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Habitats of Excellence
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**“CREATING A FAVORABLE ENVIRONMENT FOR THE PROMOTION OF
INNOVATION AT THE LOCAL LEVEL. THE EXPERIENCE OF CONSTITUYENTES
TECHNOPOLE (PTC), ARGENTINA”**

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Abstract:

The main reason of this report is to explain the way in which the relationship between the scientific capacities, the new industrial needs and the urgent social demands in certain contexts can be strengthened. We refer to Latin-America in general and to Argentina in particular.

It shows the way in which the Constituyentes Technopole has organized its own answer to this challenge. Such answer develops a series of new kinds of links with the principal actors of our community, articulations which have as a final purpose the creation of a favourable environment for the cooperation and joint work between institutions.

INTRODUCTION

The main reason of this report is to explain the way in which the relationship between the scientific capacities, the new industrial needs and the urgent social demands in certain contexts that are going through a deep crisis and which are also against innovation can be strengthened. We refer to Latin-America in general and to Argentina in particular.

It shows the way in which the first Technological Pole of this country, the Constituyentes Technopole (PTC) has organized its own answer to this challenge. Such answer develops a series of new kinds of links with the principal actors of our community, articulations which have as a final purpose the creation of a favorable environment for the cooperation and joint work between institutions, the starting-up of infrastructure, mechanisms and programmes encouraging to competition and innovation in the firms, and to keep to a strategic plan of the territory based on the productive and technological strengths of the district.

DEVELOPMENT

a) PTC: a brief presentation

The PTC, formed in 1997, by four Scientific and Technological Institutions and a National University, has been working with a methodology based on the formation of links (between its members, with companies, with other Research & Development (R&D) centers and with public enterprises both in its area of influence as well as in the region and at national level), in a strategy which reminds us in part of what the Argentine thinker and technologist, Jorge Sabato, stated in the sixties and which is known as the Sabato Triangle (outline which today updates new developments, naming it the model of the “Triple Hélice”, see Bellavista). The PTC has the Metropolitan Area of Buenos Aires as its field of action, a geographical area which concentrates almost half of the population and of the product of the country, but in a very limited area, and in particular the Municipality of General San Martín.

In a world in which the strong processes of globalization and technological revolution impose on the whole of the society the need to produce new and more innovative goods and services while at the same time they must guarantee better life levels and higher equity levels for its population, it is evident that the possibility of obtaining such accomplishments depends on the effective execution of extended and fruitful R&D activities in a framework of vigorous relationships between actors, with easy and practical rules between firms, universities, investigation centres, public administration and the financial system, amongst others (the system of innovation and/or the means of innovation) (Nelson, Lundvall, Freeman, Castells), so that they favour the processes of technology and knowledge transfer, the creation of new enterprises and of new and better jobs, always respecting the habitat and the local culture.

The PTC was created with the idea of producing this kind of rapprochement. Nevertheless, the experience so far, coinciding with specialized literature, shows that the development of synergic relationships between the scientific technological world and the industrial world is neither simple nor automatic (in the sense that it is not easy for these links to take place merely because both communities coexist in one same geographical space). The Science Parks and Technological Poles (PT) must work hard to create these positive unity (Bruhat, Castells and Hall).

b) Technological link and its difficulties

In general, difficulties in Latin-America are described as barriers (cultural, to begin with), which would produce the isolation between these two worlds, subject discussed at length by various authors. In this sense, this report tries to contribute to the understanding that this situation of

relative isolation is caused by more structural causes, and the central discussion is based on the particular experience of the PTC to overcome them.

Our hypothesis, following recent developments which have taken place in the region (Dagnino, Thomas, Stutz) and corroborated by our own experience, is that the two principal communities in such systems (the enterprises and the research and training centres) are not isolated merely by the language, the codes and the views used and sustained by both (the so called cultural barrier, which indeed exists), but mainly because they take place in a social, institutional and economic system which does not promote the process of innovation and, also, inhibits the possibilities of creating the necessary links between them. In such environments, barriers occur, which, according to our experience, are more results than causes of the curbs on the link¹.

