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THE THEORY OF THE POPULATION ECOLOGY CONSIDERED BY THE ADAPTATION THEORIES

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ABSTRACT

The idea of radical change in organizations has been discussed mainly from two theoretical positions. One, driven by adaptationist theories, argues that change is possible because the environment is not something immutable and managers can be active agents of it. The other, supported by the population ecology theory argues that change is impossible because of structural inertia that faces all organizations. In this paper we review each of these approaches and discuss the implications of the theory of population ecology in the light of adaptationist theories.

KEY WORDS: Population Ecology; Theories Adaptation; Radical Change; Organizations.

INTRODUCTION

The discussion about what the possibilities available to individuals and organizations cope with change is a point of confrontation between the theories of adaptation and selection. While the former promoted the concept that organizations have the ability to adapt to the environment in

which they are, the latter holding the opposite view, with the environment in charge of selecting the organizations that survive and those without.

In order to oppose the adaptationist theories and so-called ecology poblacional[1] a revision of them, develop the assumptions on which sits the latter and is discussed in the light of such adaptationist theories. Finally we tested some conclusions.

DEVELOPMENT

What are the possibilities of change that organizations have compared to what happens in the environment? What is the role of managers in this process? The answer to these questions lies in the center of debate among theorists adaptationist and those in favor of the selection as a mechanism of change.

The environment is a variable that is associated with change. From systems theory (Bertalanffy, 1956) the notion of the organization as an entity open to the influences of context is installed permanently. The stimulating environment, with its uncertainty and dynamism, the organization that fits your modifications (Frishammar, 2006). Thus, the change is likely to respond to environmental organizations with which they interact.

The other issue to discuss is the degree of free will that can develop individuals in general and particularly managers, in their capacity as such and be within organizational boundaries where they work.

As such, the division between theories of adaptation and selection is the degree of dominance that has the environment on organizations and change[2] on the discretion to be exercised by managers in this situation. On one side is the population ecology. This theory advocates that the change is embodied by the selection of organizations and considers the environment makes very little or no role to be played by management. The other theories are closely related to strategic choice, whose assumptions are exactly opposite. Here it is believed that

1 For practical reasons, we will use indistinctively the expression population ecology or poblational ecology.

2 This paper centers in the radical change, reason why the incremental changes, which take place constantly in any organization, are not the object of this discussion.

the context is not unchangeable, so it does not dictate the rules and organizational change are the managers who have the ability and power to intervene decisively environment (Astley and van de Ven, 1983).

The debate about whether organizations adapt and survive the environment or are selected for this is one of the oldest and found burning in organization theory. While some compromise proposals (eg Baum and Singh, 1996; Singh, 2006; Hrebiniak and Joyce, 1985; Volberda and Lewin, 2003; Zammuto, 1988) have tried to build bridges for the integration, the truth is that the debate continues.

This dispute remains now for two reasons. The first is due to the centrality of the concept of change in organizations. This is an important determinant of the dynamics in organizations as it relates to development, decline and disappearance of them. The second reason is a component of political and practical. If the change could not be generated and managed, the importance and power of managers would be greatly diminished. In this line of thought, which makes the theory of population ecology is to cancel the role of rationality and power of the leaders in favor of an impersonal and deterministic environment.

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Adaptationist theories

Strategic Option

Until the early '70s, the school of the contingency (Burns and Stalker, 1961; Lawrence and Lorsch, 1967 Woodward, 1958) dominated the field of organization theory, assuming that the environment had to adopt certain organizational structures. This provides a good fit and reached certain effectiveness. Consistent with this view, managers are assigned to a reactive role, since they were responders, even passively, to the demands of context.

Child strategic choice (1972, 1997) breaks with these budgets assume that it is the environment that should make such rules for organizations and managers actually have a role in the life of them.

The environment is not regarded as something untreatable but can be influenced and shaped, to some extent by the actions of managers. Companies can, for instance, to define what

field is located or what is the same domain to determine its environmental performance (Daft, 2000).

