

Theme: Universities as interactive partners

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The New Role of the University towards the Entrepreneurship and Innovation

Abstract

There is a gap between the results of an education committed to innovative actions and expectations of a society that craves the growth and transformation. From the literature review, this theoretical essay aimed to invite the reader to reflect on the possibilities for filling this gap and propose a direction for future empirical work. At the end of this essay, some actions have been suggested, such as the spread of entrepreneurial culture throughout the university, review of educational projects, search and improved methodologies classroom; offer extracurricular activities room; cooperation with technology based companies, stimulating the creation of centers of entrepreneurship; stimulus to academic "spin-offs", creation and proper management of the Technology Transfer Offices.

Key-words: Entrepreneurship; university-enterprise; Technology Transfer Office.

Introduction

Discuss the landscape of education in institutions of higher education, especially in the Brazilian scenario is a challenge. Any position you want to take, considering its variables, can be tricky, because there will always be a large number of possibilities to reflect. However, a truth hangs in the reflections, regardless of which side is up: education is one of the pillars for the development of a nation.

Education, as a practical intervention in social reality, is a complex process that can not be learned and neither clarified by categories of a single epistemological field. Must offer the job training of students from an integration of theory and practice, grounded in interdisciplinary and multicultural.

It is a fact that the changes occurring in the world and also in Brazil, in various sectors, indicate that institutional paradigms and organizational factors are also rapidly changing. On the other hand, it is observed that the school in Brazil, in general, continues worshipping traditional paradigm, marked by continuity of bureaucratic models, cartesian and mechanistic, rather innovative and creative practices necessary to meet the demands of the contemporary world.

The university is the locus for the construction and dissemination of knowledge. To reconcile theory and practice in an integrated and complementary way, it is necessary that activities are composed of actions for change. And as transformation implies severe changes, there is a need for arising different models of teaching, shared with the student and evolving into a reciprocal relationship, collaboration and joint construction of

knowledge. For this, there is the need to create different spaces for rehash the achievement of learning, which is often not confined to the space of the classroom. However, it is in this context that favors, in academia, the teaching-learning process and not outside it.

Another point of consideration concerns the management of the classes, often administered in the same manner regardless of the student profile. The teacher judges are abiding their role as it provides the knowledge from the perspective of Demo (2000), content - almost always so organized and assimilated by the student. And this, in turn, students assume a passive consuming knowledge transmitted by the teacher.

Ruben Alves alert for fear that "we may be forming thousands of dolls that move their mouths and speak with the voice of ventriloquists, experts say what others have said."

Thus, we live in a great gap between the results of a little education committed to innovative actions and expectations of a society that craves the growth and transformation. But what are the alternatives to fill this gap? What is the key that opens the door to the passage of the paradigm of the current model to one that can effectively transform the context, the environment and generate new job prospects, personal and professional growth? How do the students graduating from the university become more practical and innovative? This is the context in which this theoretical essay is addressed, in order to invite the reader to reflect on the possibilities of bridging the gap presented and propose a direction for future empirical work

Entrepreneurial Education

Issues such as those rose in this paper and many others have been debated in academic and also organizational world. The Delors Report (1997) raises two fundamental questions: how learning to do, learning to know? And, like learning to be, learning to live?

Perceive this change as a transition from one situation to another, means to understand it as a process of transformation, disruption and interruption that takes the difficult and easy to undertake, the leading challenges facing constant during this process. Thus, it is possible to invest in educational changes whose movement is to bridge the traditional education for an entrepreneurial education.

Drucker (1997) has argued that the social center of gravity shifted to the knowledge worker and warned that the technological revolution engulf schools. He said it would transform the way in which one would learn and teach within a few decades, as would change the economics of education. Also, would become highly capital intensive and changes occur in the status and role of the school in which leverage transformations of the current century.

It is noticed that, in fact, the changes brought by the new technologies of communication and information have changed and continue to change the dynamics of teaching in universities, however, probably much more rapid and intense that the author himself could imagine. Drucker (1997) has asked, that education means a clear commitment to learning and the teacher's role undergoes a transformation, it is necessary to free school routine, repetitive, and corrective actions that help to walk students identify opportunities and with them, get great achievements.

