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Comprehensive analysis of innovation in R&D as a cultural practice

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Abstract

The main objective of this study is to analyze to what extent innovation has been disseminated as an organizational practice in three technological companies. Using a qualitative approach and narrative analysis, was investigated the construction of innovation practices adopted in the R&D area of organizations in the southern region of Brazil, which enables their reinterpretation as cultural practices. The analysis of the narratives provided by the interviewees revealed that innovation seems to become more effective from the moment when its practice is internalized by collaborators and is established as an organizational practice. In the three cases under study was possible to observe that the organizational practices for innovation are more strongly based on the culture of those companies that already have a history of innovation for their products and processes, and in which the role of the founder, as an innovating entrepreneur, is fundamental to maintain these practices, although he might not be seen as an organizational myth.

Keywords: Innovation. Research and development. Cultural practice.

Introduction

The organizational structure of most companies, in all economic segments, is made up of units for primary and support functions (SLACK; CHAMBERS; JOHNSTON, 2002; MARTINS; LAUGENI, 2006). Despite the advances in the conception of different forms of organizing resources, mainly the performance of operational and support activities, the central idea of such division remains valid. Complementary and support

areas are involved in activities not directly associated with production. An operational area depends on processes that contribute to product manufacturing or service provision, and production, research and development stand out in an area that is also called product engineering (HILL, 1994; SLACK, 1993).

The operational area adopted, along history, stereotyped characteristics that have given it, within the organizational universe, images that are representative of a pattern, which refers to its technical and technological dimension, of precise definitions, times, processes and methods, while tasks are associated and combined (HABERMAS, 1993). Although evidence has shown the richness of the social life that exists in the production line, formed by the network of interpersonal relations that result from the intense interaction between workers, the mechanistic image of the operational area and of all employees that worked in it was prevalent in the literature of the first half of the 20th century. One of the major reasons for the construction of such stereotype in the operational area was the fact that organizations aim at optimizing the use of their resources, which included human beings (COURPASSON, 2000; PEAUCELLE, 2000; FELLS, 2000).

This normative and functional approach to the world of work and, specifically, of operational activities, had a great repercussion and influenced managers and researchers during decades, and receives special attention in the specialized literature until today, despite the growth of evidence that is opposed to this vision (VERGARA, 2006). The central axis, which consolidates the vision opposed to this approach, is supported by the rejection of this form of managing people assigned to the operational area, that treat them as machines and equipment, with no humanity and incapable of thinking, having no feelings or emotions.

As new organizational theories developed, individual and collective knowledge became relevant for the establishment of competitive advantages, which demanded that the manager should have a new position in relation to coordinating people in the operational area (BROWN; DUGUID, 2001; CHAPMAN; HYLAND, 2004; VERGARA, 2006). The main result was the confirmation that individuals in manufacturing left their supporting role and now play leading parts. In this new approach and in agreement with the Resource Based View (RBV), broadly known among researchers in management, technology has been interpreted as a specific type of resource (HAYES; PISANO; UPTON; WHEELWRIGHT, 2005).

The coordination of the different types of knowledge in organizations, incorporated into the process of conceiving technological innovation, both for products and production methods and techniques, is usually the role of the research and development department (R&D). With its original concept based on objective, normative and technical criteria, R&D was structured to perform the operational activities of basic and applied research, but always focused on economic sustainability (WESTWOOD; SEKINE, 1988; STOKES, 2005).

Along time, occurred an expansion of R&D functions, through the inclusion of "use" and "usefulness", which transcends mere economic viability and helps the organization to visualize the new benefits of the activities in the area (O´CONNOR; AYRES, 2005). Moreover, the concept of R&D, presented by the Oslo Manual (2005), defines its activities as any creative and systematic work conducted in order to increase the stock of knowledge, including knowledge about people, culture and society.

