Chapter 10 / Capítulo 10

Perspectives of the University-Company-State Partnership in Nariño and Technology Transfer

Perspectivas de la alianza Universidad-Empresa-Estado en Nariño y la transferencia de tecnología

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Abstract

This chapter examines the sought-after coordination between University, Company, and State in Nariño, including: the three parts of the development chain, key historical moments, the current situation, and different perspectives. The research involved work groups that were made up of different stakeholders in the three parts of the development chain. Through workshops, these stakeholders contributed important information about coordination milestones in Nariño. The current situation was investigated through a review of the literature, and perspectives on coordination were gathered through interviews with experts from Colciencias and the Inter-American Development Bank (IDB), as well as from an analytical reading of minutes from the Nariño University-Company-State Committee.

The chapter concludes that, historically, coordination in Nariño has not been easy, as common themes have not been well defined, leading to a tangle of internal interests which are not always clear. In this context, the university stands out as a respected voice on business and social problems, but one that does not contribute to their solution. The Nariño University-Company-State Committee could bring about a turning point in the relationship if it can interest the university in producing technology and transferring it to companies in the department.

Keywords: coordination, innovation, applied research, technology transfer.

Resumen

En este capítulo se hace un recorrido de la deseada articulación Universidad, Empresa, Estado en Nariño: tres eslabones del desarrollo, hitos de su historia, situación actual y perspectivas.

Para su realización se acudió a grupos de trabajo compuestos por diferentes actores de los tres eslabones, los cuales, mediante talleres, aportaron información importante en cuanto a los hitos de la articulación en Nariño. El tema de la actualidad se elaboró por medio de la revisión documental, y las perspectivas de la articulación se abordaron desde entrevistas realizadas a expertos de Colciencias y del BID, además de lectura analítica de las actas del Comité Universidad, Empresa, Estado de Nariño.

El capítulo concluye que la historia de la articulación en Nariño no ha sido fácil, dado que los hilos conductores de la misma no han sido bien definidos, lo que ha permitido la mezcla en su interior de intereses no siempre claros. Resalta en ellos el papel de la universidad, respetada intérprete de los problemas empresariales y sociales, pero sin aporte a su solución.

El Comité Universidad-Empresa-Estado de Nariño tiene la posibilidad de marcar un hito importante en la relación, si logra el interés universitario por la producción y transferencia de tecnología a las empresas del departamento.

Palabras clave: articulación, innovación, investigación aplicada, transferencia de tecnología.

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Key moments in University-Company-State coordination in Nariño

At the end of 2011, in the First Conference of Business Innovation Cauca-Nariño, a study was conducted with representatives of the different universities in Pasto. This showed that during the period between 2008 and 2010, there was a change in the approach to University-Company-State (UCS) relationships in Nariño. One crucial event was the prior creation of spaces for inter-institutional interaction, such as the Network of Latin American Regional Universities (UREL), the Nariño Regional Competitiveness Commission, the Nariño Local Development Agency (ADEL), the Regional Entrepreneurship Network, the Nariño Business Incubator Corporation (CIEN), and the Departmental Board of Science and Technology (Codecyt). These coordinating entities, with the exception of ADEL and UREL, form part of the strategies promoted by the national government.

ADEL Nariño was created in the mold of other development agencies around the world and in the country, but was organized based on local interests and resources. UREL represents coordination among universities and was joined by the universities with a presence in Pasto. Nevertheless, it is important to note that since 2000, various round tables (interfaces, networks, partnerships) have existed in Pasto and have worked towards making Nariño competitive: the Regional Assessment Committee of Foreign Trade (Carce), the Regional Board for Supporting MSMEs, and the Software Technology Park. The first two integration initiatives promoted by the central government no longer exist, while the Software Technology Park, an initiative that arose out of the Nariño departmental government and the Pasto mayor's office, continues with the goal of promoting software production.

In terms of coordination, in 2008 the Nariño department continued with processes initiated at the beginning of the decade. Some of these were weak due to lack of institutional support, but nonetheless they allowed those involved to gain experience in associativity and produced a network of stakeholders suitable for generating new initiatives.

In any coordination effort that demands the active involvement of stakeholders around an elusive common theme, the stakeholders, especially private ones, expect something in return. This was the case for ADEL, which was set up through two crucial injections of working capital. Later it was left to its own fate and has survived thanks to the public budget and contributions from international development agencies: the private stakeholders do not consider that their contributions have been repaid.