In this view, Ashmore (1999) draws attention to the importance of entrepreneurial education. According to this author, it is a learning process that occurs throughout life and it is a way of teaching students to observe and take advantage of the changes rather than

fear them. He states that entrepreneurial education opens perspectives to understand the options that the market offers, and assist in identifying opportunities, preparing young people to become entrepreneurs or entrepreneurial thinkers and also contribute to the economic development of sustainable communities.

Backed on entrepreneurship as a new look for the university educational process, it is necessary to consider how to develop teaching and learning that lead to entrepreneurial behavior of students. It is necessary, first of all, to prepare students for living environment broader than vocational training focused on the rise of hierarchical traditional jobs.

Therefore, it is making the student to develop new skills, which are emerging entrepreneurial characteristics that the individual possesses and can learn and develop.

Timmons (1999) points out that the entrepreneur has the ability to identify and seize an opportunity, for, from the management of resources, turning it into a successful business. It is a perspective that goes beyond the common reactive position that students undergo the traditional teaching, where no attention is paid to the possibility of new possibilities or the transformation. Similarly, Dolabella (2003) argues that entrepreneurs can exploit the opportunities regardless of the resources at hand, once you know how to search, manage and train resources. Sometimes the problems encountered in day to day business does not appear so organized as the exercises in the classroom, being a situation that go beyond the organization of data or reaching a standard solution by which they commonly evaluated.

Even before the creation of the business, but especially during his entrepreneurial career, the entrepreneur develops and refines knowledge specific practice that is seen by Dornelas (2001) as a requirement for business survival. It means empirically acquired knowledge through research or got from institutes and organizations kept for this purpose. The author highlights the following as key knowledge for the entrepreneur:

- Technical knowledge, which encompass the business itself and knowing about the product and / or service provided.
- Knowledge of customer needs, which implies knowing how to deal with people who need your products and / or services.
- Knowledge of business, especially the experience of the entrepreneur regarding the creation, operation and management of the business.
- Supplementary Knowledge that strengthens and enhances the knowledge already acquired from a particular interest or a need caused by the business itself.

Therefore, having a student entrepreneur focused on teaching and learning process implies changes in the way they that university courses should be organized. For this purpose, it is necessary to discuss the pedagogical force, what are the necessary curriculum changes, such as inserting and invest discussions on entrepreneurship in academia, especially in the context of the classroom and prepare academics to deal with it.

The question of the formation of the academic entrepreneur goes through discussion entrepreneurship is something that can be learned in the current competitive context with the transformations through which the world has been experiencing.

Filion argues that entrepreneurs need to acquire knowledge and skills that are related to what you want to accomplish. Note, therefore, that learning plays a central role in the professional activity of the entrepreneur and he needs to continue to design, develop and implement the visions that guide the activities of the organization he leads. For the entrepreneur, "the most important thing is to be a dynamic process of learning, where

learning can continue indefinitely. He will continue to learn things you find interesting or has identified as necessary for its purpose "(Filion, 1991, p. 64).

Complementing this position, entrepreneurial training would have as a principle:
(Souza et al. in Souza & Guimarães, 2005, p. 205-206)

"Learn to understand the world, analyzing and defining the different facets of the individual and institutional context; communicate and collaborate in a competitive context, develop creative thinking and problem solving, facing life under the creative perspective, having personal domain, a process in which is designed self-knowledge and self-development, developing systems thinking, allowing clear perception of the whole and of the relations between the parties; awaken leadership, treated much like an acquired characteristic, involving two directions, the will and determination and accumulated knowledge in a given sector, including the acquisition of a number of distinctive competencies.

Löbler (2006) proposes that the approach to entrepreneurial education would have the student in the center, demanding knowledge with active participation from various other sources. Therefore, it means a more challenging task due to its complexity.

Studies have Löbler alignment with those of Heinonen & Poikkijoki (2006) regarding the need to change the focus from teaching to learning entrepreneurship. For these authors must learn to understand entrepreneurship, becoming an entrepreneur and being an entrepreneur. This would be done through a process that would involve five steps, as shown in Figure 1.

