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**THE FORMATION OF
INCENTIVE MECHANISMS IN
DIFFERENT ECONOMIC SYSTEMS**

by

Pavel Pelikan*

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Abstract

When studying incentives in different economic systems, traditional comparative economics focuses on comparing incentives within markets to incentives within hierarchies. Advantages of the former are treated as advantages of private enterprise, and advantages of the latter as advantages of socialist planning or government control. This approach has two weaknesses which prevents it from reaching any conclusive results. First, no universally valid answer can be given to the question of which of the two types of incentives lead to a socially more efficient behavior. Second, the markets vs. hierarchies issue is not directly relevant to the comparison of real economic systems, for most of them contain mixtures of both types of organization and incentives.

The present paper proposes an organizationally dynamic approach which is free of these weaknesses. This approach shifts the focus from the way in which given types of organization function to the processes through which organizations form and reform. Different economic systems are then evaluated according to their capacity to channel such processes towards the formation of efficient organizational structures with efficient mixtures of incentives. The main conclusion of the paper then is that a certain type of private enterprise is superior to government control and all forms of socialism in terms of such a capacity.

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Introduction

Traditional comparative economics indentifies the capitalist, or private enterprise system with markets, and the socialist, or centrally planned system with a hierarchy.¹ Consequently, when assessing incentive mechanisms in these systems, attention is focused on comparing incentives within markets to incentives within hierarchies. All advantages of the market type incentives are then treated as advantages of private enterprise, while all advantages of the hierarchy type incentives are regarded as advantages of socialist planning or government control.

To begin my argument, I wish to claim that such an approach has two serious weaknesses. First, it is futile to seek a universally valid answer to the question of which of the two types of incentives -- of markets or of hierarchies -- lead to a socially more efficient behavior. Although efforts have been made trying to demonstrate that the former are universally superior, they have not been convincing. The most vigorous arguments of this kind are based on the theories of government bureaucracy, public choice, and rent-seeking.² Starting with the assumption that all individuals are perfectly rational opportunists, these arguments claim, in essence, that only market type incentives can discipline such individuals to strive for social efficiency. Hierarchies are claimed to be unable to fulfil this task because they protect their participants from market competition, allowing them to hide important information about real costs. The perfectly rational opportunists are then expected to exploit such a situation in various socially detrimental ways.

There are several reasons why these arguments fail to convince the unbelievers. Empirically, it can be shown that not all people are always as perfectly rational, nor as narrowly opportunistic, as these arguments claim, thus contradicting their assumptions. Moreover, it can also be shown that reasonably efficient herarchies, including even some government ones, do exist, thus contradicting their conclusions.³ From the point of view of theoretical analysis, these arguments can be exposed as being deduced from the claim that no heararchy can be

made incentive-compatible, but this claim has been formally refuted -- precisely under the assumption of perfect rationality.⁴ When the more plausible assumption of bounded rationality is made, Williamson (1975) convincingly shows that the issue of market v. hierarchies has no simple solution: under some conditions it is markets, and under other conditions it is hierarchies, which can be conducive to a socially more efficient behavior.

The second weakness of the traditional comparative approach is that the issue of market v. hierarchies is actually of little relevance in the comparison of real economic systems. The reason is that mixtures of both types of organizations, and incentives, can be found in all major economic systems. For instance, much of the economic transactions in the developed capitalist economies is internalized within large private firms, where individuals are mostly motivated by hierarchy type incentives. On the other hand, since only a part of the production tasks in any economy can be specified and sanctioned by a central plan, all real socialist systems must to some extent rely on decentralized, market-like negotiations among socialist producers, where the market type incentives necessarily prevail. Consequently, an argument in favor of market type incentives is not always an argument in favor of private enterprise, nor does an argument in favor of hierarchy type incentives necessarily support the cause of socialism. Namely, the former attacks not only government bureaucracy, but large private firms as well, while the latter does not automatically imply the superiority of socialism or government control, but can equally signify that social efficiency is to be achieved by a large capitalist firm. The false belief that the only important difference between capitalism and socialism is that between markets and a hierarchy has also led, after the correct observation that hierarchies increasingly grow within capitalism and markets within socialism, to the naive theory about the convergence of these two systems, which overlooks the truly substantial differences between them.

In Pelikan (1985) I have suggested an organizationally dynamic approach to comparative economics which is free of these weaknesses. Instead of asking whether it is markets or hierarchies into which a well-performing economy should be organized, this approach fully re-

cognizes that a real economy, in order to properly internalize all important externalities and efficiently exploit modern technologies of production, communication and computation, must be made of both markets and hierarchies. Rather than comparing the ways in which some given markets and hierarchies function -- which is what traditional analysis has done -- it turns attention to the ways in which markets and hierarchies form and reform.⁵ Consequently, when comparing different economic systems, the focus is placed on their ability to form and maintain a well-performing mixture of both types of organization. The purpose of this paper is to summarize the main points of this approach, with particular attention paid to the problem of incentives.

1 Towards an organizationally dynamic economic analysis

The suggested approach requires some modifications and extensions of the usual conceptual apparatus of economic analysis. The most important extensions can be summarized as follows.

1.1 Organizational structures

As is usual in microanalysis -- and a meaningful inquiry into the formation of incentive mechanisms must necessarily be microeconomic -- the economy under consideration will be described by three categories of parameters: (i) the collection of its economic units -- such as households, firms, government agencies; (ii) their behavior -- for instance, as described by their preferences, types of rationality, or behavioral rules; (iii) the network of the exchange channels by which they are interrelated, indicating the directions and the varieties of permissible transactions. It is this last category which indicates the set of the markets and/or the hierarchical relations into which the units of the economy are organized. These three categories of parameters together will be called the organizational structure (OS) of the economy.

By definition, OS contains all the parameters which determine the functioning of the economy in terms of resource-allocation, and can be regarded as a resource-allocation mechanism in the sense of Hurvitz (1971). For the purpose of our present discussion it is important to realize that each particular form of OS contains its specific

types of incentives through which the given units motivate each other to exchange certain economic information (coordination signals), and resources, within the given network of exchange channels.

In contrast to traditional analysis, which often abstracts from the internal organization of firms and agencies, the present inquiry will often force us to recognize that internal organization matters. In this case, we shall refine the picture of OS by considering the internal organizational structure of each unit in terms of some subunits -- such as divisions, plants, workshops, and eventually individual participants.⁶ The term organizational structure of a unit, denoted sub-OS, will refer to three analogous categories of parameters: (i) the collection of the subunits constituting the unit in question; (ii) their behavior; (iii) the network of their exchange channels. Such a network can be visualized as depicting the inside of one node in the overall network of OS.