Contrary to the perception a priori, based on common sense, according to which the innovation practices in the R&D area should be commonplace, due to the performed activities, the specialized literature describes the tendency of this organizational unit to be predominantly conservative, technical and used to execute activities that are objectively described and characterized. This reality is based on its composition, both in terms of people, the more pragmatic and technical formation, and of different kind of objects that make up infrastructure, machines and equipment, tools and manuals of technical norms, which prioritize activities that reflect the mental model of the technicians, testing and retesting, dealing with explicit and objective knowledge.

However, particularly in the last two decades, new research and development conceptions, based on organizational innovation and marketing concepts, have become the guiding principle for the strategic redirectioning of the R&D area. Technicians were motivated and stimulated to interact with the other organizational units, following the systemic paradigm and the holistic approach of an innovative conception of both products and processes. Moreover, by means of the reinterpretation of organizational structures and their assignments, R&D technicians started interacting more intensely also with the external environment. Such interaction provides favorable conditions for the influence of organizational culture.

The main objective of this study is to analyze to what extent innovation has been disseminated as an organizational practice in three technological companies. Using a qualitative approach and narrative analysis, was investigated the construction of innovation practices adopted in the R&D area of organizations in the southern region of Brazil, which enables their reinterpretation as cultural practices. This sector was chosen because of the centralization that these companies adopted, of the innovation activities performed in this organizational unit in order to make resource control more effective for the development of innovation in these two dimensions. This study is divided as follows: after this introduction, its theoretical framework is described, based on two main categories, innovation and organizational culture; the method is then described in section three; section four presents the organizations under study; and in section five, the narratives are analyzed. In the last section, the final considerations of the study are made.

Theoretical framework

Innovation

Innovation is inherent to evolution, because it changes the way that something is accomplished. Therefore, if we accept the scientific evidence that confirms the evolution of species based on their capacity to adapt to the changes of conditions in the environment (CARWIN, 2003), innovation itself is not that much innovative. Innovative may be its "(re)discovery" by human beings, its analysis, evaluation, conceptual appropriation and, finally, extrapolation of the concept to a wide variety of actions.

The description of human beings as the main role player of innovative behaviors is based, doubtlessly, on our condition of being the only mammals that can reflect and analyze their acts cognitively and consciously, overcoming the limits of their physiolog-

ical conditions and representing, therefore, an incontestable superiority of biological initiative (CHANLAT; BÉDARD, 1996).This condition per se may also be classified, somehow, as innovative when analyzed under this perspective.

Regardless of point of view or angle of analysis of the historic antecedents of the act of innovating, there is a difference between conscious, cognitive and deliberate innovation by human beings and other species, which is adaptive. It is the option of choosing between alternatives, even when not many are available, which remains a prerogative of human beings alone. The only species with the cognitive capacity to analyze the situation, make a choice and take a stand (GEERTZ, 1989; HOEBEL; FROST, 2001).

As we analyze the history of humanity, we see that when the rhythm of innovative development accelerated, it was marked by significant disturbances of the social order, such as conflicts and wars, widespread diseases and major revolutions (HUBERMAN, 1977; MORAES, 2000). Those were events that led to relevant changes in the way life, demanding that human beings reflect about their modus vivendi and the forms in which they interact with other living beings. This finding gave rise to some preliminary conclusions: human beings innovate more when under pressure or, yet, when forced to change actions by means of changes in the conditions of the environment in which we are integrated (NIGHTINGALE, 1998; HARGADON, 2005; COZZARIN, 2006).

The changes in how we produce goods and services to respond to consumption needs along the evolution of humanity also played a prominent role in world history. They were responsible, also, for some of the most relevant changes in social and political structures, as well as in the form of organizing resources for production, which affected costs and price formation, logistic distribution and access to consumption markets (HUBERMAN, 1977; DOSI, 1988; CHANDLER, 1992; LANGLOIS, 2003). In sum, we may say that changes in the way resources are coordinated to industrialize products and supply them to consumers affect the conception of a firm, which, in turn, may affect the decision about market strategies to achieve pre-established objectives.