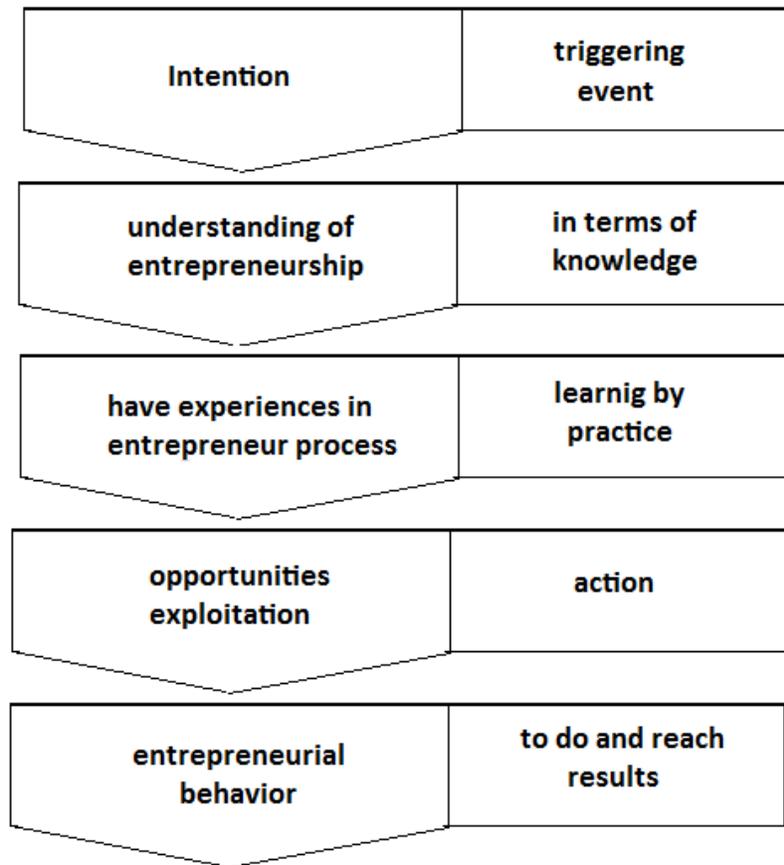


Figure 1. Process of entrepreneurship learning

Source: Adapted by the authors based on Poikkijoki & Heinonen (2006)

Edwards and Muir (2005) show an alternative model of entrepreneurial learning. This model considers three types of sources, namely: the formal (theoretical learning), social (learning from others) and active (practical learning). The challenge for these authors is to achieve innovative ways of teaching that meet rigorous academic standards as measurement and access.

Shepherd (2004) advocates another alternative approach to provide entrepreneurship learning. For this author the emotions associated with the loss experienced by entrepreneurs

in bankruptcy are important elements in building entrepreneurial skills. However, such experiences are stressful for both the entrepreneur and for their families. Eventually entrepreneurs can seek professional assistance to a recovery process, but when the need to break with the business takes shape as inevitable emotional relationships hinder their decision making.

If the present moment is actually a time of Entrepreneurship, it must be recognized that entrepreneurs are the ones who are breaking the social and cultural barriers, renewing economic concepts, breaking paradigms and generating wealth for the society in which we live.

Thus, the institution of higher education need to create a methodological framework that encourages the detection of new business opportunities, challenge students to achieve their goals, develop skills and confidence, as well as thinking and managing entrepreneurial career. For this purpose, it is necessary to empower educators to this reality.

Filion (1991) proposes that this process should also provide an imaginative approach to help to identify areas not yet occupied, highlighting not only what should be learned, but how this learning occurs. For the students, the author suggests a pattern of learning that inspire them to pursue a lifelong learning and make them more comfortable in taking on this new role.

The market, the new organizational demands and the role of Universities

In modern economies, increased productivity and new opportunities for investment and growth are mainly determined by the ability of companies to reinvent and propose new

solutions to compete in an increasingly hostile environment, under the pressure of increasingly demanding customers.

Looking at the market side, globalization has brought greater competitiveness, as the entry of larger companies to compete locally, not to mention the increasing technical barriers, legal protection and commercial presence in foreign markets. The quality and certification of the company and its products are no longer differential to be just a minimum requirement to "play the game".

On the production side, operations on a global scale and competition with products made in China, for example, became the model of mass production impractical in most industries. Companies were forced to seek differentiation, innovation and, in some cases, network production. For flexibility and lower costs at the same time, companies have developed plants with high technology, seeking greater versatility, smaller cycles, smaller-scale operations at competitive costs.