In a similar way as OS determines the functioning of the economy, sub-OS determines the functioning of the corresponding unit. Although, in principle, all sub-OSs can be classified as hierarchies, they may still be of many different forms (e.g., more or less decentralized), using differently designed incentives (e.g., flat rate or piece rate wages, fixed salaries or profit bonuses).⁷ In general, when organizational structures of several levels are considered, different forms may appear at different levels: for instance, a market may contain units which are classified as hierarchies (e.g., firms), and a hierarchy may contain areas which can be classified as markets (e.g., among the divisions of a firm, among the firms of a centrally planned economy).

In principle, with the help of the concept of organizational structure, the behavior of any system can be expressed in terms of the behavior of its constituent parts. This means, among other things, that one ultimately needs to refer to a set of some elementary subunits whose behavior is considered basic. In social sciences, such subunits are individuals. I shall use the term socio-cultural environment to denote the set of the individuals with their behavioral characteristics -- e.g., as described by their tastes, values and types of rationality -- who play the role of the most elementary subunits in the economy under consideration.

It is also with the help of the concept of organizational structure that the suggested organizationally dynamic approach can be distinguished from the traditional, organizationally static analysis. While traditional analysis assumes organizational structures to be exogenously given, the main feature of the suggested approach is to recognize them as endogenously formed.

1.2 Institutional rules

In a parallel and partly overlapping way, the economy under consideration can also be described by the list of its institutional rules (IR), which constrain the permissible behavior of its units in a similar way as the rules of a game constrain the permissible moves of its players.⁸

The various forms of such rules can be classified much like the forms of organizational structures -- for instance, by distinguishing the market type of rules, such as tradable property rights, from the hierarchy type, such as a certain asymmetrical distribution of rights and duties between a central (privileged) unit and different types of peripheral units.

Like the concept of organizational structure, the one of institutional rules can also be applied within an economic unit. Denoted as sub-IR, it then refers to the "rules of the game" -- e.g., as specified by a firm's constitution -- which constrain the permissible behavior of the participating subunits. Typically, IR contains some rules constraining the permissible forms of sub-IRs -- such as certain parts of the labor and corporation laws which constrain the choice of the internal rules (constitution) of a firm.

While organizational statics often identifies an economic system according to the supposedly invariant OS, organizational dynamics, which recognizes OS as endogenously variable, can no longer do so. Another relatively invariant concept is therefore needed which could identify an economic system whose organizational structure is changing. The concept of IR is important for organizational dynamics precisely because it can play the role of such a (relative) invariant: while OS can be changing -- e.g., some units may enter or exit, or modify, within

some permissible limits, their behavior and/or their exchange channels - IR can stay constant, imposing its particular constraints on both the functioning and the changing of OS.⁹

1.3 Organizational processes and associative actions

While traditional analysis focuses on the allocational processes through which OSs function, organizational dynamics must also consider processes through which OSs form, reform and dissolve. A suitable adjective for denoting such processes seems to be 'organizational'. To visualize such processes, one may think of hierarchies and/or markets which appear, grow, replace each other, reorganize internally, merge, split, diminish, or dissolve. The changing hierarchies and markets may be of different kinds and levels. For instance, the hierarchy in question may be a firm or a government agency, or only a part of a firm or an agency, or a group of firms under the control of a government agency; the market in question may appear among several hierarchies when they engage in mutual exchanges, or within one hierarchy when this becomes decentralized. While modern economic analysis, as Samuelson's Foundations make particularly clear, often seeks inspiration in the paradigm of mechanics, organizational processes are intuitively closer to that of chemistry.¹⁰

It should be emphasized that organizational dynamics is an extension of, and not a substitute for, organizational statics. The question of how an economic system functions in terms of allocational processes is not to be put aside, but to be completed by the question of how the organizational structures which run these processes are being formed. Since both allocational and organizational processes are taking place within OS, this structure can no longer be regarded as a mere resource-allocation mechanism, but as a self-transforming (self-organizing) system as well.¹¹

Organizational and allocational processes are interrelated in two ways. On the one hand, the organizational outcomes -- that is, the actual form of OS and sub-OSs -- determine how the allocational processes will unfold, according to the above-mentioned principle that each organizational structure implies a certain allocational behavior. On the

other hand, the allocational outcomes reached -- e.g., the production realized, the savings made, the credits obtained -- impose constraints on how the organizational processes can subsequently continue. For instance, an sub-OS can expand only within the limits of available resources, a lack of resources possibly forcing its dissolution.

When trying to anatomize organizational processes into some well-defined micro-actions of individual units (and subunits) -- without which a good understanding of these processes would not be possible -- it can be shown that there is one basic type of individual actions into which all organizational processes can ultimately be decomposed. Such actions consists in a unit (subunit) modifying -- which includes both forming and interrupting -- some exchange channels connecting it to other units (subunits). To denote such actions, a suitable adjective seems to be 'associative'.

Associative actions are to be distinguished from the usually considered allocative actions which consist of exchanges (transactions) of resources and/or information along some already established channels -- e.g., on existing markets, within existing hierarchies. While allocative actions are the elementary steps by which structures function, associative actions are the elementary steps by which structures form, reform, and dissolve.

It is important to recognize that associative actions are not mere instruments in the search for higher economic efficiency, as an economist would like to see them, but may have their own specific constraints and underlying preferences. Examples of associative constraints are the limited fineness and clarity of available common languages,¹² and the limited number of persons with whom one may interact (e.g., the limited span of control); examples of associative preferences are the feelings of sympathy or antipathy for potential partners, and the wishes to be independent, to lead, or to follow. While allocative preferences can be traced to the traditionally quoted Robinson's Crusoe needs for food and shelter, associative preferences can be regarded as stemming from human needs for social contacts. Although some rates of substitution are likely to develop between the two, they are unlikely to ever become complete -- because of bounded rationality and/or ethical scruples.¹³

Once the existence of associative constraints and preferences is recognized, they can be assigned places among the tastes, values, and types of rationality which characterize the individuals of a given socio-cultural environment. Together, they constrain the variety of organizational structures which are feasible in this environment, and possibly also imply that some of these structures are more likely to form than others.¹⁴

The view that the behavior of economic units falls into two relatively separate spheres -- the formation of exchange channels, and the use of the channels formed for the conduct of specific exchanges -- seems to be the key to a good understanding of the processes of economic organization and self-organization.¹⁵

1.4 The role of tacit knowledge in organizational structures and processes

Thus far, most of economic analysis has been conducted under two alternative assumptions about information (knowledge). The older one assumes away any form of scarce information: all economic units know perfectly well both the state of the world and the rational decision procedures for acting upon it. The newer one recognizes that some information may be scarce, but assumes that such information always is communicable: all units can perfectly well understand and rationally act upon all perceptible signals. Although the costs of communication may have to be paid, and the initial holder of information properly motivated to send it, if this is done, any scarce information can be transferred anywhere across a given organizational structure as a pure matter of allocation, while the structure stays constant.