Management is responsible for interpreting signals from the environment through information-seeking process. Then consider the various options and the power of the hierarchy decides to adopt courses of action which, although not optimal, are satisfactory for the situation that arises. Managers are then autonomous individuals and provided with bounded rationality but enough to cover the phenomena that appear and act accordingly (Cyert and March, 1963).

Associated with this theory you can find other thoughts that, although somewhat different, maintain a common set of assumptions. Such is the case of the theory of resource dependence (Pfeffer and Salancik, 1978) and vision-based enterprise resources or Resource-Based View (Wernerfelt 1984; Barney, 1991). The dependency theory states that the degree of autonomy of an organization depends on the criticality, access and ownership of resources that are available and are in possession of other organizations and how this dependence can be reduced through reduction mechanisms environmental uncertainty. The second of the theories, given their importance for the analysis, will be addressed below.

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Adaptationist theories: Resource-Based View (RBV) and dynamic skills theory

The first of these theories conceives of firms as heterogeneous sets of resources (Penrose, 1959). These resources, due to the historical trajectory that emerged in each company become difficult to imitate by other firms, becoming the basis for sustainable competitive advantage over time (Wernerfelt, 1984; Barney, 1991).

Resources are considered fixed only in the short term. In the long run, management may modify this set of resources through the perception of opportunities and linking with other resources, all from the different strategies adopted (Lockett et al., 2009).

According to the RBV, managers have a key role in regard to change and adapt the combination of organizational resources to environmental demands. They are in this sense, seen as adaptive and proactive agents to context. As said by Lockett and others (2009), the managers,

through their decisions may change the nature of competition.

Linked to the possibility of combining and recombining resources in order to maintain the competitive edge there appeared another development: the theory of dynamic capabilities. The dynamic capabilities are defined as "the ability of a firm to integrate, build and reconfigure internal and external powers in order to respond to rapid change in environmental conditions [Teece et al., 1997, p. 516](1).

Emerging during the 90s, this theory complements the RBV as long as it considers that the unique resources of a firm are not enough to sustain their competitive advantage if it does not develop the ability to recombine them permanently (Helfat et al., 2007).

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Population Ecology Theory

This approach recognizes an important milestone in the work of Hannan and Freeman (1977), who published their ideas under the title Population Ecology of Organizations.

The main components of the model highlights the role of environment in determining the survival of organizations. The selection of new and different organizational forms in the level of populations of organizations occurs as a result of structural inertia, which is proposed as the main explanation for the lack of change (Betton and Dess, 1985).

The question generated by the development of the theory is: Why are there so many kinds of organizations? To explain this diversity environmentalists set the response in the creation and death rates of populations of organizations. The end or survival do not calibrate from its ability to change but the environment's ability to select and retain certain organizations and discard others.

The thesis starts with the notion that the organizations develop structural inertia that prevents them from carrying out radical changes. The higher the inertial pressure, the lower the adaptive flexibility and it is more likely that the logic of the environment will be what is imposed.

These structural inertias can be caused by internal or external factors. The first group includes investment in plant and equipment or sunk costs, the reduced information received by management, internal political struggles that hinder the redistribution of resources and constraints emanating from the history and tradition. External sources of inertia include legal and financial

barriers that are imposed on the input and output of markets, external constraints on the availability of information, social legitimacy, considerations that limit the flexibility of the organization to change its ways or activities and the problem of collective rationality (Pfeffer, 1992).

In a later work, Hannan and Freeman (1984) review the place occupied by the concept of structural inertia to speak, not of an absolute structural inertia but relative to the speed of change. The previous version anticipated that organizations with structural inertia would not react to stimuli from the environment. The new version predicts that organizations will have difficulties as they change at a slower speed rate than the environment (Baum and Shipilov, 2006).

The role assigned to managers as agents of change is almost nil because of the concept we have on individuals and what they can cause through the organizations they manage. Managers are seen as people with limited rationality that prevents them from understanding the full complexity of information presented to them and make an optimal decision.

If rationality is not restricted, the conditions present within the organizations would also not ensure that the objectives can be carried out. This is because the will of an individual or group are not sufficient elements to ensure that decisions are implemented as intended. There are organizational elements, like politics, that prevent a linear cause and effect between what a person intends and what ends up happening then.