Allied to this, technological competition, legislation, the environment and the new consumer have brought other challenges for businesses succeed. The change of vision which used to focus all organization move to make more and more profit for its shareholders, for a vision that extends these goals to other stakeholders of the organization, brought to light a concern the need for the long term sustainability. This also can be a consequence of greater questioning people are doing on the role of organizations into society.

According to Montgomery & Porter (1998), in this hostile environment, companies will only be able to achieve competitive advantage through innovation actions and anticipating the future. They need to create innovations in its broadest sense, including new technologies and ways to take action. It became necessary to find better ways to compete

using innovative methods and practices of differentiation and exclusivity, and those that do not, will have difficulty to keep its competitive position.

The Survey of Economic Activity of Sao Paulo State - PEAP has confirmed this hypothesis, showing that innovative companies have better performance and productivity than non-innovative. For example, one of the variables of productivity, which is the revenue per employee, shows the superiority of the performance of innovative firms in all sectors surveyed.

For Levitt (2000), in most industries, any company that is not aggressively alert to the possibilities of innovation are taking a risk competitive, which companies should be at least aware. The pursuit of innovation - particularly for new products, new product attributes and customer service - is part of the company's marketing orientation. Stewart cited in Levitt (2000) argues that innovation can be one of the most effective means possible to build the image of progressiveness and leadership of a company.

By innovating, a company creates conditions to sustain its growth and profitability (GAMBIN, 1998). Innovative behavior within organizations is not accidental, but is a consequence of the external environment factors and / or internal, which lead to changes that need to be planned. The organization develops strategies to cope with changes in these environments and so hopes to learn and adapt to new realities while remaining competitive (Mintzberg et al., 2000). Thus, innovation management has become a major challenge for organizations requiring planning, methodology, and especially a new professional profile that combines entrepreneurship and a new skills profile which, as already discussed briefly, is flawed in traditional educational system.

The current competitive position of the business world and the educational model of the university presented lead to some questions. How the University can contribute to meet

these new market demands? How to prepare excellent professionals, with a profile of skills required by the new environment? How to interact and cooperate with organizations for the development of innovation and technology?

Besides teaching: entrepreneurship and innovation at the University

Aligned with other organizations, the major universities of the world have been reinvented, seeking to offer a suite of products and services that enables them to meet the new demands, which resulted, in large part, the developing of professionals prepared to meet the requirements organizations which will work. The traditional university is giving place to a new business model whose focus has expanded beyond the teaching, research, service, social responsibility and promoting economic development. In this new model, innovation and entrepreneurial education has gained progressively greater importance.

In recent years, some traditional universities in the world have sought to expand their boundaries of performance, moving closer to society through greater interaction with the productive sector. These universities are interested in transferring academic knowledge to companies that know how to use it in an innovative way, with the production of products and services that meet the needs of society.

The entrepreneurial education seeks to form new professional technical and behavioral skills that enable them to act as employees, contractors or entrepreneurs. The emphasis on innovation, with the purpose of creating an approach to the productive sector in partnership with the University, is an opportunity to develop new technologies, new products and processes that enables them to gain competitive advantage.

In this new model of university, other acting opportunities and service to society have emerged. Examples such as tailored in-company courses, development of applied research on-demand, case studies and industry publications, and consultancy, redefine the university role as a knowledge supplier, which is far beyond the university's teaching, although it must be stated that teaching remains their primary vocation.

As a result of the increase of cooperation between universities and the productive sector, new administrative demands emerged at the university and led to the development of units responsible for mediating these relationships, to verify the validity of findings, registering patents and negotiating licenses new technologies for business concerned (Schuetze, 2001). These units are Office of Technology Transfer (OTT) that are part of central administrative structure of the university, or in some cases constitute a peripheral unit or outside the university.

The OTT was developed from the need to support the patenting of technologies developed at the university, licensing to the productive sector and the creation of spin-offs as a result of entrepreneurial orientation (Lipinski, Minutolo & Crothers, 2008). The process of technology transfer is complex and includes legal, technical, financial and marketing.