The problem which has been ignored in this way is the one of the information (knowledge) which must always preexist, before any other information can be communicated, interpreted, and acted upon.

To denote such preexisting, uncommunicable information, I shall use the term 'tacit knowledge', due to M. Polanyi (1967), and recently employed in economic analysis by Nelson and Winter (1982). This is the information contained in the OS itself, determining the decision procedures (behavior) of the system, including the working knowledge

of languages and codes, decision logic, learning procedures.¹⁶

Since tacit knowledge cannot be obtained by inputs, it must be either given to each unit initially, or individually acquired through learning by doing. In the latter case, however, a unit's initial endowment with learning procedures -- to be regarded as a part of the initially given tacit knowledge -- acts as the constraint which sets the limits to what the unit can possibly learn. It seems natural to use the term 'competence' to denote the tacit knowledge which a unit actually uses at a given point in time, and the term 'talent' to denote a unit's learning abilities. One can then say that at any moment, the actual competence of a unit depends on its talent and experience; in the long run, the talent determines the limits of attainable competence.¹⁷

One important property of tacit knowledge, which immediately follows from its definition, is that no direct interpersonal comparison of the stocks of tacit knowledge is feasible. Not only is it impossible to accurately measure the stocks of another person's tacit knowledge, but people may not even be able to measure (be fully conscious of) their own stocks: it is quite frequent that one overestimates or underestimates one's own competence and talents. Consequently, whenever information about such stocks is needed, only indirect methods for estimating their states can be used. There seems to be only two such methods. One consists in using different contests (competition, tournaments) where the success of the contestants is positively correlated with their possession of certain types of tacit knowledge.¹⁸ The other method is to rely on qualified guesses made by some selected individuals on the basis of incomplete, and possibly secondary, evidence. The point to retain is that if such guesses are to be qualified -- that is, positively correlated with reality -- their makers must be endowed with much of certain specific tacit knowledge themselves (e.g., to have the "knack" to recognize another person's talents, or a lack of talents, under possibly misleading appearances).

With the introduction of the concept of tacit knowledge, an important piece of the puzzle fits into place. Namely, the dividing line between allocational and organizational processes corresponds to the dividing line between communicable and tacit knowledge. It is only through organizational processes that tacit knowledge can be acquired and

handled, and it is only in organizational structures that it can be stored and made utilizable. It is the tacit knowledge contained in an organizational structure that determines how well, or how poorly, communicable information will be used by that structure.

2 The Formation of Incentive Mechanisms as an Endogenous Process

With the help of the proposed concepts, the ways in which organizational processes unfold within different economic systems will be examined. The focus will be on the incentive mechanisms which appear within the organizational structures formed by these processes.

2.1 Self-organization and entrepreneurship

The proposed concepts lead to the following view of the formation of organizational structures. Under any institutional rules -- no matter how much centralization or decentralization they might impose on the allocational process -- much of the detailed shape or organizational structures is inevitably determined by decentralized self-organization of all of its units: each of them contributes to some degree to the formation of at least those exchange channels where it is directly involved. This is not to say, however, that self-organization is egalitarian. In fact, a profound asymmetry between two types of roles is implied. Namely, some of the units (subunits) must play the role of entrepreneurs, taking the initiative of proposing specific channels to specific partners, while others stay less active, limiting themselves to accepting, modifying, or rejecting the channels which have been proposed. The entrepreneurs, characterized by particular combinations of their allocative and associative preferences -- which is what makes them respond to certain conditions by taking the initiative -- can be said to supply the initial organization projects, around which markets or hierarchies can form. Of course, the resulting structures may develop, under the inevitable influence of self-organization, into a somewhat different shape than what these projects appeared to indicate. They are nevertheless crucial, for without them no organizational process would ever be initiated.¹⁹

The question now is how self-organization and entrepreneurship will be constrained by different types of institutional rules. For instance, the rights to act as entrepreneur may be differently centralized or decentralized, the permissible organizational projects may be required to satisfy different conditions, and different agents may have different rights to join, modify, exit, or block the organizational projects of other agents.

It should be noted that this view need not contradict the paradigm of equilibrium analysis, for organizational processes can very well be interpreted as a part of the adjustment processes chasing a general equilibrium. Adjustment processes can be regarded as consisting of two interconnected stages: the usually studied functional adaptations of a given structure -- e.g., through various cobweb processes; and the presently examined organizational processes modifying the structure itself -- e.g., by creating and reorganizing markets and hierarchies.

It is during the organizational stage of the adjustment process -- that is, as long as this process requires creation or reorganization of markets and hierarchies -- that entrepreneurship appears as an essential input. It thus finally gains the status of a scarce resource -- the status which it has been denied all along by traditional analysis for the simple reason that its social returns at equilibrium are strictly zero. In contrast, organizational dynamics not only recognizes the social value of entrepreneurship as positive, but even indicates that, when in short supply, entrepreneurship takes on some of the characteristics of a public good. Namely, without a sufficient supply of entrepreneurship, not enough organizational processes would be initiated, leaving the structure of the production sector underdeveloped and/or maladapted to the prevailing environments. For instance, some potential markets might not fully develop, or not form at all, leaving large numbers of potentially diligent workers involuntarily unemployed, far from their most preferred bundles of work efforts and consumption goods for which the availability of all other resources should allow. Clearly, in such a situation, the social returns to entrepreneurship can easily exceed the private returns.

The present view of entrepreneurs as organizers should now be compared with the two main existing views: that of Schumpeter (1934) who focuses on the role of entrepreneurs as technological innovators, disturbing a general equilibrium ("circular flow"); and that of Kirzner (1973), for whom entrepreneurs are the discoverers of economic opportunities, helping the economy approach an equilibrium. Because entrepreneurs are regarded here as catalyzing the adjustment process, the present view is obviously much closer to Kirzner's. While I am far from underestimating the importance of technological innovations, I propose to classify them, in a Knightian spirit, as belonging to the technical dimension of production, exogenous to economic analysis. Although each discovery of a new product and/or a new production technique is fully recognized as shifting the potential equilibria of the economy to a new locus, such discoveries can be regarded as made by some specialized producers -- such as scientists or engineers. Entrepreneurs -- who may of course be the same persons as the scientists or engineers -- can then be regarded, in agreement with Kirzner, as pure users of such discoveries, with the task of pushing the economy towards a corresponding new equilibrium, away from the old one.