One of the first researchers to investigate innovation in the mode of action of a firm in the market and its influence on organizational results was Joseph Schumpeter (1982), who created the thesis of innovation as “creative destruction”. While most theoretical scientists and researchers evaluated the capitalist system as a problem of managing existing structure, Schumpeter introduced the perception of capitalism as a process of creation and destruction of their respective structures. That author also reviewed the evolution of the modus operandi of competition. He found that, along time, competition migrated from pure competition based on price to a dispute for consuming markets based on quality and service quality, and stopped at the search for a competitive strategy by organizing industrial resources to focus, mainly, on large scale production.

As he improved his approach, Schumpeter (1982) defended the perception that competition in the capitalist system should be based on the development of new products, new techniques, new sources of supplies and new forms of business organization. This type of competition would be more effective than that based on price reduction, differences due to quality or large-scale production. Therefore, capitalist entrepreneurs that seek different forms of acting by using a strategy of investment in new products,

new production techniques, new suppliers, etc., deserve extraordinary profits that result from that business positioning.

His studies inspired researchers, who expanded the concept of innovation and applied it also to the management of organizational processes, and new forms of organizing resources and making decisions were conceived according to the complexity present both in the external world and in the organizational universe. The competence in organizing resources innovatively and making decisions to optimize internal resources and the use of prospected opportunities in the market defined the basis to build organizational competitive advantages (NELSON; WINTER, 1982; FOSS; FOSS, 2004; VOLPE; BIFERALI, 2008).

For Rodney (2000), there are three large categories of innovation: (i) innovative strategic management to face environmental changes; (ii) management of innovative change initiatives; and (iii) innovation by means of knowledge creation and application. Within each of these categories, innovation is segmented in traditional literature as incremental and disruptive innovation, and the author suggests one more segment: innovation associated with knowledge. This inclusion results from the author's understanding that knowledge building includes the creation and recognition of knowledge that is socially built. Therefore, organizations are innovative when they leave room for new knowledge to be recognized and applied, Chaharbaghi both in processes and in products.

In this sense Chaharbaghi and Newman (1996) confirmed that the term "innovations" is also used to describe the process of change, as well as to evaluate the effect, on individuals, of the adoption of new procedures or products. Innovation may, also, be an idea, practice or material artifact that has been invented or is seen (interpreted) as new, regardless of whether it is adopted. Authors classify innovations into four different types according to their focus: a) on the product or on the service; b) on the production process; c) on the organizational structure; and d) on people.

Miller and Morris (1998) analyzed business model, based on innovation, and found three theoretical dimensions upon which they are structured: economic, learning processes and management. The economic dimension is characterized by change from the industrial economy to the economy of knowledge. Learning is the central process to create knowledge and generate innovation. Finally, management defines organizational structures and means by which innovation and the other activities of an organization are conducted. According to the Oslo Manual (2005), technological innovation appears through change in products and processes. Innovative products demand changes in processes to be taken to the market, and processes are build and performed by people, who act aligned with their idiosyncratic interpretation of the environment, and are, therefore, subject, to a wide variety of cultural influences.

Organizational culture

Each particular culture has a peculiar way of seeing the world, that is, a perspective to interpret the universe of human experience. A world view normally consists of more generic, wide-ranging and, therefore, more comprehensive concepts about the way life functions. An world view helps, in part, to integrate perceptions and traits built

from a cultural background, and it gives the due support to the interpretation of rules, customs, behaviors and attitudes. Because of the high degree of complexity, abstraction, subjectivity, comprehensiveness and multiplicity of facets, a world view can hardly ever be expressed accurately (SOUZA, 1978; SCHEIN, 1988; GEERTZ, 1989; HOEBEL; FROST, 2001; SCHNEIDER; BARSOUX, 2004).