The OTT function as intermediaries between university researchers and established companies, start-ups, venture capital investors, among others, ie, those with potential for development and commercialization of innovations. Nunes, Dossa & Segatto (2009) present the OTT as an office belonging to universities or research institutes with the function of society lead to the results of the scientific work of researchers and make the management of funds received for internal research. The flow of technologies from

research laboratories to industry is pointed out by Wolson (2007) as poor and in need of intermediate agents such as OTT, which act as a pivot in the process of technology transfer.

Cunha & Fischmann (2003) state that OTT emerged as an institutional mechanism to minimize barriers and promote university-industry interactions and thus enjoy the benefits of this relationship. Each office is linked to its research institute and thus can receive different names, according to the policies and guidelines of the university, and will be guided by its mission and philosophy. Through the OTT, researchers are helped to draft and require patents and partnership contracts and agreements with the productive sector.

As reported by Schuetze (2001), it is possible to observe a diversity in how the OTT works, even among universities within the same country. Knowledge areas most classic as general engineering, mechanical and chemical, are more mature in relation to technology transfer, while new emerging areas, but with economic potential, such as microbiology and health sciences are focused on the traditional model of university-oriented pure research.

There is a greater propensity of universities to patent their inventions, which has led to the provision of technologies, what means patents to be licensed. However, not all get to be acquired by the companies, not by considering its commercial application interesting for your business. This is a finding reported by both companies and by the OTT, which point to the fact of university inventions available for licensing in need of improvement through applied research.

Garnica (2007) outlines that cooperating with the productive sector, the university shows an evolution of its activities, which shall direct their research to a greater interaction with society that institution. Thus, in addition to the training of qualified personnel to market, benefits from academic research also incorporate value to economic development and welfare of society.

The technology transfer from universities to the productive sector is seen by Lipinsk, Minutolo & Crothers (2008) as a complex process, with the possibility of using large number of strategies (Arvanitis, Sydow & Woerter, 2008) and is subject to the specifics of each sector of the economy. Technology transfer can occur among various actors and between companies, between universities, university to the company and vice versa (Cunha & Fischmann, 2003). The transfer of knowledge and technology occur both to input and output of universities. According to Arvanitis, Sydow & Woerter (2008), the transfer of knowledge and technology occurs in various ways, such as exchange of scientific and technical information, training of qualified R&D, doctoral courses for company employees, specific courses, consultancies, use technical infrastructure and research cooperation. A formal way of technology transfer is through patenting, which requires legal certainty as parameters the funds involved in the project and encourages a culture of intellectual property among researchers and students (Lotufo, 2009).

Thursby & Thursby (2002) point out that an increasing number of contracts between universities and industries, a result of increased corporate interest in developing new ways of managing the area of R&D. On the other hand, universities have also been more open and interested in approaching companies for commercial application of the results of their research.

According to Lotufo (2008), there have been advances in learning and university-enterprise relationship.

"The relationship before conflicted between universities and industry, marked by different purposes, has been replaced by a collaboration institutionalized and with positive results, mainly due to government initiatives and efforts expended by academic institutions, professors and researchers. The challenge lies in managing this relationship between these two seemingly different worlds. This relationship must be

well managed to be healthy and not to interfere with academic freedom and research, so necessary for the great contributions that the university brings to society"

It is worth mentioning that for Thursby & Thursby (2002), there is a change in the way of leading research universities, this is, it does not mean that universities are shifting their focus, going to give greater importance to research that are more related to the needs market, but a change in perception of the possibilities of use of research results. Thus, researchers are more interested in approaching companies for use of their inventions, rather than focusing only on the publication of their research without generating financial returns. The authors emphasize that, for companies, increased contracts with universities is due largely to the increased need to include external sources in their R&D, as well as greater reliance on these sources.

The National Innovation System in Brazil and the University

It is clear that technological innovation works as key to increasing productivity countries. Therefore, investment in innovation is strategic for Brazilian companies and the nation, as it increases their ability to compete globally. Government plays an important role in this process, structuring programs and policies to push the development of innovation and technology. In Brazil, such policies had a greater boost from the 90s, especially the creation of Strategic Sector Funds at the end of this decade and the launch of the Industrial, Technological and Foreign Trade - PITCE in 2004.

The National Innovation System includes, among other agents, the Government, innovative companies, universities, other institutions of Science and Technology (ICT) and

financial institutions. Besides these, a regulatory framework to support innovative activities and a policy of fostering research and training people, that give support to the system as a whole. Figure 2 shows the interactions of these agents.

