an analysis must solve is the one of conceptual clarity and parsimony. In particular, good care must be taken of the concepts "institution", "organisation" and "structure". The well-known difficulty with these concepts is that they have been interpreted in many different, not always clearly defined ways. For instance, "institution" has been used to refer to a general rule, such as a law or a custom, or to an organization, such as a Parliament, a Central Bank, or even a firm. "Organization" has been used to refer to a coordinated collection of agents, such as a firm, or to the process of establishing and coordinating such a collection. As to the different meanings which have been given to "structure", they are virtually impossible to enumerate.

It seems that a clear and parsimonious conceptual framework, adequate for the problem at hand, can be built around two key concepts: "institutional rules" and "organizational structures".

The former clearly indicates that "institutions" are understood in the meaning of rules, and not organizations. Such rules constrain the behavior of economic actors in a similar way as the rules of a game constrain the behavior of its players. Examples of institutional rules are property rights (usus, usus fructus, and abusus), the rights and obligations to inform and to be informed, and various norms constraining the conduct of economic policy.

Institutional rules consist of both written law and unwritten custom. Their common feature is that they are respected by all, or nearly all, economic actors. Consequently, they also help the actors predict each others' behavior.²

Each economy can be characterized by its list of prevailing institutional rules. It is according to this list that one can determine whether the economy is capitalist or socialist. Moreover, one can also read there the precise form of capitalism or socialism in question, including the precise forms ("norms") of admissible economic policy and/or planning. (One may think of recognizing the type of a game from reading the list of its rules.)

On the other hand, the concept of organizational structure is to convey the idea that a typical economy is an organization of organizations. For instance, using Williamson's (1975) terms, one can describe the organizational structure of an economy as a mixture of markets and hierarchies. In both capitalist and socialist economies, typical cases of hierarchies are firms and government agencies. In a capitalist economy, such hierarchies are interconnected by markets -- although some higher-level hierarchies usually also appear among policy-making agencies and the firms concerned by the policy in question. In a socialist economy, firms are interconnected by a higher-level hierarchy of central planning, headed by the Central Planning Board, and possibly also by socialist markets, which are becoming increasingly common.

Formally, the concept of organizational structure refers to a collection of units, behaving in certain ways (e.g., maximizing or satisficing), and interrelated through a certain organizational design (e.g., a certain mixture of markets and hierarchies). The traditional microeconomic view of an economy as a collection of profit maximizing units, interrelated through a set of perfectly competitive markets, is a particular and simplified case of organizational structure.

If institutional rules are compared to the rules of a game, then an organizational structure can be compared to the configuration of the players actually playing the game. This comparison is helpful for a good intuitive understanding of the situation studied, for it clearly suggests the idea that a given game can be played by different and possibly changing configurations of players. It also indicates promising avenues for formal modelling.

One advantage of the proposed conceptual framework, important for studies of self-organization, is its flexibility, allowing the internal organization of firms and agencies to be depicted in a formally similar way as the entire economy. A firm or an agency can be regarded as a subgame, with internal institutional rules and organizational structure of its own, related in certain precise ways to the rules and the structure of the economy. In general, any multilevel organization can be depicted by a recurrent application of the concepts "institutional rules" and "organizational structure" at each of the levels involved.

Modelling Economic Self-Organization

Using the introduced terms, one can say that mainstream economics studies the allocation of resources within a given organizational structure, under given institutional rules. And let me now make clear that what I propose is not to abandon studies of resource-allocation, but to complement them with studies of self-organization. As will become clear shortly, resource-allocation and self-organization are intimately interrelated and cannot be meaningfully studied without each other.

The entire self-organization of an economy can be divided into two stages. During the first one, which may be called institutional self-organization, institutional rules are formed through cultural, political and legal processes (e.g., through "preconstitutional contracts" in the sense of Buchanan [1976], or through spontaneous formation of custom, as studied by Schotter [1980]). During the second stage, which I shall call economic self-organization, organizational structure is formed under some already formed institutional rules.³

The present discussion leaves aside institutional self-organization, limiting itself to economic self-organization under different given institutional rules. To recall, it is the adaptive efficiency of different institutional rules -- that is, their abilities to promote the formation of suitable organizational structures -- which is to be examined.⁴

Let me now briefly outline a model of economic self-organization by noting the main differences between such a model and the usual

microeconomic view of an economy. Clearly, the basic difference is that the organizational structure of the economy is no longer assumed exogenously given, but recognized as endogenously variable. In other words, instead of postulating the presence of some given markets and/or hierarchies, the model must depict the fact -- and this is what economic self-organization is about -- that markets and hierarchies can form, reform, grow, transform into each other, diminish or dissolve.