There is, however, one point on which the present views come close to Schumpeter's. Since entrepreneurs are defined as the designers of organizational projects and the initiators of organizational processes, they are regarded as creators, innovators, or at least problem-solvers, which is closer to the status which Schumpeter gives them. The qualification of course is that for Schumpeter, the creations and innovations are above all technological, while here they are purely organizational. For Kirzner, in contrast, entrepreneurs simply respond to some preexisting opportunities without much creative contribution of their own, their main advantage over the other agents being their greater alertness.

2.2 Incentives for resource-allocation v. incentives for entrepreneurship

Following such a dual view of economic behavior, incentives can be divided into the two corresponding dimensions: the usually studied incentives for resource-allocation, including incentives for truthful in-

formation about resource-allocation, and the less often considered incentives for organization, including incentives for entrepreneurship. Of course, the two dimensions are not unrelated, since incentives for resource-allocation -- e.g., the profit incentive -- usually play an important role among the incentives for entrepreneurship. Yet, as the above discussion about the relative independence of associative preferences suggests, there are also other incentives for which people engage, or do not engage, in organizational processes. This is one of the reasons why such a dual view of incentives may be useful. A second reason is that this view corresponds to the distinction between endogenous and exogenous variables: incentives for resource-allocation are formed endogenously, as an integral part of the endogenously formed OS, while incentives for entrepreneurship more directly depend on the prevailing IR -- in particular on certain property rights -- which is assumed, within the framework of organizational dynamics, to be exogenously given.

Most of the existing literature on incentives is limited to incentives for resource-allocation, examined from an organizationally static point of view. One example is the literature on incentives for truthfulness in hierarchies, and on the principal-agent problem.²⁰ Another example is the treatment of the incentive problem by Williamson (1975, and forthcoming: Ch. 6). This example is more relevant to our discussion than the former for two reasons. First, Williamson recognizes human rationality as bounded, which corresponds to our recognition of the scarcity of tacit knowledge. Second, his systematic use of the market v. hierarchies comparative approach is an important step towards organization dynamics. Namely, by comparing hierarchies with markets, rather than treating each type of organizational structures separately, important indications can be obtained as to when it would be potentially efficient to transform a market into a hierarchy (e.g., through vertical integration), or vice versa -- even if the question of when and how such a transformation will actually take place is not addressed.

Without trying to duplicate such studies, what organizational dynamics does is to point to some of their limitations and to situate them in a broader context. One implication of our argument is that the detailed form of the incentives for resource-allocation actually used in a real economy must be regarded as a product of endogenous organizational

processes, which must have been projected and initiated by endogenous entrepreneurs and modified through the inevitable self-organization of all the participants concerned. For instance, one may think of the incentives effectively at work within a firm, which are the result of both the design and the implementation of long-term employment contracts. This means that an organizationally static theory can at best state certain general principles which apply to entire classes of incentives. It cannot, however, predict very precisely which particular incentives will appear in a particular situation and how well or poorly they will actually work. The point to be emphasized is that details which no theory can comprehend can be very important: different entrepreneurs can apply the same theoretical principle in a clumsy or ingenious way, with very different outcomes. While the communicable knowledge of a theory may be useful to designing incentives, it cannot be sufficient. The actual efficiency of the incentives for resource-allocation within a real economy is also, and sometimes above all, determined by the tacit knowledge of endogenous entrepreneurs.²¹

To illustrate this idea, consider the two main questions studied by Williamson: When can a hierarchy successfully internalize a part of a market? How big can it become before losing its comparative advantage? The factors which Williamson points out and examines -- such as limited spans of control, opportunistic behavior, bounded rationality, informational asymmetry, side effects of selective intervention -- undoubtedly play an important role in determining the answer to these questions, yet they cannot predict, by themselves, how large an efficient hierarchy can actually become in any given economy. The obvious reason is that all such factors can only indicate the potentially attainable efficiency of market and hierarchies, while the actually attained efficiency will also depend on the tacit knowledge of the entrepreneurs who happen to initiate the formation of the market and hierarchies in question. Clumsy entrepreneurs may fail in building an efficient hierarchy of any size where the most talented ones may succeed in organizing and maintaining surprisingly large efficient hierarchies, securing the cooperation of their participants by ingeniously designed and sensibly implemented incentive mechanisms, with an important role played by organizational innovations.²²

On the one hand, organizational dynamics thus sets limits to what an organizationally static theory can say about incentives for resource-allocation in different economic systems. On the other hand, by introducing the tacit knowledge of entrepreneurs as an additional factor to be considered, it enlarges the inquiry by some new, more roundabout questions, such as: How are the candidates for the role of entrepreneurs recruited? In which contests will they have to succeed? Which type of tacit knowledge is favored by these contests and how is it relevant to the task of designing well-performing incentive mechanisms? Which incentives will motivate people to become candidates and to succeed at these contests? In other words, organizational dynamics submits that theory itself cannot solve the problem of incentives for resource-allocation in all relevant details and, therefore, calls attention to the question of how the people who can do so are attracted, selected, and given the opportunity to act.

It is according to the answers to the above questions that organizational dynamics compares different economic systems, dealing with the two previously discussed dimensions of incentives. As already mentioned, the incentives for entrepreneurship are directly defined by IR, in the form of certain property rights, such as the rights to the proceeds of entrepreneurship, and the distribution of responsibilities in case of adversity among entrepreneurs, labor, creditors and customers. As to the incentives for resource-allocation, the influence of IR is less direct, although not less important. On the one hand, IR defines the limits of admissible types of markets and hierarchies, including admissible types of incentives -- e.g., by prohibiting slavery, or by imposing certain forms of profit-sharing. On the other hand, by defining the incentives for entrepreneurship and the conditions under which entrepreneurs are selected and given the opportunity to act, IR also has much responsibility for the quantity and the quality of the entrepreneurs who will assume the task of designing, within the defined limits, the actual incentives for resource-allocation and, thereby, for the quality of these incentives themselves.

2.3 The preferences for entrepreneurship

The responsibility of IR is, however, limited by the fact that the outcomes of any economic process, including the formation of incentive mechanisms, depend not only on the general rules which channel the process, but also on the behavior of the actors who run it. One may think of the outcomes of a game which depend not only on its rules, but also on the quality of its players. This means that one cannot compare different economic systems (forms of IR) without also taking into consideration the socio-cultural environment where they are applied.