It is also relevant here to cite the case of higher education institutions (HEI). If coordination among stakeholders for development purposes was not easy, among HEIs it was downright scarce; their actions were isolated and low-impact, not allowing

effective exploitation of resources or the adopting of university educational projects relevant to the situation in the region and the development of priority production chains there. This resulted in a loss of credibility in the eyes of companies, which did not recognize the HEIs as key elements in their development. Production of basic knowledge through research was closed, and the results were not widely disseminated. Furthermore, the lack of associativity and technological capabilities in small and medium enterprises in Nariño meant they were not prepared to face emerging markets.

Despite efforts towards coordination, in 2008 the stakeholders had not established a common concept of regional development; a plan for 2030 was set out by the Nariño departmental government, but it remained on paper due to the notably weak coordination among different levels of the State, among other reasons. Allocation of resources to the UCS relationship was just a trickle because other processes were prioritized and also because companies were not aware of how important it was to produce knowledge in conjunction with HEIs, in order to improve innovation processes.

It was not until the end of 2009 that informed conversations began to take place about the role played in development by innovation-based coordination of the three points of Sábato's Triangle (University-Company-State) in Nariño. This model was instigated by Colciencias in order to form regional University-Company-State committees, which in Nariño took the name of Nariño University Company State Committee (CUEEN). This new coordinating entity possesses a principle that sets it apart from those that came before, as it has only one task: to promote, with State support, the transfer of technology and innovation from the university to the company.

The current UCS relationship in Nariño

The setting for the University-Company-State partnership or coordination is no longer as it was in 2008. Even in 2007, Manuel Castells (2007) warned that an economy—different from the industrial one—was moving the world, and this so-called new economy had specific characteristics and assumptions that were different from those of the industrial or traditional economy.

This new economy is an emerging phenomenon, marked by globalization and the resulting blurring of borders, that weaves new economic, social, and political structures with previously undreamed of, extraordinary speed. In the 21st century, the large factories (which never existed in Nariño), packed with polluting chimneys and crowds of workers doing repetitive tasks, from which classical economic thought originated, have given way to a new economic rationality based on the

activity of small- and medium-sized high-tech companies that, connected in a network, produce wealth differently, taking advantage of the knowledge and information society.

However, these trends have been far removed from Nariño's business world, which is still rooted in precarious agricultural production, services, and trade, aimed at the local market. But as the saying goes, when it rains (in this case, new tendencies), it pours. The country thus experienced a veritable deluge of free trade treaties and agreements signed by Colombia with Mexico, the U.S., El Salvador, Guatemala, Honduras, Chile, Canada, Cuba, the EFTA (Switzerland, Liechtenstein, Norway, and Iceland), the Caribbean Community (CARICOM), the Southern Common Market (Mercosur), and the Andean Community of Nations (CAN), on top of those signed with the European Union and the negotiations underway with Korea, Canada, Turkey, Israel, and the Pacific Alliance (Colombia, Chile, Mexico, and Peru) (Mincomercio, 2012). Although the departments opposed these globalization actions due to the disastrous consequences for sensitive sectors of the rural economy, they could do nothing and have therefore accepted them with resignation, uncertainty, and concern.

These actions of increased globalization in the country, and their adverse effects on Nariño's precarious economy, are destined to cause still more poverty than that reported by the National Administrative Department of Statistics (DANE). In 2011 it listed Pasto as the city with the greatest number of poor people in Colombia, with the poverty rate at 40.6% and extreme poverty at 8.8% (DANE, 2012a).

Globalization and its Discontents warns about the negative effects of a globalization left to the vicissitudes of market forces, that is, without any kind of government intervention.

> Globalization itself is neither good nor bad. It has the power to do enormous good, and for the countries of East Asia, who have embraced globalization under their own terms, at their own pace, it has been an enormous benefit […] But in much of the world it has not brought comparable benefits. For many, it seems closer to an unmitigated disaster (Stiglitz, 2002, p. 46).

Understood as the removal of barriers to free trade and greater integration of national economies, globalization can benefit poor countries as long as there are fair trade agreements. Otherwise, it will harm them if it takes away the State's responsibility to regulate economic growth and equitable distribution of wealth, if it establishes the market as the only regulator of the economy and citizens' lives, if it promotes inequality in international trade, if it uses ideological arguments to assign capital resources to economies in crisis and obligates them to use shock therapy

to save themselves, and, as a result, multilateral capital interests. Globalization left to the free reign of market forces is selective, exclusive, and it generates poverty.