This kind of system (or complex, as referred to by Oteiza, 1992) subordinated our technological institutions and its resources to the problems and parameters of the international scientific community and therefore, it usually ignores or rejects, according to the case, the national needs (apart from certain epistemological obstacles regarding what is considered relevant); on the other hand, the enterprise community, in general, has been formed as a mere reproducer of technological advances generated in developed contexts, not requiring, therefore, much innovation in the production, and it has received little stimuli to get in touch with the universities and science and technology centres.

The “Lineal Model of Innovation” diagram is also still in use, although some recent developments try to improve this model which given a good base of scientific investigation, the rest will follow suit (R&D and innovation). Another well used strategy to link science and industry is the so called “offering”, which establishes that a good promotion of services and technological capacities on behalf of the Science and Technology (S&T) organizations, will result in an immediate attention on behalf of the much desired “demand”, which will automatically accept its goodness and will approach the centres to solve its problems. Such strategies, developed within the same S&T system, and which sometimes lay the foundations of the PT and the Business Incubators, only generate more frustration and reinforce the idea that both fields are irreconcilable.

Two other considerations proper of our region are added: the first one is that our productive net is very disintegrated and few situations of well conformed productive bonding can be verified (clusters, *filières* or industrial districts, where what is mainly missing are capital industries and equipment and top quality services capable of adding value to the complex, together with a flexible specialization of the production), with the exception of those tied to the farming activity and primary exporters; such grade of disintegration makes the shared access to certain services difficult, in particular to services related to technology. The second consideration is related to an important process of destruction (not creative) of the productive capability (except certain agricultural industries or primary exporting industries) and an unparalleled regressive distribution of income, which go against investments, savings and consumption on the part of the majority of the population and, therefore, against the national productive capacity.

Furthermore, in the last few years the “frivolous” commercial opening, based on the recommendations of the unique thought, together with the heavy load of the foreign debt and bad administrations, have strengthened the idea, amongst others, that it is more convenient (“rational”) to acquire technology made abroad instead of producing it locally (innovating), as on the other hand we would have to face highly uncertain situations, technical outpace and lack of

¹ Many actions take place on behalf of the S & T and university centres to try to overcome such obstacles, such as seminars, sensitiveness conferences, training courses, amongst others; but none of these go to the heart of the problem, that is to say, to try and find out which the real needs and demands of each one of the actors are and which the correct mechanisms for producing common work programmes are. That is to say, we are confronted with institutional problems in the wide sense of its meaning and which also imply a very persistent management and organization of the innovation .

competitiveness, amongst other evils². Other disheartening facts are the absence of credit, seeding and risk capital for the productive investment and the mistrust in our financial system (which started in the year 2001).

To sum up, such adverse features of our economic, social and institutional (the accumulation model) system, make the PT as well as other surely valid instruments in other contexts to approach the academy to the industry (Business Incubators, Innovation Centres), be proposed, developed and evaluated with new and original parameters. A very important advance in this sense is given by the recent Bogotá Manual, which shows some of the main characteristics of the science, technology and innovation of the subcontinent system, and at the same time it suggests treating its activities and results according to the new parameters³.

In practice, and following the same source, in our context one can verify the following characteristics regarding the technological behaviours of the enterprises:

- There is a prevailing generalized idea to lean on informal organizational structures for the accomplishment of technological innovative activities.
- Within the largest firms, the orientation to privilege the provision of technology from exogenous sources (instead of internally producing them) and specially that of international character prevails.
- In small and medium-sized firms, an intention to the acquisition of capital goods to achieve technological improvements, combined with endogenous or internal efforts (even though they have marked limitations) can be observed.