For proponents of this view, even if we could remove the limitations raised above it would not be enough. Events that occur outside of the organizations are completely random and therefore are beyond the control of management.

In short, there are both internal and external conditions, individual and organizational, not possible to link the intentions and means of managers to the final results.

At this point, with the aim of classifying within the sociological paradigm seen up to now, you can use the categories of Burrell and Morgan (1979). They propose as a criterion of division in human nature. This has as opposing poles a subjective and an objective view. According to the first, human nature can be described as proactive. In this sense, man is perceived as endowed with free will, which is able to create and modify the environment. He is not an actor in a play but who decides and influences his destiny and human objects that surround him. On the other hand,

the objective or deterministic view says that human beings respond in a mechanical way to situations they encounter in the outside world. It shows that the adaptationist theories involve a proactive view of people and, by extension, of the organizations they lead. In contrast, population ecology theory maintains a deterministic view on these items.

Postulates of the population ecology theory

The following points are stated, in brief, the assumptions that underlie the theory of population ecology:

a) The individual organizations are subject to strong inertial pressures, so they do not create successful changes in their structures and strategies; facing the threats presented by the environment (Hannan and Freeman, 1984).

b) Most of the causes of structural inertia may be summarized as the inability to predict what will happen in the context, due to their constantly changing nature, the limitation of individuals and organizations for the search and information processing and political resistance generated by the change (Hannan and Freeman, 1977).

c) Another cause of structural inertia is the social conditions present at the beginning of each organization. These conditions will shape its form and then give it several features that are difficult to change (Stinchcombe, 1965). This phenomenon then generates an effect of historical dependence or path dependence (David, 1999).

d) The structural inertia, as originally conceived was modified years later when stopping to think in absolute terms to move to be understand them in relative terms (Hannan and Freeman, 1977). Postulates are softened when recognizing that change is possible but as it happens at a pace which is always slower than the environment, the structural inertia continues being present (Hannan and Freeman, 1984, 1989).

e) Without the centrality of the concept of structural inertia one can not explain the variety of organizational forms caused by the strength of environmental selection (Hannan and Freeman, 1989).

f) Every organization presents a technical core and peripheral elements. The first has as its function to ensure the stability of the tasks for transforming inputs into products and services. The second is in charge of tempering, through a series of mechanisms, the impact of environmental changes in the core (Thompson, 1967). There is a hierarchy of inertial forces, which vary according if they correspond to the technical core or peripheral elements (Pugh and Hickson, 2007). The technical core always presents more inertial pressures than the periphery because their components tend to consistency and predictability. Even although the periphery changes, given its secondary character, in the organizational structure, it can not influence the inertia present in the technical core (Hannan and Freeman, 1984).

g) Even though established organizations carry out radical structural changes, then the phenomenon known as liability of Newness (Stinchcombe, 1965) appears, which is typical of new organizations, so that eventually the structural inertia, once again is verified (Hannan and Freeman, 1989).

h) The possibility of learning is only possible if one can make equal, the interior of the organization, the context change rate. (Hannan and Freeman, 1989).

i) One can not change organizational routines and what constitutes a more radical stance, not even admits the possibility of reform of the second-order routines; from which the first depend (Hannan and Freeman, 1984).

j) While recognizing the possibility that organizations can do, on the one hand, activities linked to the stability and other innovative activities, one assigns to both forms a quota of inertial pressure, due to the phenomenon of institutionalization of behaviors (Chen and Katila, 2008).

k) The environment is conceived as something that imposes or determines the rules of behavior of individuals and through them, to organizations. The atmosphere is difficult or almost impossible to embrace, understand and modify.

l) People are thought of as a kind of puppet whose orders are given from the outside world. Therefore, their discretionarily is held as null or nonexistent.

The population ecology theory reviewed in the light of adaptations theories

Henceforth there will be a discussion of concepts related to the theory of population ecology in order to contrast the assumptions on which it sits with notions of change adaptation and organizations. Since these assumptions are closely intertwined, they are not checked against each other, but we will work with an integration of concepts, so that is functional to the discussion.