Moreover, in the case of Nariño, the most enduring impediment to competition is the lack of integration among the companies, which, despite insisting for more than 20 years on the importance of the production chain and forming clusters, have not found a common aim due to mistrust, their focus on production for local markets, and the lack of an associative culture which makes them see other businesses not as potential partners, but as competitors. Nor do they have the ability or resources needed to confront these challenges individually; the only option is a collective strategy of integration and innovation to kick-start processes to adjust to the new economic conditions. Otherwise, they will continue being displaced by foreign companies, which will increasingly flood the local markets with goods and services. Collective strategies give businesses access to economies of scale, new technologies, new markets, innovations, cost reductions, and faster learning processes, and they also give them greater bargaining power.

As if this was not enough in the internationalized environment of the economy, there are new worldwide consumer trends in today's consumption society. Consumers, now internationalized, are always unsatisfied and seek happiness through consumption (Bauman, 2000, p. 67); furthermore, they demand hygienically produced products that are not harmful, and that are nutritious and have positive effects on health. For these, they will pay two or three times the usual price, or even more; they pay for features such as specific smells, flavors, shapes, and colors, as well as for convenient, biodegradable products produced in such a way as to ensure the protection of humans and the environment, with quality certifications issued by recognized international organizations. They are fascinated by and purchase advanced technology condensed into multiple applications in a small product and, paradoxically, also pay for products that last for as little time as possible, as it is vital to continue consuming new models, upgrades, fashions, and information; they increasingly choose to purchase online and prefer, although it makes them anxious, to be presented with many options. Fast learning and rapid forgetting are characteristics to bear in mind for current consumers (Bauman, 2000, p. 133).

What these new products and services have in common is that they generate added value, this being understood as the price consumers are willing to pay for a product or service. Creating or adding value is therefore to produce what consumers want, in the way they want it. In order to do this, companies in Nariño must implement business competitiveness strategies, such as aiming their offerings at consumers, and producing what the consumers prefer and not only what the

companies know how to produce. They must also offer competitive prices, improve administrative management, and constantly innovate. This is the challenge the companies must meet in order to survive this environment of consumption, which is highly intensive in terms of information and knowledge.

It is now easier to understand why the current environment of the new economy affects the business landscape and has a particularly powerful impact on micro, small-, and medium-sized companies in Nariño. In facing this challenge it is important to support coordination in the UCS triangle to strengthen business competitiveness, although it may be somewhat late, as business competitiveness has already arrived; companies do not need to export to be competitive. It is now vital to be competitive in the local market since globalization and the resulting trade treaties and agreements that have been signed, or are going to be signed, for Colombia, increasingly turn local into global and vice versa. Small and medium-sized local companies will be obligated to think globally and act locally, to compete in their own territory with imported products free from tariffs.

The UCS triangle must therefore contribute to strengthening competitive companies and products with outstanding added value in foreign and domestic trade. To do this, all available physical and mental resources must also be applied, maintaining a permanent competitive advantage in technical training, education, and knowledge (Vásquez, 2001).

Prospects for UCS coordination in Nariño

Asked about prospects for UCS coordination in Latin America and recommendations for appropriate progress in this area in Nariño, Gabriel Casaburi, the Lead Specialist in the Competitiveness and Innovation Division of the Inter-American Development Bank, affirmed:

> First it must be understood that this is extremely difficult, and that there are more failures than success stories in the world. The U.S. and Israel are possibly the only countries that have clearly managed to make this into something expert and almost effortless, while the rest of the world looks at them and tries to imitate them, to improve these relationships.

These words corroborate the difficulties noted above on coordination.

UCS coordination in Nariño has weaknesses that must be addressed in order to structure clearer prospects for success. One of these, from the companies' point of view, is their lack of interest in this coordination, as they rarely use innovation to solve concrete problems. When they need it they simply buy it, because they

believe (quite rightly) that slow and impractical university research cannot provide it. Companies have been studied, and continue being studied, by HEIs to enhance the state of the art in countless subjects arising in the classroom, with no interest in practical applications that would at least provide some compensation for the information provided by companies that are rushing around trying to simply secure short-term survival, more than continuous growth. Even so, there is still time for the university to overcome the apathy of companies by offering research that is applied to solving their problems and meeting their needs.

Additionally, the companies in Nariño have different levels of development and growth which must be identified in order to move forward in a productive research-company relationship. With a view to successful technology transfer, it is important for the universities to not only have researchers, organizers, equipment, university policies, and people responsible for transferring research results, but also that they identify potential clients well. A key to success in this enterprise is to segment the companies to which technology will be transferred. Companies can be divided into four categories: type one, fledgling; type two, reliable; type three, competitive; and type four, successful (Parra, 2012).