This means that the model does not assume any multipersonal organizations to be given. Instead, it starts from a collection of individuals -- the society -- and studies how these individuals combine and recombine into different economic organizations. Even if no changes of the collection of individuals are assumed to take place, the collection of economic units conducting resource-allocation is still recognized as variable.

This difference entails several other differences. The most fundamental one is that our view of microeconomic behavior must be enlarged by a new dimension. In addition to viewing economic agents as exchanging (transacting) signals and resources along some already established channels -- e.g., through existing markets or within existing hierarchies -- we must now also regard them as forming, modifying or dissolving such channels. In other words, we must formally recognize that economic agents can actively and selectively associate and dissociate.⁵

To explicitly recognize associative behavior as relatively autonomous from allocative behavior is crucial for a good understanding of self-organization. The failure to do so seems to be the main reason why theory has made so little progress in this direction. Associative behavior involves its specific "associative" constraints and preferences -- such as limited span of control and limited trust, and the liking for social contacts, rituals, status and power. Such constraints and preferences influence individual behavior side by side with the traditionally considered allocative constraints and preferences. They can often surprise traditional analysis by leading self-organization towards structures which apparently violate all principles of allocative efficiency.

It is significant that this view of economic behavior can no longer refer to the paradigm of mechanics, on which mainstream economics has

been built, but invites us to turn to the paradigm of chemistry and biochemistry. Economic agents can no longer be regarded as organizationally passive parts of a given "mechanism", but must be recognized as actively and selectively "reacting" with each other, forming and reforming themselves the structures of which they are parts.

An important consequence of this view is that the form of an organizational structure is disclosed as impossible to perfectly plan by any central organizer, for it will inevitably be enriched, or disturbed, by spontaneous self-organization of all the agents concerned.

On the other hand, however, not all agents can participate in the same way. Some of them will have to assume special roles, resembling the roles of catalysts in chemistry. In particular, most markets and hierarchies require initiative-taking entrepreneurs in order to begin to form. In a precise sense, entrepreneurship can thus be interpreted -- and this is a fruitful complement of the interpretations by Schumpeter (1934) and Kirzner (1973) -- as catalysis of self-organization.

Another point on which the model must differ from standard microeconomics is that it cannot neglect the internal organization of firms and agencies. Both interfirm and intrafirm levels of organization must be depicted, for self-organization often involves both these levels simultaneously. For instance, vertical integration typically transforms a part of an interfirm market into an intrafirm hierarchy. Similarly, the entry of a new multipersonal firm implies the formation of both a new intrafirm hierarchy and a new set of interfirm relations. It is here that the flexibility of the proposed conceptual framework proves particularly useful.

Finally, the model must be dynamic in a rather unusual sense. Besides showing how a given organizational structure allocates resources -- the usual task of economic analysis -- it must also take into consideration the fact that while resource-allocation is still going on, the organizational structure may change through self-organization. The above-mentioned intimate relationship between resource-allocation and self-organization can now be explained. Self-organization forms the organizational structure which determines how resources will be allocated. The resulting allocation of resources then becomes an important constraint on further self-organization.

The development of such a model, which must extensively rely on simulation techniques, is still far from finished. But it is not necessary to wait until this is done. Some approximative but significant results can be reached by qualitative reasoning. It is to such reasoning that the present discussion will be limited.

Economic Self-Organization under Different Institutional Rules

To understand the impact of different institutional rules on self-organization, we must begin by a microeconomic inquiry about their impact on the behavior of individual agents. In general, each set of institutional rules constrains, in its characteristic ways, the behavior of economic agents during both resource-allocation and self-organization. One can often clearly see the two corresponding subsets of rules -- for instance, the rules to be respected when signalling and trading, as distinguished from the rules to be respected when associating or dissociating. Typical examples of the latter rules are the antitrust law, the corporation law, the laws regulating entry and exit, and the laws and custom regulating the labor and stock markets -- the places where most of the associating and dissociating of individual employees, managers and owners is done in capitalism.