Moreover, the most relevant characteristic of current historical contexts, both in the social and organizational spheres, is represented by change (LAKOMSKI, 2001; AHN, ADAMSON; DORNBUSH, 2004). Perpetuated, institutionalized, constant and accelerating, change represents the symbol of modernity in current society, of economic, technological and even social development. Consequently, the word that better defines the current moment is complexity.

Complexity, according to Perrow (1986), Morin (2002) and Chapman and Hyland (2004), is reflected in social situations and environments, while people gravitate in a complex universe, full of meanings. Since childhood, people try to decode the symbols that represent the environment where they live, from the words of their parents and closer relations to their expressions, postures, attitudes and all varied actions, always assigning meaning to them (BLANCHARD; HERSEY; JOHNSON, 1996; ARIELY; CARMON, 2000; HALLER; HADLER, 2006).

This understanding suggests that the concept of culture is essentially semiotic, based on the finding that human beings are, somehow, hostages of meanings that they themselves built. Therefore, we deduce that it is an interpretive science of nature, and not an experimental science in search of laws. The analysis, therefore, is a choice of signification structures, which may be understood as codes established to determine the social base and its importance. It is often a questions of facing the multiplicity of complex conceptual structures, several of them overlapping or tied to each other. Cultural analysis is intrinsically incomplete (GEERTZ, 1989; HOEBEL; FROST, 2001).

However, authors, such as Souza (1978) and Schein (1988), also interpret culture as a set of control mechanisms – plans, recipes, rules, instructions – that intend to control behavior. Several researchers, such as Simon (1967), Stevenson and Bartunek (1996) and Blanchard, Hersey and Johnson (1996), believe that human beings may desire this control (though unconsciously), and, because of teat, they seek support in symbolic sources to serve as references to their actions in the world. Therefore, we may say that if people were not directed by cultural standards – organized systems of significant symbols – their behavior would be virtually impossible to govern, chaotic and based on meaningless actions.

Souza (1978) and Schein (1988) studied the phenomenon of organizational culture and found that it can be divided into three elements, each including a series of interdependent phenomena. They are:(i) principles understood as a set of norms, values, rules, administrative policy, traditions, managerial styles, formal issues (laws), as well as customs, rituals, patterns and informal aspects that are followed tacitly;(ii) technology, understood as a set of instruments, processes, layouts, task distribution, work distribution and organizational flow that provide subsidies to the technical, methodological, scientific, rational and operative functions of the organization.(iii) character as a set of active and affective expressions of the individuals in the organization, subjective expressions, perceptions, feelings and positive or negative reactions of the organizational subjects, characteristics of group behaviors.

Cultural systems should have a minimum degree of coherence because, otherwise, they would not be systems. However, it is also important to remember the fact that highly coherent narratives are usually untrue, as confirmed by the illusions of paranoid individuals and stories told by criminals (PLYMIRE, 1993; HUMPHREYS; BROWN, 2002).Therefore, interpretive work should not be based only on the rigidity of the internal structure and under the shelter of argumentative safety. A good interpretation of anything, of a person, organization or story, should take the analysts to the core of what they intend to analyze. The interpretation should be able to, preferably, trace a curve of the social course, fixing it in a verifiable way. In this sense, cultural analysis is (or should be) a guessing of meanings and an evaluation of the suppositions, which should make it possible to draw explanatory conclusions (GEERTZ, 1989).

Anthropological studies brought conceptual improvements, such as those that refer to moral (and esthetic) aspects of certain cultures and the value elements that were summarized by the term ethos, whereas the cognitive and existential aspects were identified by the term "world vision". Ethos would be represented by tone, character and quality of life, in addition to the moral and esthetic style, which would form the underlying attitude towards themselves and their world, which is reflected by life. World vision, in turn, would be the picture that shows things as they are in the simple reality of nature and of society. This picture probably contains the most comprehensive ideas about order (BERNSTEIN, 2005; BOURDIEU, 2005).