Type one companies are fledgling businesses, small-scale, and empirical. They do not yet receive technology transfer, as they require the basics: organization in administration, finance, accounting, marketing, and human talent. They can therefore be attended to by students in their final semesters who are linked to the extension departments of their universities.

Type two companies are those that have been in the market for more than three years. They are no longer fledgling concerns and have become reliable, that is, they already have a basic structure defined and formalized, and require product design, continuous process improvement, technology change, and increased turnover.

Type three companies are competitive. They have solved the problems of type one and type two companies and are better positioned. These companies can be offered technology and innovation. They already think in terms of ISO standards, market intelligence, and export plans, and they are clients of the university because they start discussing research and development (R&D), realizing that this will lead to the success of their business or, alternatively, their exit from the market.

Finally, type four companies are successful and are only interested in research, development, and innovation projects, for which they generally have their own teams; they are the major players. These companies no longer seek out the university, as they invest directly and later offset this with tax benefits for direct investment and innovation (Parra, 2012).

This strategy of categorizing companies allows the universities to serve the groups of companies that match their capabilities in terms of technology and innovation, as research results cannot be transferred if the client is not appropriate. Universities must therefore conduct an inventory of their abilities for adequately meeting business needs.

Another weakness can be seen in universities that maintain a marked interest in basic research, with an academic and administrative structure designed accordingly. This does not allow them to change the direction of research as quickly as is desirable. It has been necessary for the State, through the Ministry of National Education (MEN) and Colciencias, in line with policies on productivity and competitiveness at the national and international levels, to encourage universities to respond to national and regional production problems through applied research.

The university incentive systems for researchers are another weakness in HEIs. For many decades there has been an insistence in Latin America on the need for university research to move closer to the elusive company, if only for the purpose of learning. But the rigid bureaucracy that exists does not allow researchers to invest time outside the classroom and charge individually; nor do universities, especially public ones, have the means to charge companies for research services. If they continue designing projects without putting their own house in order, they may continue to fail; if they offer too many incentives, researchers will neglect their teaching work; whereas if they offer too few incentives, research will be neglected.

Despite the weakness of the administrative structure for research that Casaburi raises, it is essential to explore basic research a little further, as it is the only type of university research ranging from the undergraduate to the doctoral level. With respect to this, the National Board of Tax Benefits (CNBT) in Agreement 01 of June 1, 2011 adopted three types of projects of a scientific, technological, and innovative nature, according to which projects approved by the CNBT are classified in the interest of Law 1286 of 2009, to "incorporate scientific research, development, and innovation into production processes to increase the productivity and competitiveness required by the national means of production" (Colciencias, 2011). The CNBT, adopting the Frascati Manual, included basic research, applied research, and experimental development in its R&D activities. The OECD defines these as:

> […] research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
>
> Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

> Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience, that is directed to producing new materials, products, or devices; to installing new processes, systems, and services; or to improving substantially those already produced or installed (OECD, 2002, p. 30).

It should be stressed that the aim of applied research is to increase technological knowledge by obtaining new design methods and new forms of implementation. Its results can be patented, and the research can end in an invention that is a combination of preexisting knowledge that satisfies a need (Mandado et al., 2003, p. 19).

It is up to the HEIs to move towards applied research, especially that which enables the transfer of technology and innovation and generates valuable impacts on business productivity and competitiveness, taking advantage of the abundance of resources for research, which are staggering. Indeed, as of 2012, 10% of all royalties will be allocated to the National Science, Technology, and Innovation Fund, representing the not inconsiderable sum of COP$8 billion (approximately US$4.1 million as of January 2012) (Senado de la República, Acto legislativo 05 de 2011).

What has been seen until now as an apparently new matter of HEIs dedicated to responding to problems and challenges in their environment with pertinent research is, in fact, not so new. In 2000, the National Department of Planning (DNP), the Directorate of Regional Development (DDT), and the Andean Development Corporation (CAT) were already advising universities to commit themselves to building regional competitive advantages by forming knowledge companies, such as industrial districts, scientific parks, and incubators for entrepreneurs, innovators, and companies, in order to shape themselves into

> […] centers of new businesses and companies with high-tech content. This is based on the understanding that it is the universities of excellence that can trigger the process of new local high-tech companies and structural economic change, not companies, which are largely limited by the structures of their traditional business models (Acosta, 2002, p.111).