But as has just been explained, self-organization and resource-allocation are closely interrelated. Therefore, both types of institutional rules will influence self-organization. The resource-allocation rules will do so indirectly, via their responsibility for the actual allocation of resources, determining which changes of organizational structure become economically feasible. The self-organization rules will then determine which of the economically feasible changes are moreover institutionally permissible.

The institutional rules of an economy are thus exposed as doubly responsible for the development of the economy's structure and performance -- much as the genetic message of an organism is responsible for the development of the organism's form and abilities. Consequently, the habit of mainstream economics to assign an arbitrarily postulated organizational structure to given institutional rules -- such as a set of perfectly competitive markets to capitalism,

or a hierarchy of optimal planning to socialism -- is disclosed as illegitimate. Although new institutional rules typically begin with the organizational structure inherited from their predecessors, their responsibility for the organizational structure will soon become decisive. Once institutional rules are given, they constrain, often in hidden and surprising ways, the set of compatible structures, making all a priori assumptions about structures subject to serious errors.

What this view implies for the present argument can best be shown by referring to the so called "convergence hypothesis" (cf., e.g., Tinbergen [1961]). This hypothesis claims that, through increasing use of large hierarchies in capitalism and markets in socialism, the two types of economies are converging to similar organizational structures. To be sure, some socialist economic reforms -- such as in Hungary, and recently also in China -- do result in mixtures of markets and hierarchies which resemble those encountered in capitalist economies. But the resemblance can now be disclosed as only superficial, limited to the area of resource-allocation within given structures. In the area of self-organization, through which structures are formed and reformed, no true convergence is possible, unless socialism is transformed into full-fledged capitalism. Only private ownership of capital allows for truly decentralized entrepreneurship with open entry to both product and capital markets. As will be discussed later, it is these features, inimitable by socialism, which are necessary conditions for adaptive efficiency.

Tacit Knowledge

The above implication involves a puzzling point. It is admitted that different institutional rules, channelling self-organization in different ways, can nevertheless generate similar organizational structures. Yet it is claimed that, in spite of their similarities, the generated structures will perform differently, because of differences in their self-organization. But this can be true only if different ways of self-organization endow the structures with different abilities, important for the production performance, but difficult to observe from the structures' appearance. In other words, socialist markets and

socialist hierarchies may resemble capitalist markets and capitalist hierarchies, and yet not perform in the same way. The question, then, is which hidden factor of production, depending exclusively on self-organization, can make such a difference.

According to my argument, this factor is a particular type of information, ignored by standard analysis, but crucial in studies of self-organization. This is the information inherent to organizational structures themselves -- similar to the information inherent to the internal arrangement of a machine or an organism. It is this information which determines what the structure can do, which other information it can use and which operations it can perform -- much like the computer "hardware" determines what a computer can do, which "software" data and programs it can receive and handle. But unlike a computer which obtains its hardware from an external constructor, the organizational structure of an economy can obtain this information only through its own self-organization.

To denote this information, a convenient term is "tacit knowledge", due to Polanyi (1967) and recently employed in economic analysis by Nelson and Winter (1982). And although my interpretation of this term is somewhat different from theirs, it is nevertheless close enough to make the coining of a new term unnecessary. Probably the most important difference is that I regard tacit knowledge as a property not only of individuals, but of organizational structures in general.

As to individual tacit knowledge, its most important forms here are the competence, which an individual must acquire through his own learning by doing, and his talents, in the sense of his learning abilities which limit the competence he can eventually learn.⁶ As an example, one may think of the competence of a chess player, which determines how well he can actually play, and of his talents, which determine whether, after 10 or 15 years of diligent playing and reading of chess literature, he will become a grand master or a B-class player.

The main distinguishing feature of individual tacit knowledge is that it can be freely used by its owner, but cannot be communicated (directly transmitted) to someone else.