Structural change is possible

One example cited by the authors of the population ecology theory, will serve as an introduction to the analysis of this point. They note that when International Business Machines (IBM), in the early 80s, moved to the market of microcomputers and minicomputers, they did it at a speed slow enough so that competitors adopt the same strategy and come to compete for the same market. Even a company like IBM, considered flourishing at that time, needed a minimum time to assess the new market, stabilize the technology and reorganizing the production and marketing activities (Hannan and Freeman, 1984). According to these authors, the structural changes due to their own inertial nature, involve a time period long enough to allow other players to set up and endanger the change. However, it was the same IBM that years later would drastically change the nature of its structure and operations to dispose of all business related to the production of hardware, to become a firm exclusively focused on the computer services sector (Moss Kanter, 1990). Because at some point they realized that their business model could no longer be tied to the production, it had the speed to switch to an entirely new and adequate form for the need for computer services.

Longitudinal studies have also confirmed that changing structural configurations is possible with positive outcomes for organizations that have applied it. Siggelkow (2002) shows, for example, how a mutual investment fund performed through time, changes in the core elements of its structure, which resulted in an improvement in their performance and better adjustments to the demands raised by the financial market.

An implicit assumption behind the theory of population ecology is that the need for radical change is always present. This is not necessarily so. Research has proven that change windows

are not very extensive. In this sense, Gersick (1991) develops the theory of punctuated equilibrium (punctuated equilibrium). In it, he conceptualized it not as a homogeneous and linear process, but as the persistence of long periods of incremental changes that are discontinued for short periods of radical change. This suggests that organizations do not have to make central transformations all the time but be alert and to achieve change in a timely manner.

The environment can be modified

Structural inertia seems not to commit equally to all types of organizations. Large companies have the resources and the ability to modify the conditions of their environment. This was clearly shown during the last international financial crisis when the U.S. government came to financially support to enterprises sensible for the American economy, as was the case with General Motors and some first class financial institutions (Moulton and Wise, 2010).

Companies, whatever their size, also have the opportunity to decide on which set of customers, suppliers and competitors they will act. That is, they have the ability to define and redefine the environmental domain in which they participate (Daft, 2000). Moreover, some practical approaches but with empirical support, show how some organizations have decided to shelve the competitive rules of their industry to create new ones, for which new markets are developed and where they emerged as absolute leaders. In this sense, Kim and Mauborgne (2005a, 2005b) point out to create and exploit non existent market conditions so that the competition becomes irrelevant.

Another way to influence the environment is through the various options proposed by the dependency theorists to achieve critical resources for the organization and thus reduce the need for other organizations (Pfeffer and Salancik, 1978). There are three key factors in determining the degree of dependence: the importance of the resources the organization needs to ensure continuity of operations, the possibility of deciding on the location and use of the resources required and their available sources. Given these linkages with other organizations, Pfeffer and Salancik (1978) propose, to manage the uncertainty and interdependence, absorption measurements of portions of the environment such as mergers. They also extend their analysis to other milder forms such as interlocking directorates, joint ventures, associations and cartels.

The agents have the capacity for change

It is true that individuals and organizations suffer from cognitive limitations. However, the collective capacity to generate knowledge may be greater than the sum of individual capabilities. In this sense, the organization provides a framework to overcome these limitations, as from the information processing aggregate levels, which exceed the individual level, such as groups, organizations and organizational networks (Tsoukas and Mylonopoulos, 2002).

Managers, thanks to the power granted by the hierarchy, may provide and operate the structure and staffing of an organization so as to reach the proposed objectives. They are therefore active agents and not mere actors on the stage. Unlike the structural contingency theory that gave them a reactive role assigned to them against the environment, strategic choice theory conceives them as individuals capable of anticipating and addressing, but not entirely, on certain environment variables (Child, 1972, 1997.)

From an interpretive perspective, one states that the environment can be changed because they are the same people who cut in an organization through mental models, fragments of reality with those who build the environment in which they are. According then to the perception that they have of the environment, will be their reactions and stances. Individuals are decision makers, as from the construction of a collective framework of understanding of their environment (Weick, 1979).