The evidence that confirms the structuring potential of the reality perceived and interpreted by organizational participants confirms the growing interest of managers that try to influence (and often to manipulate) the established organizational culture. The next section presents empirical cases, beginning with the method used and the characteristics of the companies studied, to analyze the results of the study by means of reflective thinking and, essentially, promote the comprehension of the themes approached according to the theoretical lenses resulting from this revision.

A Method characteristics

Was chosen multiple case analysis because it has the best adherence to the objective of the research. Tull and Hawkins (1976, p. 323) claimed that "a case study is an intensive analysis of a particular situation." According to Yin (2010), a case study should be used in the study of contemporary events, as in the situations in which behaviors cannot be manipulated, but in which it is possible to make direct observations and systematic interviews. This study was conducted based on the external view of researchers, without involvement or manipulation of any information, and the facts collected by the study are contemporary. Of the applications for the case study mentioned by Yin (2010), in this study we attempted to describe the context of real life and to conduct a descriptive evaluation.

This description is based on the analysis of narratives built from the unstructured interviews conducted with people that work in the R&D department. After transcriptions, the interview text, that usually results in a nonlinear and often confusing text, is interpreted and rewritten in the form of a cohesive, fluid text in the first person, in the form of a narrative. After that, it is submitted to the appreciation of the people

interviewed for checking, adjustments or contributions. Although this method is not recent, it is still treated as innovative.

Narrative is part of the cultural process in which symbolic systems create and are created by means of discourse, and it is applied in different contexts to communicate different points of view. Fragments of longer narratives and different versions of narratives are part of the everyday discourse of people, who are, after all, beings constituted in the language based on meanings construed to assign meaning to the world in which they live. These are the meanings that are part of the network of conversations, which establish a set of values, symbols, representations, that is, the culture to which they integrate (MOEN, 2006; POLKINGHORNE, 2007).

According to Czarniawska (2000), the method of narrative analysis is considered adequate to unveil to the investigator the process used by the narrator to interpret things, particularly indicated to evaluate an individual's interpretation of subjective themes, such as organizational culture. As the texts are interpreted and created in each word and sentence, the contextualization of the narrative becomes obligatory because the discourse is constructed according to objective and subjective elements that the investigators find in the environment where they are inserted and interpret them according to their own assumptions, results of their own personal and professional experience. These assumptions are filters, behavior patterns, attitudes and truths or untruths, which are used by the subject to characterize the determined situations, that is, to serve as a classification parameter of the nature of the occurrence (RIESSMAN, 1993).

Cases under study

As it was a comprehensive analysis of a phenomenon in some specific organizations and because of the method chosen for the study, in this section we present details about the organizations under study which are relevant to the understanding of the context where the interviews were conducted. The companies under study are called here Alpha, Beta and Gamma to keep their privacy.

The history of the Alpha company begins around 1960 when a businessman born in a town in the metropolitan area of Proto Alegre, Brazil, decides to produce hydraulic pumps. Talented to perceive the needs of clients, he chose to create pumps for wells in tannery, present in a large number in the region. The initial concept of the pump was German, but as a result of its application, the entrepreneur improved the equipment in a way that the final product was better than the original in several aspects.

After that, he started a production line for pumps especially for viticulture to face problems with wine transportation in tank trucks. The recognition of that innovative work in the pump segment had a national repercussion and reached the largest oil company in the Brazil, Petrobrás. To solve the problem of suction pumps with higher levels of efficiency, Petrobrás contacted the entrepreneur with an offer to study the question and create new technology for the solution.

The technology developed in partnership with Petrobrás was very successful, and the company became the preferential supplier in the segment of suction pumps for

oil. Based on the support of public policies, whose purpose was to promote the technological development of Brazil, the partnership with Petrobrás was responsible for the very fast growth of the company, both in income and in number of employees, in addition to the economic and financial structural organization provided by the high level of profitability generated by the operations.

With these characteristics, the company became a type of star in the corporative world and attracted the attention of world players in this business segment, particularly of an American company that finally made the entrepreneur an acquisition offer that he could not turn down. The transfer of the controlling interest in the capital stock occurred in the 1990s and resulted in important changes in the management structure. This way, a new phase began in that organization's life.