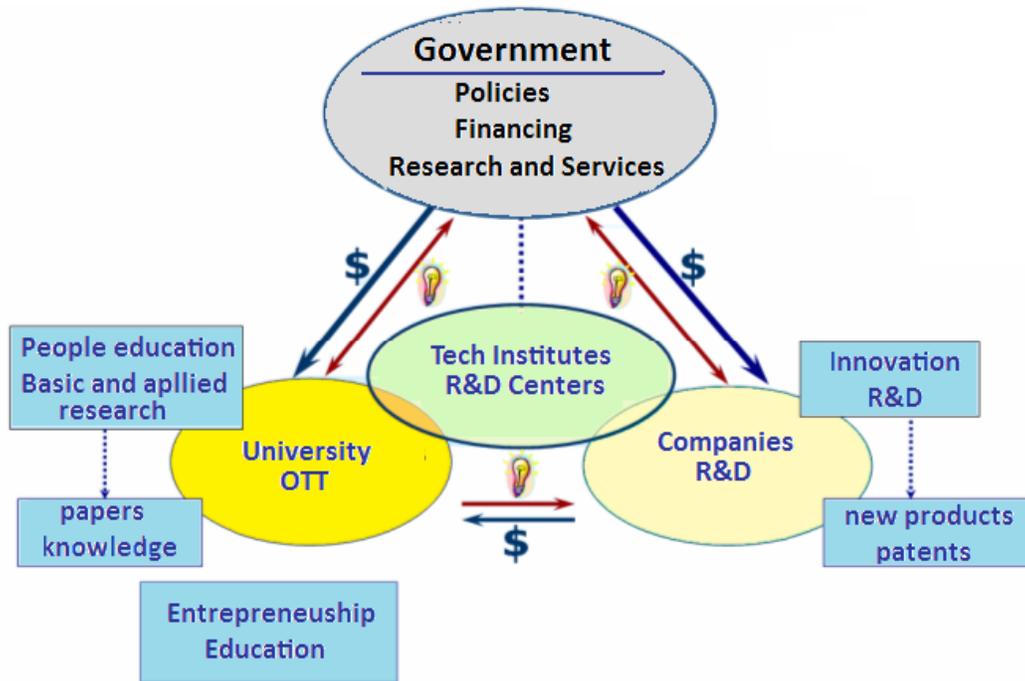


Figure 2. The Innovation System in Brazil

Source: adapted from NAU (2007)

This cooperation forms a kind of synergy critical to the innovation process, since it provides the partners access to different skills, markets, shared resources, and furthermore decreases in time, cost and risk. The policy to support innovation Brazilian government keeps improving. The National Innovation System works to support technological development in sectors considered strategic, such as tax incentives, funding for research and technology development, and to stimulate university-industry cooperation.

The roles of universities, companies and governments vary when comparing developed countries with developing countries and least developed countries. Variations are also observed among democratic countries, countries with centralized power and military regimes. Traditionally, universities have a role in advancing the frontiers of knowledge through academic research and train students, as companies develop innovations to market and use research to enhance competitiveness and margins of its advantages over the competition (Brito Cruz, 1998). For Lipinski, Minutolo & Crothers (2008), the roles of universities include education, research, the exchange of ideas between academics and, in some cases, the development of technological innovations such as public benefit, in addition to training for spin-offs creation of new businesses and job creation. However, in a recent study in Australian universities, Gunasekara (2006) noted that while reactively, positioning and behavior of these institutions are being redirected by their managers in order to be aligned with regional needs.

As pointed out by Queiroz & Quadros (2005), there is an imbalance in the national innovation system in Brazil, with high dependence on the public sector to carry out R&D and a small private sector participation. Noteworthy is the small number of Brazilian companies that continually develop R&D and the shortage of organizations that have departments that keep ten or more top-level professionals to carry out these activities. If comparing the efforts in R&D to local and foreign companies, there is a considerable participation of multinational companies with growth potential as the headquarters move from their home countries their R&D labs, but it deserves attention of those who develop public policies that Brazil is attractive to these companies and be able to grasp opportunities to advance in technological development (Queiroz & Quadros, 2005). This implies that policies are not limited to incentives, which are occasional and transitory character, but

which include the development of trained human resources as well as investment in infrastructure, the establishment of the State procurement policies and promoting the country's image in a scenario of R&D globalization.