One can also say that individual tacit knowledge is the information which must preexist, before an individual can understand and use any other information. For instance, in order to understand a message, one

must first have learned the language (code) in which it is expressed, and in order to learn a language, one must be endowed with the abilities to learn languages.⁷ The upshot is that there can be only two possible sources of individual tacit knowledge: initial endowment and learning by doing. In turn, learning by doing requires, besides the data provided by experience (including education), some preexisting learning abilities, which leads back to initial endowment.

Besides not being directly communicable, individual tacit knowledge has a few other properties which are of relevance for economic self-organization. In particular, it is not directly measurable, nor interpersonally comparable. Only the particular results of its application in particular circumstances -- such as the solutions of particular problems, or the performance in particular tests or tournaments -- can be observed and compared. The frequent cases of overestimation or underestimation of one's own competence and talents show that one is even unable to directly measure one's own tacit knowledge, in spite of using it freely.

While some tacit knowledge is needed for all human activities, the present focus is on the tacit knowledge needed for economic behavior -- that is, on what may be called "economic" or "business" competence and talents. By making the standard assumption of perfect (unbounded) rationality of all economic agents, mainstream economics implicitly assumes that such knowledge is always perfect. In contrast, the present point is to recognize such knowledge as scarce and unequally distributed -- that is, different people are to be recognized as endowed with different economic competence and talents. This point is equivalent to making the increasingly popular assumption of bounded rationality (cf., e.g., Simon [1955] and Williamson [1975]), with the important addition that the rationality of different people is recognized as bounded in possibly different ways and degrees.

As to the tacit knowledge of an organizational structure -- let me denote it "organizational" -- it is made of all the individual tacit knowledge involved. But it is not a simple sum of individual contributions. The main idea is to give more weight to the individual knowledge employed in top positions -- such as those of managers, investors, and entrepreneurs -- than to the knowledge used by the rank and file. Consequently, when considering a given society, consisting

of given individuals with given tacit knowledge, it is on their respective positions and interrelations that the organizational tacit knowledge of the economy's structure will depend.

This means that organizational tacit knowledge will depend on the organizational design, which determines the network of individual positions and interrelations, and on the selection of specific individuals for these positions.

Two implications are of particular importance. First, the same individuals can form structures of different organizational tacit knowledge, if employed in different organizational designs. Second, the same design can result in different organizational tacit knowledge, if it employs different, or differently selected, individuals.

The second implication is the key to the puzzle of organizational structures which look similar but perform differently: although their easy to observe organizational designs may be similar, their difficult to observe organizational tacit knowledge may differ substantially.

Self-Organization as Allocation of Tacit Knowledge

In contrast to the construction of machines, where the design can be separated from the selection of components, in economic self-organization the formation of organizational design and the selection of individuals are closely interwoven. The design is formed by the individuals themselves, with different individuals having different influence, according to the positions for which they have been previously selected. A fruitful approach to such a situation is to regard economic self-organization as the formation of organizational tacit knowledge through allocation of individual tacit knowledge.

This would nearly bring us back to the traditional problem of resource-allocation, if only tacit knowledge were not such a peculiar resource to allocate. Whereas all other resources, including communicable information, can change hands and flow across a given organizational structure, tacit knowledge is tied to individuals and structures, and can be allocated only through changes of the structure itself. Economic self-organization must, therefore, be regarded as a particular case of resource-allocation which cannot be reduced to the

traditionally studied cases. While traditional resource-allocation leaves the organizational structure which conducts it intact, the allocation of tacit knowledge ends up with another organizational structure than the one it started with. A "strange loop", typical for self-organization, thus clearly appears. The allocating mechanism and the allocated resources, which traditional analysis keeps tightly separated, appear here to be the same thing. In other words, self-organization can be said to allocate, in a cumulative way, tacit knowledge by the means of the already allocated tacit knowledge.

Another peculiarity of such an allocation process appears when we recall that besides being incommunicable, tacit knowledge is not directly measurable and interpersonally comparable. The upshot is that the actual allocation of tacit knowledge, on which the future allocation is based, can never be perfectly known. The difficulty of the problem which economic self-organization is to solve can now be fully appreciated. It is the difficulty of allocating imperfect and imperfectly known tacit knowledge by the means of imperfect and imperfectly known tacit knowledge.