The Beta company was set up in the 1960s in a city of the metropolitan area of Porto Alegre, Brazil, as result of the initiative of an innate entrepreneur, whose expertise in mechanics was outstanding. Since a very young age, he had a strong connection with machines and equipment, which made him go to college and graduate, at 17 years, from one of the technical schools that are reference in this area in the city of Pelotas, Brazil. Immediately after that, he was accepted in the renowned Varig School, in Porto Alegre, where he specialized in aeronautic mechanics and electronics and became a well-known specialist in the company, in the area of electronic control of airplanes. That experience was fundamental for his next steps, particularly in the area of innovation, research and development, at the same time that it made it possible for him to face a new challenge: maritime navigation.

It was based on the opportunities identified in maritime navigation that his company was created, and its first developed and sold product was an ICR intercommunicator, at the time manufactured in a small shed. The development of equipment opened the doors of Estaleiro Só to the entrepreneur in the golden age of Brazilian naval industry. In need of customized technological solutions, the naval sector had a series of problems to be tackled. Along the years, the entrepreneur developed and manufactured products, such as the motors that are basic components in analogical automation, navigation systems, gyroscopes, radiogoniometers, as well as in the control of the hydraulic system of rudders used in several vessels. Based on the tested technical competence to solve specific problems, the company was invited to participate of the II National Plan of Naval Construction in Brazil, in the 1970s, which brought favorable conditions for the consolidation and growth of the organization and made the company a known national reference in its segment.

The success of the company also reflected in other numbers. From a 24 m2 shed and four employees, the characteristics of the companies in the early 1960s, an organization was built and moved to a physical built area of 8000 m2 where 300 people worked in the early 1980s, when the entrepreneur had to face a new challenge: The bankruptcy of the Brazilian naval industry.

It was in this scenario that the entrepreneur again demonstrated his flexibility and entrepreneurship. Based on an order, insignificant at the time, from the Brazilian oil company, Petrobrás, made some years before, the company developed and produced a line of electric actuators, equipment for the automated operation of valves in process industries, such as oil and sanitation industries. Although seen as a very innovative product at the time, it was not representative in income generation.

However, after the naval crisis, the entrepreneur decided to invest in this line of products, and in the 1990s it became the major competence of the company and its flagship product in gross income generation. At the time, the company was undoubtedly helped by the economic context of opening of markets and globalization. While the market offerings represented a risk to many companies, in some cases even taking them to bankruptcy and the end of operations, for others it meant a unique opportunity of expansion, which was the case of the Beta company, which specialized in industrial automation and served other companies that sought greater efficiency. His bet was proven right, and the company consolidated a new technology and became the only Brazilian manufacturer of products for the Brazilian oil and gas state company.

The third company, called Gamma, is a chemical company that has been in the Brazilian and Latin America market for forty-seven years as a company that develops products and services for painting and gluing, and known for its development of innovative solutions and customized for several sectors, such as shoemaking, furniture, civil construction, tannery and metal and mechanical industry. It has more than five hundred employees in the units in three Brazilian states, and its annual income in 2010 was more than 120 million dollars from the sales of almost two thousand and five hundred items, such as paints, varnishes, putties, textures, adhesives, solvents, additives and others.

With a family in its origin, the company was his at the age of twenty three years. Working at the time since he was thirteen years old in house painting, decoration, billboards and ornaments, mainly in balls in immigrant settlements, the entrepreneur always tried to do the service requested with quality and in a particular way, especially in terms of the colors used, that he himself prepared. His professional ability and competence ensured his success and brought him clients and financial independence. Working independently and feeling satisfied, he did not even consider opening a company. However, his neighbor, about to close down a small paint factory, looked for him and offered him the business.