“Finally, both in large companies as well as in small and medium-sized ones, a low degree of consolidation of the association and interaction framework between the company and its surroundings (Stutz, 1998) is appreciated; the weakness and the lack of articulation of the national and local innovation systems in Latin America, is probably one of the principal aspects to take into account when analyzing the differences in the behaviour and the performance of the firms in the region with regard to countries with a higher level of development.” (Bogotá Manual).

c) Methodology developed to overcome obstacles

In this context (modified in Argentina since last year, owing to a strong process of devaluation of the national currency which forces enterprises to substitute imports and favour certain exports), the strategy which the PT has been unfolding since its beginning, is directed to dismantle a series of adverse elements typical of our context, trying to create a new “milieu” favourable to innovation and enterprising activity, to conform a strategically locally planned development process⁴.

² Therefore, on the one hand, many of the company investment decisions are taken outside the country without considering the needs and, on the other hand, it reinforces the fact that technology (taken in its broad sense) must be manufactured and acquired abroad. Furthermore, another cruel fact of our reality is the stagnation of investments already very low in science, technology and higher education which produces, amongst other results, the emigration from the country of its best human resources.

³ “The existing specifications at regional, national and even local level, which distinguish Latin-American firms from their equals located in more developed countries of the OECD, are related to the particular characteristics of their respective Innovation System, the markets they operate with, the size and characteristics of the predominant firm, the degree and character of the international insertion of the economies, amongst other aspects. This forces one to think which the most adequate ways the measuring exercises are and must assume and, up to what relevant extent it is convenient to use the proceedings and criteria (as those suggested in the Oslo Manual), design which responds to experiences taken from realities which cannot necessarily (or, at least, not totally) be assimilated to those of our region.” (Bogotá Manual).

⁴ This issue was dealt with during the presentation of the PTC experience at the IASP World Congress in Istanbul, 1999. We take the opportunity to thank the profound debate generated on the possibilities of a

The main consequence of this position, is that the task cannot be confronted by any one organization in an isolated manner and its resolution to achieve an integral and sustainable regional development implies establishing certain basic agreements between various actors. This new development has two basic characteristics: the strategy is done from “the bottom to the top” and it is based on the community social capital.

In the first case, we refer to the fact that it is the actors themselves who must participate in the solutions to their problems, avoiding the easy position (sometimes authoritarian) adopted by the technicians or administrators who produce (many times copy) certain recipes to be passively complied with by the members of the community. In this case, the opinion, participation and comptrollership of the members is a guarantee to the success of the various initiatives. The community social capital is referred to so that in the whole territory (and in ours in particular it is so) there are various accumulated practices and knowledge that can – most of the time – be put at the disposal of new projects. In the case that we are dealing with, it is possible to find hundreds of businessmen and thousands of workers with creative and productive capacity that with updating and adequate training, can lever up the opening up of the local economy.

Before presenting the new activities that the PTC does under the frame of what could be named the “construction of the territory,” it is necessary to emphasize that its own activity of generating and transfer of technologies is being focalised in industries of avant-garde technology⁵, as these industries of industries, when they set forth the creation of new firms which widen the diversity and quality of the products that go into the market, are active agents in the processes of the development of science, technology and innovation and transference of technology. In this way, the idea is to try to attract new firms with good technological levels and feedback the development of the capacities of being and doing of the economic actors. In short, promote a different style of development based on knowledge.

Such activities are based on the construction of networks of knowledge and trust and they do not come from our offer of skills but from the case by case acknowledgement of business, institutional or even social needs. In this way, one is spared from falling into the “offering” which we previously referred to and the fears and apprehensions of the various actors are overcome, in particular, from the business sector. Rejection is generally produced by the lack of knowledge or insufficient degree of awareness regarding the possibilities that the road to technological improvements offers in terms of competitive advantages and in term of risks and that firms that do not try to traverse it in a systematic and consistent way must face.

d) New activities of the PTC in the territory

We start from the idea that innovation, as well as technological improvement of enterprises and their possibilities of winning in competitiveness depend on multiple factors, many of which can be included in the concept of Innovation Means, and that such Means can be a deliberate construction of the local actors.

This “constructed territory” implies the concurrence of at least the following three factors:

- It is conformed by a some actors who have certain independence in the making of decisions.
- Material (infrastructure), immaterial (know how) and institutional elements coexist in it.
- It is ruled by a logic of interaction and a dynamic of collective learning.