The answer to the puzzle of similarly looking but differently performing organizational structures can now be completed. The crucial difference in organizational tacit knowledge must indeed be ascribed to differences in self-organization. Consequently, successful organizational structures can be shown to owe their success less to their static appearance than to the entire process of their genesis. This means that they are not directly imitable, unless their entire self-organization would be imitated as well. The upshot is that, contrary to what standard analysis implies, the organization of successful capitalist firms cannot be imitated by socialist firms, nor by government agencies.

Comparing Organizational Failures

Let me now outline how comparative studies of self-organization can obtain some significant results by relatively simple means. The main idea is not to try to discover the detailed course of self-organization under one list of institutional rules, but only to compare the organizational failures -- that is, failures specific to self-

organization -- of two or several lists. The logic used is very simple. If list A can be shown to be less resistant to organizational failures than list B, the conclusion will be that the adaptive efficiency of B is superior to that of A -- regardless of how adaptively inefficient B might be according to some absolute ("nirvana") criteria.

Organizational failures are defined as misallocated tacit knowledge or, alternatively, as inefficient parts of organizational structure -- such as an inefficient market, the absence of a market, a poorly organized or managed firm, or an incompetent policy-making agency.

To understand the causes of such failures, we must turn to the properties of tacit knowledge. Since tacit knowledge is imperfect and imperfectly known, it follows that self-organization must involve search, consisting of two interwoven stages: generation of organizational trials and elimination of organizational errors. Such a search can be further complicated by the fact that organizational errors may be not only probabilistic, due to imperfect knowledge, but also systematic, due to associative preferences which are not oriented towards efficiency -- such as liking for status, power, baroque rituals, and one's own relatives.²

Organizational failures can occur in either stage, and can be, consequently, divided into two basic types: surviving errors and absent successes. The former consist of mistaken organizational arrangements -- such as a maladapted firm or an overgrown government agency -- which have not been eliminated. The latter failures are less tangible, but correspond nevertheless to real and serious problems which can often be traced to some defective institutional rules. They consist of the feasible and potentially successful trials -- such as new firms promoting new organizational forms and/or new technologies -- which have been eliminated too early, or prevented from appearing altogether.

To assess different lists of institutional rules for their resistance to organizational failure, the first step is to identify the two sets of rules (possibly overlapping) which influence the generation of organizational trials and the elimination of organizational errors.

The next step is to examine the effects of these rules. In general, the fewer successful trials the rules prevent, and the faster they allow the committed errors to be eliminated, the better is their resistance. Referring to tacit knowledge, one can also say that resistant rules do

not hinder superior tacit knowledge in making itself socially useful, while keeping inferior tacit knowledge as harmless as possible. The resistance of rules should be assessed in a dynamic world, with a continuing stochastic supply of new individual talents and organizational innovations, as well as of new cases of senility and organizational decay.

There are many fine points which must be carefully examined before different institutions can be properly assessed for their resistance to organizational failures. However, one elementary result concerning the role of private enterprise in production can be reached at a relatively early stage of research. It can be shown (cf. Pelikan [1985a and 1986]) that for a good resistance to organizational failures, institutional rules must meet certain necessary conditions, which only some forms of capitalism can do.

In particular, two things can be shown: (a) to minimize absent successes, entrepreneurship and investment decisions must be decentralized -- which requires private ownership of capital and open entry to both product and capital markets; (b) to minimize surviving errors, the right to ultimately veto the survival of the maladapted parts of organizational structure must be vested with the actual users of their outputs -- which requires markets with well-defined rules of bankruptcy.

The upshot is that all forms of socialism, and, in general, all institutional rules which eliminate or strongly limit private enterprise, have a substantially reduced potential for producing successful organizational trials and for promptly and rigorously eliminating organizational errors. In other words, they are inferior in terms of adaptive efficiency -- in comparison with at least some forms of private enterprise.

Competition and Government

The search for adaptively efficient institutions can now be limited, without loss of any valuable candidate, to the category of private enterprise. Compared to the inconclusiveness of existing theories, this is a significant result. But from the point of view of practical

policy-making, most of the search is yet to be done. The task is to find out which specific forms of private enterprise are the best ones, and which specific types of economic policy they require.