It seems that a brief discussion of people's preferences concerning entrepreneurship can expose most of the socio-cultural parameters which are of importance for the present discussion.

Obviously, the problem of preferences is complementary to the problem of incentives since, in order to become an effective motivational force, an incentive must always interact with some corresponding preferences within the agent who is to be motivated. As follows from earlier discussion, both the allocative and the associative preferences will play an important role in determining the preferences for entrepreneurship -- that is, the conditions under which different individuals would volunteer to become entrepreneurs.

The allocative preferences concern the traditionally quoted desire for material gain and require no comment. The associative preferences contribute to the motivation of the potential entrepreneurs by making them appreciate their gains (losses) in terms of social contacts -- such as the status gained, the friends and/or the enemies made, the admiration and/or the envy provoked. Moreover, these preferences also influence the subjective costs of entrepreneurship. For instance, a shy person will find these costs much higher than someone who enjoys taking the initiative and leading others.

The rewards for, and the costs of, entrepreneurship depend not only on the associative preferences of the entrepreneurs themselves, but also on the values concerning entrepreneurship of the population at large. On the one hand, these values determine the social esteem,

or the hostility, which a successful entrepreneur will attract, thus contributing to his rewards. For instance, if a successful entrepreneur is admired, the need for material incentives to entrepreneurship may be lower than if he were despised. In the latter case, he would clearly have to be offered an additional material compensation. Moreover, entrepreneurship would then be made particularly attractive for the morally deviant individuals who care little for social disapproval. On the other hand, these values influence the objective costs of entrepreneurship by determining some important socio-cultural parameters, such as the general standards of honesty and loyalty, on which the costs of setting up and running economic organizations depend. For instance, these costs are obviously lower in a culture where such standards are high than in a culture where cheating one's employer is regarded as a moral duty towards one's family and/or the working class.

The point to be retained is that different socio-cultural environments may exhibit substantial differences in the preferences for entrepreneurship. Consequently, they can substantially differ in the supply of potential entrepreneurs for different lines of economic activities (e.g., simple trade v. complex manufacturing v. industries with high moral hazard, such as investment and insurance), with an important impact on the attained economic development and social welfare. The importance which organizational dynamics thus ascribes to the contents of people's preferences is one of the points where it substantially departs from traditional analysis. According to traditional views, the contents of people's preference do not matter. Provided that certain formal conditions of transitivity and connectivity are met, a Pareto-efficient equilibrium can be defined for any particular contents. Organizational dynamics, in contrast, shows that the content of certain preferences is crucial for the very formation of the resource-allocation mechanisms (organizational structures) without which the system could not work and no equilibrium could thus be approached.

3 Private enterprise is likely to form more efficient incentive mechanisms than other economic systems

While organizational statics has been unable to determine which

economic system contains the most efficient incentive mechanisms, we shall now see that organizational dynamics has some more conclusive results to offer.

3.1 What kind of social welfare?

In principle, each economic system can be regarded as working with certain efficiency towards a certain type of social welfare. Therefore, different systems can be evaluated according to either their efficiency, or the kind of social welfare they tend to achieve -- e.g., as imputed from the final demands they effectively satisfy.

To compare types of social welfare is a thorny problem which can easily be confused by differences in the tastes, values and ideologies of the comparers. However, as suggested by Nelson (1981), much of this problem can be avoided by focusing on the system of production, while leaving the question of the contents and the distribution of final consumption largely open. If one system of production can be shown superior to another for a wide range of types of social welfare, a valuable result is reached. While different comparers may continue to disagree, within this range, as to which type of social welfare should be strived for, they must now at least agree that in any case, production should be organized according to the former systems rather than the latter.

As I show in Pelikan (1985), this approach strengthens the cause of the private enterprise system of production, for it disconnects it from the value-loaded questions of consumer sovereignty, individualistic society, and philosophical liberalism. More precisely, government -- no matter how democratic or undemocratic, wise or unwise it might be -- is left to determine much of the final demands which production should meet -- e.g., in terms of public goods, merit goods, employment, growth, environmental protection. If one can then show that even under these conditions, a good system of production must be of the private enterprise type, one disarms all the critics of this type of system who accuse it of meeting the wrong final demands.

It is this approach which will be adopted here. When speaking of the relative efficiency of incentive mechanisms contained in different economic systems, I shall have in mind their respective capacities to

induce people into socially efficient (non-wasteful) production activities vis-à-vis some largely unspecified final demands.

3.2 Organizational failures

Organizational processes in any single economic system are difficult to model, since much of their course and outcomes depend on the entrepreneurs who happen to appear, and on the ideas that these entrepreneurs happen to have -- both of which any positive theory must regard as largely stochastic variables. As the following reasoning will suggest, it is nevertheless possible to obtain, by relatively simple means, a fairly good idea of how different systems compare with each other as to their respective capacities to channel organizational processes towards the formation of efficient organizational structures with efficient incentives.

To begin, recall that organizational processes are to use tacit knowledge in order to handle some other tacit knowledge, without anyone reliably knowing how such knowledge is distributed. Consequently, they cannot avoid having the character of a trial-and-error search. A suitable model of organizational processes thus appears to be the one which decomposes them into two interwoven stages: generation of organizational trials and elimination of organizational errors.²³

Such a trial-and-error model of organizational processes implies two types of potential organizational failures which would cause poorly performing organizational structures to appear:

- (i) surviving errors, denoting cases of defective error-elimination which tolerates the presence of some errors, for lack of detection or for lack of effective elimination.
- (ii) absent successes, denoting cases of defective trial-generation which prevents some potentially successful trials from materializing, or cases of defective error-elimination where some of such trials are eliminated by mistake.²⁴

The idea to be followed is very simple. Different economic systems will be compared according to their relative capacities to avoid these two types of organizational failure. If system A proves more resistant to at least one of these types, and no less resistant to the

other, than system B, we can then conclude that A will form relative-
ly better organizational structures, with more efficient incentive mech-
anisms, than B.

3.3 The inferiority of centralized entrepreneurship

Let me first compare two types of economic systems: contestable private enterprise, which is defined here as decentralizing the rights to initiate organizational trials and to eliminate organizational errors over both established units and potential newcomers (open decentralization),²⁵ and centralized entrepreneurship, defined as restricting the rights to conduct these two kinds of activities to government agencies and their appointees. It may be useful to emphasize once more that centralized entrepreneurship need not at all imply centralized resource-allocation. The central entrepreneur might very well try to imitate markets by setting up relatively independent units and letting them decide about their current production and even compete with each other -- as can be illustrated on the example of Hungarian economy. From an organizationally static viewpoint, such markets may be indistinguishable from private enterprise markets.