Lundvall et al. (2002) and Nelson (2008) argue that even a system that is tied tightly, do not adequately consider the complexities of these arrangements, and that there are many barriers to the operation of an innovation system. Casper & Kettler (2001) argue that the practices of technology transfer, for example, need to go beyond simple licensing protocols, but should include a set of support resources, incentives and procedures. It suggests that universities should have the support and partnership of technology transfer offices, as well as encourage the creation of business incubators and technology parks.

One of the main drivers of the Brazilian innovation system is the viable solutions that will bring all scientific institutions and industry, fostering research projects and development of technology in sectors considered strategic. The results are expected to increase the competitiveness of Brazilian companies, strengthen the economy and, indirectly, the development of a modern, global and able to generate more knowledge and wealth.

Besides the traditional action of country development agencies - CNPq, FINEP and State Foundations of Research - funding the research activities and BNDES – National Development Bank - in financing the expansion of the industrial park, the system had great momentum with the enactment of Technological Innovation Act in 2004, whose pillars have been encouraging the entrepreneur and researcher tax incentives for business investment in R&D. Among other stimuli, the Innovation Act proposes the creation of Technological Innovation Centers (called NIT – Nucleo de Inovação Tecnológica in Brazil) in universities and other technological institutes, and attributed the responsibility for the

management of innovation policy, including mechanisms of cooperation with the productive sector. Although many universities already have OTTs in operation, when the Innovation Act created the NITs, it is known that the process is recent and most Brazilian universities, public and private, is in the initial structuring of the NITs. A few universities and technological centers in the country are in a more advanced stage, with NITs structured and fully operational.

The NITs are designed with the primary purpose of fostering and managing projects with potential generation of technology and innovation. However, there is still little experience of implementing NITs, with rare exceptions, there is therefore a few tools and methodologies for widespread these cores will fulfill its role.

The main duties of a NIT - Technological Innovation Center are:

- managing innovation policy;
- provide funding to the various innovation activities;
- increase the formation of networks and partnerships;
- expand significantly the interaction between universities and research centers with business;
- promote knowledge transfer between universities and companies.

The major challenge is the implementation of a management methodology to support the NITs in the exploration, protection, valuation and marketing of research results, generating patents and technology transfer agreements.

Araujo (2008) draws attention to the internal barriers to the implementation of mechanisms to promote applied research and innovation in universities. He points out that

intellectual property rights are also important in this regard, along with the specific features as governing how technology and economic potential proceeds will be divided among the agents. And this is related to the motivation and interests of researchers in the development of research activities.

According to Araujo (2008), transfer practices should include clear policies, standards, routines and rules governing the flow of knowledge in interorganizational relationships. In other words, it can be understood as a collaborative experience or how things are done when there are partners involved in the creation, exchange and application of knowledge.

Also according to Araujo (2008), the entrepreneurial culture plays a significant role in academia sectors not dominated by large organizations, such as biotechnology. The spin-offs from universities are crucial to the dynamics of these sectors and therefore they strongly impact the motivation of scientists to engage in business. On the other hand, in sectors dominated by large corporations, academic entrepreneurship gains a different connotation. It is associated with the activities of researchers who, while maintaining full university positions, are encouraged to maintain close relationships with industries, for example, through consulting or collaborative research projects. They are called entrepreneur teachers (ARAUJO, 2008).

Facing these challenges in that regard new organizational demands, changing paradigms, requirements based on public policy, and a speech facing recurring issues essential innovation is the fact that entrepreneurial education is the resource for captaining all these relationships. Through entrepreneurial education, and it is believed that only with it, it will be possible to envision a learning context, forward-thinking and perception of

opportunities that can alter substantially the surrounding reality. And the University is the locus for this purpose.

Discussion, Proposals and Final Thoughts

The literature review presented in this paper makes it clear that there are many challenges to create an entrepreneurial university whose basic principle entrepreneurial education. Universities have an important role in this process, creating its internal policies for the promotion of research and to stimulate innovation and management structures that enable the operation of the projects.