Technological Pole to produce, by itself, wide range transformations in its surroundings. Some of these comments have been taken into account to restate certain goals and activities which the PTC is currently developing.

⁵ These industries include activities related to biotechnology, information technology, advanced materials, nuclear activity, aerospace activity and scientific instruments for measurement and control.

The PTC, attentive to the needs of the community, identified on the basis of permanent dialogue with its representative institutions and with the explicit actors of its economic and social system adds to the activities that have traditionally been taking place, a series of initiatives tending to improve the competitiveness of the companies in the district and to turn the territory into a system which promotes productivity and competitiveness.

These new activities centred in the territory have the double objective of preparing the field for the achievement of the links establishing higher degrees of trust and of putting into practice certain activities that the PTC tries to promote together with its local actors, such as the Municipal Government, Enterprises, Advertising Agencies, amongst others.

That is to say, the idea is to try and generate a more innovative environment in its area of influence capable of promoting and also having the answers to certain explicit and peremptory demands of the community⁶ it serves. We group such activities in five lines of work, as follows:

- I. Reinforce activity complexes in certain key sectors of the local economy, helping them to achieve advantages in innovation, production, marketing, the access to national and international markets, to loans and financing, which in an isolated way it would be impossible to reach. This denotes the achievement of a series of initiatives which include the municipal government itself which summons and articulates the groups of companies (consortia), and which requires the active inclusion of the companies and its chambers and associations, the agencies for the development of exports, the loan and finance sector and obviously the university and scientific and technological institutions concentrated in the PTC. So far, the main activity chains of the region (textiles, plastics, chemicals, electronic, electro-mechanic, furniture and accessories, food products, footwear) have been surveyed to get to know their productive capacity, their exporting possibility, their business dynamics and their willingness to associate. From such work, the exporting consortium of furniture and accessories has been formed⁷ while the plastic and chemical ones are about to follow the same steps.
- II. To invigorate the process of transfer of knowledge to the population in general, and in particular to the working force (both employed and unemployed), putting its main emphasis on the Directors' technical education, the updating of the "know how" and the promotion of the excellence of human resources (University studies and PhDs), with the participation of companies, the town and the different chambers of commerce and industry. This implies building up new phases of education, using in general mechanisms which allow large firms to transfer part of their taxes in favour of groups of companies from certain sectors. In this way, the PTC works together with groups of large, small and medium-sized companies, identifying the needs for updating and training in certain fields (plastics, industrial quality, information technology, amongst others), situation that at the same time reinforces the links (dialogue, knowledge, respect, reference) with the companies of their area of influence⁸. A sensitiveness and

⁶ Even though the San Martín, area where the PTC is, boasts the largest number of companies per inhabitant in the country with a well developed system of industries, the present crisis of company destruction, social exclusion and pauperisation has led to a drastic decrease in the number of industrial enterprises (from 5,000 to less than 3,000) and to an increase of unemployment (around 20%) and of poverty (measured according to income) which involves over 50% of its population.

⁷ The goal of this consortium is to offer products in common, collect market information in a professional and systematic way, obtain technical common advice as well as to improve their own design, this last issue from institutions which form the PTC. For this reason we work closely with the Furniture District of Alto Livenza, Italy, developing courses on furniture design and accessories and propitiating commercial and productive links between the companies of both conglomerates (See <http://www.sanmartin.gov.ar> and <http://www.coemma.com.ar>)

⁸ Such activities pursue the goal of increasing the capability of the firms of absorbing new technologies, as on the other hand they would not be able to take advantage of the external facts generated from their own

special training is directed to form leaders and experts in local and regional development, people who are capable of promoting and executing actions in the territory, educated in the logic and discipline of the interdisciplinary task of a planned strategy⁹.