The first conclusive result can now be obtained in the form of the following proposition: In comparable circumstances, centralized entrepreneurship is likely both to generate fewer successful organizational trials and to tolerate more surviving errors -- thus forming less efficient organizational structures and incentive mechanisms -- than contestable private enterprise.

There are three joint reasons to justify this proposition. The first, relevant to trial-generation, consists of two simple steps. First, it is to be noted that only contestable private enterprise is potentially able to take advantage of all the talented entrepreneurs present (but more or less hidden) in a given socio-cultural environment. On the other hand, centralized entrepreneurship restricts the rights to initiate organizational trials to government officials, selected through politico-administrative contests.

Second, in order to see that such a restriction effectively prevents some of the potentially feasible good trials from materializing,

it must be shown that government cannot succeed in concentrating all the talented entrepreneurs into its agencies, and in promoting them to sufficiently high positions where they would have the decision authority to initiate organizational trials. This can be done by pointing to the fact that the politico-administrative contests, through which government officials are selected and promoted, are relevant to another type of tacit knowledge -- e.g., the talent of winning political support, the art of pleasing one's superiors -- than that needed for organizing efficient productive arrangements. Although some individuals might be talented at both, the distribution of these two types of tacit knowledge is unlikely to be perfectly correlated. This means that centralized entrepreneurship is bound to stifle the effective supply of successful trials by requiring all entrepreneurs to first succeed at the wrong contest, where some of the good ones will fail, or not even try, while some mediocre ones may excel.²⁶

The second reason, relevant to error-elimination, begins by noting that the ultimate criterion for distinguishing organizational successes from organizational errors is their respective ability to perform. Although preliminary judgements by qualified guesses are also possible, and some people may be quite talented at making them, such judgements are, by their nature, unreliable. The units which make such guesses (e.g., market analysts, investors, planners) may themselves be successes or errors, and their ability to guess correctly must also be subjected to error-elimination.

In order to show that contestable private enterprise performs better than centralized entrepreneurship in localizing and eliminating organization errors on the basis of their insufficient performance, one can refer to the 'exit vs. voice' argument due to Hirschman (1970). Only contestable private enterprise decentralizes the effective authority of error-elimination to the dissatisfied units (subunits) which are directly affected by insufficient performance of other units. This authority is ultimately exercised through 'exit' from the sphere of the entrepreneur whose organizational errors caused such a dissatisfaction, and a tentative 'entry' into the sphere of an alternative entrepreneur, with the legal possibility for the dissatisfied unit to become entrepreneur itself. On the other hand, in the industries or economies where entrepreneurship

is centralized, no such exit is possible, for no alternative entrepreneurs are allowed to show their talents. The dissatisfied units are limited to 'voice' -- such as complaints addressed to a supervising agency, belonging to the sphere of the same central entrepreneur, which may be unable to understand and/or unwilling to listen to them. Clearly, such an arrangement is prone to let more errors survive for longer periods of time than what contestable private enterprise would tolerate.²⁷

The third reason is relevant to both trial-generation and error-elimination. Contestable private enterprise, by making both these dimensions openly decentralized, has the exclusive potential to keep the trial-makers and the error-eliminators well separated from each other. In this way, each trial can be provided with a jury of independent error-eliminators, different from its authors (e.g., an entrepreneur facing his investors and customers). In contrast, centralization or closed decentralization of these two kinds of activities necessarily brings the trial-makers closer to the error-eliminators. Consequently, error-elimination is bound to lose some of its independence to the detriment of its quality.

The systems with centralized entrepreneurship, which have thus been proved to be inferior to contestable private enterprise, contain several categories of real systems. The most important ones are the Soviet type of socialism where centralized entrepreneurship embraces most of the entire production, the Swedish style of welfare society where government acts as an institutionally privileged entrepreneur for most of the production of merit goods and services, and the French version of planning where government is a privileged entrepreneur for organizing exchanges of economic information and the elaboration of economic forecasts. It is worth repeating and emphasizing that organizational dynamics does not claim that these systems lack the potential to accommodate efficient organizational structures and incentive mechanisms. Traditional analysis has been quite successful in showing -- and on this point it is not to be challenged -- that ingenious organizational structures with efficient incentive mechanisms are theoretically conceivable for all these systems.²⁸ What organizational dynamics does claim is that systems with centralized entrepreneurship suffer from inherent weaknesses in their organizational processes which make such

structures and mechanisms unlikely to be actually generated and preserved against deterioration.

3.4 The inferiority of market socialism

Economic systems based on market socialism need not, at least in theory, make use of any central planning, and not even of centralized entrepreneurship. They can make room for a wide variety of markets under the condition that all production units, or at least all production units over a certain size, apply certain rules of collective decision-making and profit sharing within their sub-OSs. I shall now show that contestable private enterprise is superior to these systems as well.

Let me first emphasize that the point is not to examine the impact of such internal rules on the performance of a given firm. This impact may sometimes be quite beneficial indeed: examples of successful firms in market socialism are not impossible to find, and even in the private enterprise system one can find firms which have developed variants of such rules voluntarily, to their obvious advantage. Rather, the focus is again on the organizational processes which generate and maintain organizational structures across the entire production sector, and on the organizational failures from which they are likely to suffer, if such rules are obligatory for all firms.

As to surviving errors, market socialism need not, if not interfered with by arbitrary political decisions, perform worse than contestable private enterprise. Obviously, the mechanism of exit can work on socialist markets with the same force as on capitalist markets. Also, market socialism can keep trial-makers reasonably well separated from error-eliminators, thus preserving the necessary independence of error-elimination to a comparable degree as private enterprise.

It is on the side of absent successes that the decisive weakness of market socialism can be located. This type of system is bound to stifle the supply of potential successes for at least two reasons. First, the obligatory rules of collective decision-making and profit-sharing necessarily act as a constraint which discourages or prevents some, possibly important, organizational trials where such rules would be unsuitable, thus decreasing the stream of new trials in comparison with private enterprise, ceteris paribus.

Second, the quantity of risk capital and/or the quality of its allocation will necessarily be lower in market socialism than in private enterprise. One consequence of imposing the rules of collective decision-making and profit-sharing on the capital market is that specialized investors are virtually prevented from appearing, which will limit the supply of risk capital to self-financing, with the well-known efficiency losses, and to banks organized by government, likely to suffer from the earlier exposed failures. Consequently, some potentially successful new trials will be prevented from materializing for lack of resources.