After forty years of dedication to the company, the founder decided to leave his executive position in 2002, and started participating in social activities as a volunteer and for leisure. He left management in the hands of his two sons, who follow the path of entrepreneurial success confirmed by the opening of one more branch in the northeastern region of the country, this time in the state of Bahia, two years ago.

Narrative analysis

The literature, both seminal and more contemporary, has emphasized the importance of organizational culture, from its construction to the events that mark its transformation due to its potential to developing organizational abilities and competences, which support the implementation of previously devised strategies (GEERTZ, 1989; HOEBEL; FROST, 2001).The organizational structure may, therefore, be perceived and interpreted as a weaving of social relations around myths, narratives, beliefs, rules, norms, symbols, among others, that originate the cultural components of the organization (SOUZA, 1978; SCHEIN, 1988).

Innovation, in turn, has been praised, markedly in the present day, as an obligatory requisite to ensure organizational competitiveness (HUBERMAN, 1977; DOSI, 1988; CHANDLER, 1992; LANGLOIS, 2003), particularly of the industries based on technology, the case of the three companies under study, Alpha, Beta and Gamma. However, innovation, whether in product or process, is based on change, both in thinking and acting, as in the form of perceiving, interpreting and adapting to it, which, in a way, contradicts the predisposition of human beings, who seek stability and safety most of the times and as part of the organizational environment.

To evaluate how organizational practices reflect the new organizational strategic directions focused on innovation, this qualitative study was conducted using in depth interviews and narrative analysis. A total of nine employees in the area of R&D of three organizations, which showed the reinterpretation of internal routines focused on innovation, and reflexes on organizational culture. Although these employees are not named here, the reflection below arose from the content of their narratives.

During the study, we found evidence that confirmed the theoretical assumption according to which the area of R&D is characterized by rules, norms, procedures, methods and techniques that not only offer, but practically make it obligatory that the individuals in this unit have a distinct code of communications (FIATES; FIATES, 2006). This situation is the result of the unique condition of these areas, the relative homogeneity of the academic background and professional experience of the individuals that form that group. In the Gamma company, most employees interviewed had an educational background in chemistry, either a MBA, engineering degree or teaching degree, and several also had a technical education in this area. The same is observed for the employees interviewed in the Beta and Alpha companies, both operating in the industrial automation segment, an outstanding participation in the R&D area, of workers with an adequate academic background, that is, in mechanics, robotics, electronics, materials and production.

However, to promote changes in the profile of this technical area, the three companies under study reviewed organizational structures and their attributions. The assumptions that define the internal divisions within the organizations are traditional and part of the culture, whatever it is, regardless of political regimes or social structures (SCHEIN, 1988). In one of the companies under study, Beta, the board of directors conducted a series of changes in the company's internal structure to introduce values that might reinforce organizational culture, favorable to innovation.

In the Gamma company, in addition to the implementation of a new internal organizational structure segmented by product lines, there was a change of people in key positions, of group leaders and the admission of new employees with a different profile. The objective of that profile, adherent to organizational purposes, was to achieve professional differentiation, which might be achieved by academic background (Master's and Doctorate degrees), as well as by the expertise acquired in large competing companies used as sector benchmarks. The introduction of new employees in the group was part of the organizational strategy of aggressively investing in innovation, which, according to the board of directors, could only be achieved rapidly by the admission of reference professionals in the market.

The relevance of the strategic guidelines and their reinterpretation was supported by the identification of evidence of the influence of the founder's history, in the form

of a myth or saga. The founders, during their heroic trajectory, conquered victories and built that organizational space (SOUZA, 1978; SCHEIN, 1988). Their feats and victories take up a differentiated dimension in the group imagery, are retouched, refined and transformed into narratives that then permeate the organizational universe. The opinions of the founder are legitimized according to this mythic aura, which made it easier to introduce internal processes that are aligned with the organizational objectives or even the founder's himself. As in two of the three organizations under study the founders had an innovative profile along the company's history, notably at more critical moments of its history, innovation is legitimated symbolically, positively reinforcing similar attitudes.