Two overlapping areas are to be examined: the role of competition and the role of government. As to the former, the focus is, of course, on the nonprice competition through which the number and the quality of firms and markets are being modified, rather than on the traditionally studied price competition among existing firms on existing markets. In particular, the focus is on entry, exit, mergers, takeovers, divestitures, and internal reorganization, which are viewed much along the lines proposed by Marris and Mueller, but with one important addition. Following Nalebuff and Stiglitz (1983), nonprice competition is also regarded as a means for revealing important information which could not be revealed in any other way. Here such information is the tacit knowledge relevant for economic decision-making -- that is, economic competence and talents of individuals and organizations.

The basic finding is that nonprice competition has to fulfil a socially important task, ignored by existing theories. The task is to recognize and promote the most competent and talented entrepreneurs, managers and investors, and the best performing organizational arrangements. Alternatively -- and this is a more powerful formulation -- it is to demote the mediocre decision-makers and to dissolve the most inapt organizations.

At least some of the resources which Marris and Mueller claim to be wasted in nonprice competition are thus discovered as well spent. Contrary to their view, the social outcome of mergers, takeovers and divestitures need not be limited to needless redistribution of wealth and power among groups of managers, but can contribute significantly to efficient allocation of tacit knowledge. The failure of theory to answer the questions of why some firms become cheap and which of the cheap firms will actually be taken over -- which Marris and Mueller duly note -- corroborates precisely the view that important tacit knowledge is involved. Intuitively, one can compare these questions to the ones of how to recognize the hidden winning moves in apparently lost chess situations, and how to recognize such apparently lost situations from the really lost ones. Only excellent chess players are likely to provide the right answers, whereas mediocre players will often be wrong

-- and one cannot tell the former from the latter without costly chess tournaments.

As to the role of government, the focus is on the tacit knowledge of government agencies which is relevant to the organization and management of production and investment. The basic finding here is that this knowledge is inferior, probabilistically but significantly, to the corresponding knowledge of the private firms which have resulted from, and are still active contestants in, nonprice competition.

Of course, the conjecture that government lacks business competence has been made (see, e.g., Eliasson [1984]), but the analysis of self-organization seems to be first to provide it with theoretical justification. Also, the claim that government agencies are not socially efficient producers and investors has been made, in particular by the theory of public choice (cf. Buchanan and Tollison [1972]). But this theory has been put in doubt, because of its debatable assumption that all government appointees and employees are perfectly rational opportunists who cannot be properly motivated to pursue social objectives. Since the analysis of self-organization pays as much attention to the question of competence as to that of motivation -- that is, regards the efficiency of government agencies as threatened not only by competent egoists but also by less competent altruists -- it cannot be put in doubt so easily.

Towards Specific Policy Implications

To conclude, let me briefly indicate a few policy implications to which the two basic findings lead. As to the scope of government policy-making, the general implication is that government should not intervene in production by selective measures -- such as firm-specific industrial policy, credit rationing, indicative planning, and the management and/or organization of parts of production. Because of the likely inferior tacit knowledge of government agencies, all such intervention must be socially wasteful in the long run.

One particular form of this implication, important for Sweden, is that government should not be given the status of a privileged producer, protected from actual and potential competition, of subsidized

goods and services -- such as day care, education, health insurance and medical services -- if such production is not to become grossly wasteful for lack of adaptive efficiency.

Regarding nonprice competition, two general principles are implied: not to discriminate against new entrants, and not to distort the selection of individuals and organizations in favor of other attributes than productive efficiency.³

One particular area where one or both of these principles are often violated is tax policy. For instance, differentiated taxation according to forms of investment and forms of firms, and inheritance taxes on productive assets violate the second principle by according fiscal advantages to certain organizational arrangements which need not be the most efficient ones.

Sweden in particular appears to be suffering from such taxes. To lower the anticipated tax burden for the owners of small and middle sized firms, rather than to improve the quality of organization or management, often appears to be the leading motive for takeovers. The Swedish investment funds -- intended to regulate investment activity through delayed tax-free self-financing -- can be quoted as an example of tax policy violating the first principle. Although claimed micro-economically neutral, the funds in fact benefit only firms of certain age -- thus discriminating against younger firms and new entrants.