Market socialism thus leads to a disadvantageous combination of a relatively good error-elimination with a relatively poor trial-generation. The effect will be that the rightly eliminated errors are less likely to be replaced by new successful trials than in private enterprise. The organizational structure of production is thus likely to stay chronically underdeveloped, causing a higher level of involuntary unemployment than what contestable private enterprise would achieve in comparable conditions.

The present unemployment level in Yugoslavia, which is higher than in the comparable capitalist countries, seems to illustrate well the present argument. On this point, the Soviet type socialism has a certain "advantage": its surviving errors (wasteful production units), instead of being eliminated, can purposefully be dimensioned so as to keep everyone busy.

Concluding Remarks

Organizational dynamics thus allows us to reach a difficult to refute conclusion: Contestable private enterprise is superior to both centralized entrepreneurship and market socialism in that it is most likely to form better organizational structures with more efficient incentive mechanisms.

It is easy to verify that this conclusion is more difficult to refute than the parallel conclusion based on the theories of public choice and government bureaucracy. Namely, none of the objections to these theories which were mentioned in the introduction can be used against the present argument.

As to its assumptions, the present argument fully recognizes that different individuals can be differently intentioned and differently rational, thus having no quarrel with the objection that not all people are perfectly rational opportunists. Instead, the behavioral characteristics of individuals which will eventually prevail within an economic system are claimed to largely depend on the system itself, in particular on the type of the contests (selection) which the system implies.

As to its deductions, the present argument is not built on the incorrect claim that hierarchies are bound to be incentive-incompatible. On the one hand, the problem of incentives is recognized as possibly aggravated by the problem of tacit knowledge, which shows that hierarchies are threatened not only by poorly motivated competence but also by possibly well-motivated incompetence. On the other hand, both these problems are regarded as very difficult but not quite impossible to solve. Consequently, large efficient hierarchies are not claimed to be deterministically infeasible, but only very difficult to find and keep among the vast majority of similarly looking but poorly performing variants.

In this way, the present argument is made fully resistant to all theoretical and empirical evidence presenting cases of successful hierarchies and/or failing markets. All such cases can easily be accommodated, for what is claimed is not that markets are necessarily better than hierarchies, but only that the system of contestable private enterprise is likely to obtain a better performing mixture of markets and hierarchies than any other system.

The accusation of sweeping too widely does not apply to the present argument either. By focusing on the genesis of organizational structures rather than on their static appearance, this argument makes a clear distinction between government hierarchies and private enterprise hierarchies. Government hierarchies are not criticized for being hierarchies, but for being the fruit of centralized entrepreneurship. This is claimed to be the reason why these hierarchies are less likely to become and stay efficient than apparently similar private enterprise hierarchies which have formed and survived under the system of contestable private enterprise.

Two qualifications are necessary, however, in order to avoid possible misinterpretation of these conclusions. First, it should be emphasized that the present argument has been limited to the system of production, while the question of which final demands should be satisfied has been left open. This means that this argument should not be interpreted as defending some extreme forms of laissez-faire. A priori, government has not been disqualified from conducting a wide array of policies outside the production sector -- e.g., concerning final consumption, general work conditions, and environmental protection. Even some highly paternalistic or welfare type economies may thus be given good marks in the present comparison, provided they allow private enterprise to compete in the production of whatever merit goods government might wish to be consumed. Moreover, as I show in Pelikan (1985), government may also be allowed, and indeed required, to intervene directly in production, in order to protect the contestability of markets, and to increase the supply of entrepreneurship if this proves to be insufficient.

Second, the term 'contestable private enterprise' refers to an entire category of economic systems which may still differ from each other in many important aspects. Therefore, the property of belonging to this category should be regarded as necessary, but not sufficient, for a successful economic system. What I claim is that without contestable private enterprise -- that is, without institutional rules which make room for contestable markets -- efficient organizational structures and incentive mechanisms are unlikely to appear and survive. On the other hand, I do not claim that any system of contestable private enterprise must necessarily be successful. For instance, systems of this category which are too tolerant to predation, or too inhospitable to entrepreneurs by overprotecting creditors and/or consumers and/or labor, would likely suffer from high level of absent successes, thus failing to develop efficient organizational structures. Much research is still needed to determine in detail all the properties which would enable an economic system to develop efficient organizational structures in a given socio-cultural environment. Far from knowing how to find such a system, all I claim is that it would be futile to search for it outside the category of contestable private enterprise.

Notes

1 The terms 'market' and 'hierarchy' are used here in the sense of Williamson (1975). Hurwicz (1971) is an example, formally impeccable, of such a simplified application of the markets vs. hierarchies dichotomy to the comparison of economic systems.

2 The basic references are Niskanen (1971), Buchanan and Tollison (1972), and Buchanan, Tollison and Tullock (1980).

3 A critical survey of these arguments attacking their assumptions and conclusions is in Greffe (1981)

4 An ingenious solution of the incentive-incompatibility problem was proposed by Groves (1973), and elaborated in the context of central planning by Loeb and Magat (1978).

5 Reference should be made to the famous quotation from Schumpeter (1942; ed. 1976: p. 84): "... the problem usually examined is how capitalism administers existing structures, whereas the relevant problem is how it creates and destroys them." The present argument will not, however, be limited to capitalism, but will embrace different economic systems, and different types of incentive mechanisms within them.

6 In this respect the present argument comes close to modern transactional analysis, in particular as developed and applied by Williamson (1975).

7 An example of classification of hierarchies at the firm level is in Williamson (1975) who distinguishes three types: U-form, M-form, and corrupted M-form. At the economy level, a parallel classification of hierarchies in terms of centralization and decentralization can be found in discussions on economic reforms in the socialist economies (see, e.g., Nove, 1977).

8 This concept has appeared in economic literature under different names, such as 'general rules' (Hayek), 'economic constitution' (J. Marschak, Buchanan), 'economic regime' (Hurwicz), 'property rights' (Demsetz), 'institutional framework' (a generally used term). Since the term 'rules' is sometimes also employed in the sense of 'behavioral rules', describing the actual behavior of a unit, it may be useful to underline the difference between the two alternative uses of this term: 'institutional rules' have the meaning of constraints imposed on the space of variants of 'behavioral rules'.

9 In a loose but illuminating biological analogy, the relationship between the institutional rules and the organizational structure of an economic system could be compared to the one between the genotype and the phenotype of a living organism: the genotype stays constant, while channeling both the functioning and the organizing of the phenotype.

10 The closest economic literature has come to dealing with such processes is in the writings on coalition formation, the design and the implementation of long-term employment contract, and the dilemma 'exit or voice' as beautifully stated by Hirschman (1970).