In company Beta, which control was transferred to the founder's son, the myth of the founder remains strongly ingrained, as the consequence of his frequent presence in the company. Therefore, in their collaborators' understanding, he continues to hold the power in the organization, which built the relevant symbolic meaning for the group, reinforced by the fact that the same management style was kept. The Gamma company, however, where there was also a formal transfer of the executive position from the founder to his son, at a clear break in the management model, with changes in the board of directors and managers, the myth of the founder had a reduction in its symbolic meaning. However, it did not affect negatively the focus on organizational innovation, as the successor assigned priority to investments in the R&D area. In the Alpha company was not found any signs of a symbolic influence of the founder's image, because its management did not remain with the family, being sold to a multinational corporation with a professional management and worldwide presence.

The content of the narrative of the employees interviewed in the Gamma company lead to the perception of a clear distinction between the responsibilities of each one in the roll of tasks, activities and processes, so that the manager of the research area was informally assigned to office activities and had a role of a "bridge" between employees and the board of directors. In Alpha and Beta, however, the manager does not have only the formal role of coordination of people, demanding that they develop or maintain a technical profile to support the construction of technological solutions without, however, abdicating the managerial role (FELLS, 2000). The greater proximity with the operational team makes it possible to have the role of both formal and informal leader for the other employees, in both the managerial and the technical dimensions. It is believed that his double function makes it possible to introduce new working models into the two dimensions mentioned, and to influence the construction or reconstruction of organizational knowledge and its application to the focus of the R&D unit – its incorporation to products and services.

The strategy adopted by Gamma in dividing the professionals in the R&D area according to product lines, subdividing the largest group into groups with a smaller number of collaborators, and each group with a coordinator, was successful in terms of greater internal cohesion in each of the subgroups. Coordinators, who had a technical profile and were closer to their subordinates, strengthened their links within their subgroup, which led to an effective leadership and influenced actions, which was not possible in the larger group.

In the case of the organizations under study, we found that the original concept of groups of rules and norms to be followed in the social environment of the organiza-

tion, defined by the founder, went through a series of adaptations and changes. The factors and variables that affected their transformation were a result of the changes in the market and competition context, demanding the adaptation of the organization and the admission of employees with a different vision of the organizational performance, with a focus on innovation.

Final considerations

Innovation is currently classified as the potential source of building the sustainable competitive difference, especially for industrial organizations. It is not only the creation of something new, but, also, the performance of a new interpretation of products and processes already in place to add new attributes and functionalities to them. However, for that purpose, it is necessary to create, in the organizations, environments that are favorable to innovative behaviors, which requires the reinterpretation of contributions that those people who live in the organizational universe can make in terms of knowledge, attitudes, skills and competences.

Therefore, it is not enough to approach the theme of innovations within organizations only in the most objective way, because individual and collective behaviors will depend on a set of subjective variables resulting from the organizational culture. A relevant challenge is thus brought up for the organizational manager, which consists of the introduction of innovation in all its dimensions and facets within the organization. How can we change the organizational panorama, characterized, in the traditional management model, as a system to control, stabilize and organize organisms that are resilient and adaptable to external stimuli, to conceive, develop and implement new and creative responses to the challenges posed, that is, by an innovative organization?

To provide some answers to this question, a survey was conducted using a qualitative approach and a multiple case study with three organizations in the southern region of Brazil. The analysis of the narratives provided by the interviewees revealed that innovation seems to become more effective from the moment when its practice is internalized by collaborators and is established as an organizational practice. In the three cases under study was possible to observe that the organizational practices for innovation are more strongly based on the culture of those companies that already have a history of innovation for their products and processes, and in which the role of the founder, as an innovating entrepreneur, is fundamental to maintain these practices, although he might not be seen as an organizational myth.

Despite the limitations of this study, such as the qualitative approach and the small number of cases, its results seem to offer significant contributions to the advancement of knowledge about innovation as a component of the organizational culture.

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