Another area concerned is antitrust policy. One implication, corroborating and complementing Williamson's (1975) views, is that policy should not automatically counteract non-standard business practices, corporate takeovers, and growth of firms in general. The reason is that at least some of these actions must now be recognized as parts of the search for efficient organizational arrangements and excellence in management.

This is not to deny, however, that corporate takeovers as well as some other actions of incumbent firms can be, and often are, of predatory nature -- that is, pervert nonprice competition from within by unethical practices against actual and/or potential competitors.

This raises the well-known but not well-answered question of how to distinguish between predatory actions, which should be counteracted, and the search for organizational and managerial improvements, which should be welcome. Here, this question is related to the tacit

knowledge of the antitrust agencies which should keep answering it in practice. The first implication, then, is that no antitrust agency can be expected to do so without committing errors. However, the overall implication for antitrust is opposite to the one for selective intervention in production. Provided that the question is understood in general, imperfect antitrust is to be preferred to no antitrust at all -- for similar reasons as in sports, imperfect referees are preferred to no referees at all.

Nonprice competition may go wrong yet for another reason. Even if new entrants do not encounter any unreasonable institutional or economic discrimination, poorly performing firms on some markets may fail to be eliminated, and some potential markets may even fail to form, if the supply of entrepreneurship is insufficient. In such a case, incentives for entrepreneurs appear to be the prime candidates for policy intervention. There are several forms of policy to be considered and examined, such as various tax advantages lowering the costs of entry, simplification of tax rules decreasing transaction costs, and partial shifts of responsibilities from entrepreneurs to creditors and/or consumers and/or labor, diminishing entrepreneurial risks.

Of course, all these policy implications are no more than first approximations, with much work yet to be done on their theoretical refinement as well as empirical documentation. One point, however, seems to be definitely made. Comparative studies of economic self-organization prove not only academically interesting, but also socially useful. They disclose conventional wisdom as misleading on several policy issues, and indicate promising avenues towards more comprehensive policy advice.

Notes

- ¹ A similar research program is recommended by Kornai (1971).
- ² In the present discussion, I leave aside the question of how the respect for institutional rules is enforced. As will be explained below, the present focus is on the adaptive efficiency provided for by different sets of institutional rules, assumed given and respected.
- ³ Logically, this division corresponds to the one made in biology between the evolution of species (cf. institutional rules) and the development of an individual (cf. organizational structure) of a given species. The great difference is, of course, that in biology the two stages of self-organization are neatly separated by substantially different time scales, whereas they are often closely interwoven in the history of societies. Typically, while an organizational structure is still in full development, the prevailing institutional rules are also being modified -- e.g., by new laws or changes of custom -- thus causing the organizational structure to continue its development under a more or less different set of institutional rules.
- ⁴ As can easily be verified, it is indeed with what I call "economic self-organization" that Marris and Mueller, as well as Schumpeter, are concerned. In this respect, the only difference between their approach and mine is that they examine economic self-organization in capitalism, whereas I propose to examine it under different institutional rules -- such as different forms of capitalism, socialism, and interventionism.
- ⁵ Economic literature comes close to dealing with such behavior in the writings on coalition formation, long-term employment contracts, and the issue of exit, voice, and loyalty, as formulated by Hirschman (1970).
- ⁶ The unity of the concepts used appears with particular clarity if learning by doing is interpreted as psychological, or even neuronal self-organization within individuals.
- ⁷ The universal grammar, which Chomsky (1969) claims to be the genetically given prerequisite for learning languages, can be used as an example of such knowledge.
- ⁸ Clearly, the well-known case of evolution through random mutations and natural selection can be regarded as a particular case of self-organization through generation of trials and elimination of errors. Of course, the trials in the present case may be far from random, and the selection may be far from natural.
- ⁹ At this point, I can mark the fundamental difference which separate the present policy implications from those of Marris and Mueller. After criticizing corporate capitalism for wasting too much resources on nonprice competition, they recommend democratic socialism which would associate big business to government. Without necessarily defending the actual form of corporate capitalism, the present analysis indicates that their preferred alternative would be one of the worst. It would simply combine the inferiority of government tacit knowledge with the sclerosis of big business, bound to be caused, sooner or later, by the implied discrimination against new entrants.

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