It is necessary, first, to create a sound basis for change. Some of the possible actions to move in this direction are:

- dissemination of the culture of entrepreneurship in the context of the university, from senior management, faculty and students. This action requires an awareness of the need for the involvement of a wider range of university courses, what means that entrepreneurship education should not be restricted to courses offered by business schools.
- review of pedagogical projects to contemplate interdisciplinarity and multiculturalism and the development of competencies, skills and entrepreneurial attitudes. It is a movement all the academic units of the university, which should prepare challenging activities for students of undergraduate and postgraduate be proactive in seeking innovative solutions to problem situations identified by them.

- search and improved methodologies classroom - resources that encourage interaction and participation of students in the activities proposed.
- offer extra-room as computer simulations, experiences, drama, games, tours, contests, business incubator, lectures, academic weeks, integration with Junior Companies created and managed by students.
- creation of seminars, forums, workshops aiming to disseminate the internal culture of innovation and the importance of teaching for market demand - matters related to innovation.
- encouragement and pursuit of research funding allocated to the implementation focused on the needs of production companies. This action should not be understood as dichotomous funding of academic research that has been undertaken and we have no commitment to immediate results in the productive sector.
- cooperation with technology-based companies in the development of innovations
- stimulating the creation of centers of entrepreneurship, incubators and technology parks. With this action, seeking the involvement of university entrepreneurs with both the internal and external community, including joint actions among universities.
- encouragement to "spin-offs" academics. Within this action, it is suggested that senior researchers from universities seek to involve students with entrepreneurial characteristics and overlook create their companies at the possibility of entering into the labor market contracted by a company after graduation. Therefore, the focus is not on the researchers draw from their academic activities and research to establish the creation of a business. Thus, it is expected that the research projects include

results as the creation of start-ups to include young entrepreneurs in teams that make up the project.

- creation and proper management of NITs, with clear policies for intellectual property, effective communication and mechanisms to stimulate the involvement of researchers in projects with potential for generation of technology and innovation.

Currently it is possible a performance of some very active NITs, which act to turn existing technologies protected, commercialized and licensed, as well as seek partners in the productive sector for the joint development of new technologies that can be achieved in the research lines in progress. However, the proactive approach of the NIT as agents responsible for doing the mapping and dissemination of the core competencies of their universities, is still incipient, but it shows how an interesting element as part of initiatives towards an entrepreneurial education.

It is also possible to find, but still few in number, research papers that students perform in corporate environments, which leads to contact with the real needs of the productive sector seeking academic research for the solution of their demands. Already more frequent, the consultancy services provided by teachers should also continue to be encouraged, so that students have classes updated to the context in which they live.

Admittedly, there is still a considerable way to go so that government, universities and companies can work together in order to build a system of solid, modern innovation in the country, but undeniably, there was great progress in this direction in Brazil in recent years.

Within the main Universities there is a lot of research in progress that will be completed in the short or long term, while others have been already completed and can also

serve as insights for further studies. In this research environment, the movement is continuous with the participation of researchers, teachers and students of undergraduate and postgraduate, serving internal and external demands. The monitoring of this cycle of research enables the NIT to search and evaluate application possibilities of new technologies that arise within the University to the external environment. It is suggested that the knowledge being generated internally can be applied to external agents who need supplementary knowledge to develop technological innovations. Thus, the search conducted by NIT is focused on the opportunities of the external environment on the basis of what has been in the indoor environment.

Many universities support the emergence of new business through incubators where new entrepreneurs install and start the activities of their companies. In this case, the NIT may act in the selection process of business plans, collaborating with the incubator in examining the feasibility of the new venture. This would indeed be an interesting role in the NIT, as it maintains contact with both academics and with other entrepreneurs, enabling a more accurate view of the potential application of new technologies that are candidates for incubation idea to develop. Moreover, the NIT may itself contribute to the building of the business model of the new enterprise, identifying the links to be established, both downstream as upstream in the value chain of the company that installs the incubator

New firms which are generated from the search results on University environment, the academic spin-offs represent an efficient way for the technologies developed at a university come to market. The NIT can help these companies find new potential markets, who wish to acquire the value provided by its innovative products. A start-up still have great difficulty in finding the best market performance and would have the support to win the NIT commercial force in the competitive landscape.

The support of senior management, the emphasis in the new culture, better communication and a structure to manage innovation are determinant factors to circumvent the difficulties of establishing partnerships with the productive sector, and those that lie ahead.

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