- III. Stimulate wider segments of the population towards culture and entrepreneurship and innovation with the purpose of giving new solution to the already endemic problem of unemployment, the pauperisation and the high rate of mortality of companies, organizing different activities of education and training for different groups of people (workers, students, professionals, unemployed, amongst others). The PTC has also started working with groups of the population that have very low income – numerous in the region –, trying to form new undertakings based on its social capital, always using network strategies (networking) and with the collaboration of the Municipality¹⁰
- IV. Incubate new companies, mainly those based on knowledge (Knowledge Based Ventures –KBV-), as a way of diversifying the industrial nets and giving value to the results of the investigating activities. The fact that the municipal government has launched an initiative tending to give certain advantages and stimuli for the setting up of new companies and to their employment of new personnel¹¹ is added.
- V. To support the new process of recovery on behalf of its workers from factories closed down or in crisis, providing technical knowledge for the productive relaunching of each one. This type of work, which counts with a special participation of the resources of the University, is directed to produce technological and productive diagnosis of each business unit abandoned by its owners (in the process of bankruptcy) and in the preparation of business plans so that the workers united in recently formed cooperatives can produce once again¹².

FINAL WORDS (as synthesis)

As a Technological Pole that develops its activities in a southern country, we not only assist the urgent needs of providing courage to the companies in our community, developing and transferring technologies, information and education, but also contribute to generate an innovative environment which allows those technological efforts to be fruitful so as not to remain paralysed by obstacles which impose a more than weak innovation system.

The PTC works on having the scientific and technological capabilities of its institutes valued and used by the firms of the region, therefore doubling their efforts to produce links of confidence and mutual recognition, having direct contact with firms or groups of firms in certain sectors of activity and placing emphasis on the Management of Innovating Activities (Bogotá Manual). In this case, the PTC works permanently to make it easier for firms (particularly those of avant-garde technology) to fulfil technological innovating efforts and for

environment. In this way, the minimum thresholds of some of the most lagged agents in the process of learning are raised.

⁹ Since the year 2002, the UNSAM in conjunction with the Universidad Autónoma de Madrid participates in a Masters Degree on Local Development.

¹⁰ In this case, la Universidad de San Martín, as part of the PTC, has created the Oscar Wortman Department for the Development of Entrepreneurship Vocations (DVE 2001, <http://www.unsam.edu.ar/unsam/secyt/DVE2001/index.htm>), from where it has launched a competition on business ideas in the community and also fulfils certain sensitiveness and training activities.

¹¹ A Program has recently started for the Creation of Micro and Small Enterprises in the town of San Martín as “Local Development Strategy” which involves an Italian NGO, CISP, the UNSAM and the PTC which will provide the creation of 60 firms, using the support of a Nursery of Municipal Firms. On the other hand, the Company Incubator of Technological Basis UNSAM-PTC which started its activities in June 2000 has incubated up to date five undertakings, two of which have graduated.

¹² So far, four cases from various sectors have been dealt with (sports footwear, car parts, transport and electro-mechanics), which means returning the source of employment to over 500 workers.

the conglomerate of firms in traditional sectors to help them update themselves on the basis of information, knowledge, technology and association.

This permanent contact with the various actors of the community within a context of social emergency as the one which the Argentine society is going through, has led the PTC to get involved in other activities tending to solve certain urgent problems, such as unemployment, the closing down of factories and poverty. For this reason, actions are fulfilled to reinforce certain conglomerate of firms in traditional sectors, updating the of workers' and businessmen's knowledge and capabilities and to promote the entrepreneurship spirit and culture as well as creating new companies.

Such efforts are fulfilled in conjunction with other actors of the System, as the conviction that the removal of certain difficulties to the innovation cannot be fulfilled by any one institution in particular¹³. That is to say, there is an advance in the diffusion and adoption of a combined strategic thought, capable of building up a new territory fit for innovation, entrepreneurship and competitiveness.

¹³ "Tasks which analyse the possibility of generating synergic innovative processes in the Latin American context estimate the task of reverting the scarce innovative dynamic of such context by means of mobilizing only one of the actors involved in theory difficult, to say the least." (Versino, 2000)

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