11 In this way organizational dynamics closely relates to the newly developing theories of self-organization and autopoiesis. Zeleny (1980) is probably the best reference for a survey of these theories and their applications in the social sciences.

12 The impact of this constraint on the feasibility of centralized economic systems is examined in Pelikan (1969).

13 It seems that the influence on human behavior of associative preferences, relatively independent from allocative preferences, might help to explain some of the bureaucratic costs and distortions in large hierarchies which Williamson examines in his forthcoming book (Ch. 6). The explanation offered would be that the participants of a large hierarchy perceive much more sharply and directly the associative outcomes of their actions -- such as the personal relationships formed, the power and status gained -- than their contribution to the allocational gains or losses of the entire hierarchy. On the other hand, even if a market is also frequently used for satisfying some associative preferences -- such as making and maintaining social contacts, exchanging news --, the allocative and associative outcomes can be quite symmetrically perceived and easily compared. Indeed, each market participant feels rather directly the relationship between the social intercourse enjoyed and the deals made.

14 Biology offers an interesting term for denoting such a constraint, namely, the constraint of morphogeny (Gould and Lewontin, 1979). This term was coined in a discussion which is likely to have important implications even in the social sciences. The general argument is that, contrary to what the neo-darwinian orthodoxy implies, natural selection is not the only determinant of the forms of life, and need not lead to their optimal adaptation to the environment. The reason is to be sought in the limited organizational possibilities -- the inherent constraint of morphogeny -- of the material of which living organisms are made (cf. the inherent properties of atoms constraining the feasible forms of crystals). In other words, adaptation is not to be regarded as unbounded optimization in terms of parameters exclusively given by the environment, but rather as optimization under the constraint of morphogeny -- that is, limited to the structures which are feasible, given the constituent parts. If this constraint is strongly binding, it may determine more features of the resulting structures than what is determined by the selective pressures of the environment. In economic literature, Alchian (1950) was very close to expressing this idea when

he emphasized that selection is always limited to the set of actually tried alternatives. Clearly, it is the constraint of morphogeny which marks the outer limit of such sets. This means that some forms of organizational structures may never appear as the candidates for selection -- such as perfectly profit-maximizing firms, or optimally planning socialist economies -- simply because of the limited perceptual, communicational, computational, and moral capacities of the individuals who are to constitute them. Moreover, different cultures at different levels of development are likely to imply different sets of potentially feasible organizational structures -- that is, different constraints of morphogeny.

15 Strictly speaking, this is not a complete view of the dynamics of economic system, for it assumes that the institutional rules which constrain both these spheres of behavior are exogenously given and constant. In order to further develop this view, IR should also be recognized as possibly evolving -- e.g., through changes of legislation and/or custom. This type of dynamics, appropriately denoted as 'institutional', would pay attention to yet another sphere of units' behavior -- namely, their proposing, accepting or refusing changes of IR. While keeping open the possibility for such an extension of analysis, the present paper is limited to organizational dynamics, examining the respective ways of different given IRs to channel organizational processes, and thereby to form OSs of different qualities.

16 A simple computer analogy may help to clarify this concept. As is generally known, one distinguishes between "software" information which a computer can receive by its inputs, including both data and certain programs, and the "hardware" information, embedded in its construction. The latter consists of built-in programs and parameters, which is what must be contained in the structure of any information processing system, in order to enable it to receive and act upon a certain software. Intuitively, "software" corresponds to communicable information which can be handled by allocational processes, and "hardware" to the tacit knowledge which must preexist within the organizational structure running these processes, which must be handled by organizational processes.

17 This indicates a way in which the traditional theory of human capital, which assumes this capital to be homogeneous, could introduce considerations for non-homogeneity, and thus avoid the criticism raised by Ysander (1978).

18 The competition referred to here is of the dynamic type whose main task is to reveal information which could not be revealed otherwise, as recently studied, in a slightly different context, by Nalebuff and Stiglitz (1983).

19 The paradigm of biology gives here the right intuition: an entrepreneur more closely resembles the enzyme in a biochemical reaction than the constructor of a machine. The believers in self-managed socialism who expect the theories of self-organization to support their beliefs should note that even a cooperative, administered in the most democratic way once it has been formed, required an entrepreneur to initiate its formation.

20 See, e.g., Groves (1973) and Ross (1973).

21 In other words, the problem of incentives is seen here as a design problem in the sense of Simon (1969), which a positive theory can help clarify but not fully solve. Similarly as no chess manual can tell how to become a chess master, no positive theory of incentives can tell how to design and implement a high quality incentive scheme for a specific group of people in a specific environment. And similarly as there is no other way to tell excellent chess players from the mediocre ones than by letting them play a tournament, the present argument claims that there is no other way to recognize the talented designers of incentives than through competition (contests) and selection.

22 While the works in the Schumpeterian tradition often treat technological and organizational innovations together, the present approach makes a clear distinction between the two and focuses on the latter (cf. section 2.1).

23 Obviously, this is nothing more than one possible way of describing the well-known logic of a general evolutionary process without an omniscient creator. For instance, Schumpeter (1942) denotes trial-generation as 'innovation' or 'creation', and error-elimination as 'destruction'. Modern writers, such as Nelson and Winter (1982), often use the biological terms 'mutations' and 'selection'. The presently proposed terminology seems to have the advantage of being intuitively transparent in various economic problems, while clearly marking that the discussion is not about social darwinism or sociobiology.

24 As Professor Hirschman has pointed out to me, it is much easier to empirically observe the first type of failures than the second. While this is undeniably a drawback of the suggested concepts, I believe that we must learn to live with it, for the poorer observability of the second type of failures does not at all imply lesser losses imposed on the economies which suffer from them. One way in which we can try to cope with this drawback is to replace some empirical observations by mental experiments and logical deductions. More precisely, we can try to deduce the fate which a hypothetical talented entrepreneur would meet in different economic systems, and thus discover which systems are more likely to suffer from absent successes than others. In this way we can clearly distinguish the cases when the lack of talented entrepreneurs is due to the socio-cultural environment, from the cases when the system itself would make it difficult for talented entrepreneurs, even if they were abundant, to make themselves useful.

25 The concept of contestable private enterprise is closely related, but not identical, to the one of contestable markets as introduced by Baumol, Panzar and Willig (1982). To recall, such markets are defined by zero costs of both entry and exit. In contrast, contestable private enterprise only provides the necessary institutional framework for the formation of such markets, by not imposing any institutional constraints on either entry or exit. The actual formation of such markets may, however, be impaired for various other reasons -- such as scarcity of entrepreneurship.

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