The dynamics of change

Organizations have mechanisms that can be used to modify their behavior. In this sense, the theory of enterprise behavior seeks to explain how individuals and the community of which they are part, acquire, process, distribute, integrate and disseminate information within an organization, or to put it into another way, how to learn in organizations (Cyert and March, 1963, Lewin et al., 2004).

One form of organizational learning occurs through the modification of routines. They can be defined as the capacity that can be used repeatedly in some contexts and has been learned by an organization, in response to selective pressures (Cohen et al., 1996). Routines, thus, are the

main argument for both the immobility and the change. As some argue that they are difficult to change, others argue that we can change. Assuming the latter option feasible, it enables organizations to adapt and learn through the transformation of the same routines (Miner et al., 2008). This necessarily denies that routines become institutionalized and crystallize through time and cause what some call learning trap, for which once incorporated behaviors that are considered successful, they tend to be repeated indefinitely, leaving little space for the perception of new problems (Levitt and March, 1988).

If routines are not institutionalized, as proposed by the theory of population ecology, this opens the way that second-order routines can also be altered. This learning, of a higher level of complexity, is what allows modification of reference marks that signify a deeper transformation, or what in terms of Argyris and Schon (1978) is called double loop learning.

On the side of the RBV and the related theory of dynamic capabilities, it is worth saying that the initial endowment is just one element that organizations have. To maintain a sustainable competitive advantage, one requires the combination or relationship among these resources evolve or be modified through time. If the idea of structural inertia mobilization of resources is correct, it would not be possible, as resource endowment remain unchanged. This would cause the combination of resources would be achieved by the competition, creating a vision of companies as homogeneous organizations, thus challenging Penrose's thesis (1959).

The theory of population ecology argues that although changes in the periphery are possible, changes in the technical core are difficult to perform due to its nature and the protection provided by its peripheral elements, responsible for buffering the uncertainty environment. While it may be accepted that the alterations in the center of an organization are more difficult, at present the position is stronger to open said item, so as to get a variety of information through increased contact with the environment (Scott, 1998). As the nucleus begins to lose forms of protection, its possibilities for change would be increased, with which the concept of structural inertia would be relative.

Other concepts that may contribute to this debate are those presented by March (1991) in relation to the exploration and exploitation by the organizations. Exploration activity is one that

seeks new knowledge, while exploitation is the use and development of existing knowledge (Levinthal and March, 1993). The exploration is associated with the idea of flexibility, radical change and innovation, while exploitation is associated with the idea of stability and incremental change. Although the population ecology theory recognizes that some organizations may perform both activities at some point, also both are assigned inability to change as the routines that they have are very difficult to change. Studies on ambidextrous organizations, which are those which benefit from both activities show that these entities are able to achieve higher performance measures and adjust quickly to the demands of the environment, since one of its parts is responsible for finding new routines for solving new problems (Gibson and Birkinshaw, 2004; Raisch et al., 2009). Although part of the organization may eventually be characterized by structural inertia, the other party may terminate the pressures to promote the necessary change.

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CONCLUSIONS

The theory of population ecology is based on two main ideas. On one hand, individuals and organizations are unable to modify their behavior so as to adapt to the demands of context. On the other hand, the atmosphere is regarded as something unchangeable or against which organizations have little chance to influence.

It is true that there are inertial forces that limit the radical changes in organizations. We can not ignore the influence that these processes play in factors such as politics or the limited capacity of information processing of individuals, among others. Nor deny that external factors that strongly affect the outcome of organizational strategies.

Adaptationist theories can help to relativize the assumptions upon which rests the theory of population ecology, while assigned to individuals and organizations ability to adapt and survive in changing environments. At the same time, they do not believe that these environments are intractable and therefore unchangeable, as highlighted throughout this work.

Additionally, different results of studies question the tenets of population ecology. These investigations show that the structural arrangements and processes of an organization can change

and can do so at a rate equal to or greater than that of the environment.

In short, the theory of population ecology has helped emphasize the importance of different factors that influence the ability of organizational change. However, both theoretical contributions and practical reality challenge their deterministic assumptions to argue that organizations can change, adapt and survive throughout time. Then there exist real arguments to at least attenuate its postulates and general implications.

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Please refer to articles Spanish bibliography.