Universities were called on to drive the Regional Agendas for Science and Technology, and increase the training of doctoral students so that they can work in Research and Development (R&D) laboratories, closely linked with the forming of regional clusters. They were also asked to create professorial areas of research in competitiveness, region, border development, production chains, value creation, clusters, and other subjects that support local and regional economic growth. Finally, universities were encouraged to open specialized, high-quality programs such as postgraduate studies, lectures, and customized courses, as well as establish

regional observatories and promote students, teachers, and directors who are geared towards a culture of personal achievement and civic responsibility (Acosta, 2002).

The wholehearted involvement of the universities in response to this call enabled spaces to be arranged in Nariño for coordinating development, bringing together the government, academia, and companies. These included the Business Incubator, the Regional Assessment Committee of Foreign Trade (Carce), and the Local Development Agency. The universities' response, important in itself, was seen in the significant adjustments to academic functions; however, it was not considered necessary to do this in research and extension.

In this way, their participation in these coordinating spaces further increased the capacity to contribute to the state of the art in many areas such as universities, academic programs, areas and sub-areas of research, and a great variety of research topics. The universities in Nariño have offered only one type of research, valuable in itself, but without applications for real-world problems. Thus, in order to now talk about technology transfer to innovatively solve business and social problems, a new discourse is required for conversations between universities, companies, and the State.

The new discourse

At this point it is necessary to establish some definitions for innovation and technology transfer. Although innovative action is as old as humanity, the concept of innovation was used for the first time almost seventy years ago, in the first half of the 20th century, by the Austrian-Czech economist and sociologist Joseph Schumpeter. He considered it so important that he placed it in the production function, showing that the volume of production in a specific country depends on capital, natural resources, work, culture, and technology and innovation (Mandado et al., 2003). This futuristic approach made it impossible to argue that production only depended on the land, work, and capital. At the time, Schumpeter declared: "We will simply define innovation as the setting up of a new production function. This covers the case of a new commodity, as well as those of a new form of organization such as a merger, for the opening up of new markets" (Mandado et al., 2003, p. 20).

In Colombia, the DANE, in its *Encuesta de desarrollo e innovación tecnológica de industria 2009* (Survey of development and technological innovation in industry 2009), broadly defines innovation as

> […] the creation of a new or improved good or service for the domestic market or for a company and the implementation of a new or improved production process, for a principal or complementary line of production, as the result of investment in development activities and technological innovation (DANE, 2012b).

Furthermore, the DANE makes clear that while an innovation is always new for the company, it is not necessarily so for the market. Here it should be noted that innovation is not defined by the innovator, but by the market; in other words, if it sells, it is innovative.

Technology can be understood as the complete set of technical knowledge that arises from a process in a social and cultural context, in which knowledge and resources act in order to solve one group's problems. Technology has also gained particular importance because upon transforming techniques into technology via their combination with scientific knowledge, technology became a differentiating factor between rich and poor countries, and between obsolete companies and leading ones.

The field of technology is vast, and its classifications are broad. Correa (2000), at Universidad Nacional de Manizales, offers one general classification, and one by categories. The general classification proposes distinctions between soft, hard, and intangible technology. Soft technology includes: Orgware, for the organization and market management; Techniware, for managing technology; Humanware, for management, leadership, and administration of human talent; Organizational software; and Informational software. Hard technology refers to: means of operation such as machinery and equipment, materials, physical resources, and raw materials; means of circulation such as material management systems; and interface, operation, and circulation, related to logistics and supply chains. Intangible technology, meanwhile, refers to: industrial design, management of patterns in fashion and consumption, and trading systems.

Correa's classification into categories considers location, availability, scale of modernity, hierarchy, resource use, degree of innovation, and environmental impact.

With foresight, the Colombian Institute for the Promotion of Higher Education (ICFES) stated twelve years ago that:

> Modern technology occurs when scientific principles are applied to a production system leading to greater production, at a higher quality, more quickly, offering goods and services that under no circumstances could have been produced with empirical or traditional ingenuity (Palacios, 1991, p. 19).

This approach refers to the application of scientific knowledge to solve a company's practical problems, and it assumes that a synthesis is first carried out within the HEIs between the scientific foundations provided by basic research and the creativity for experimentation, design, the solving of concrete problems, the capacity to adapt, and the tailoring of generic technologies to suit specific conditions. Subsequently, this synthesis is brought into the world of production. Palacios (1991,

pp. 12-20) makes a distinction between scientific knowledge—which is necessary but insufficient to bring about changes in the environment—and technological knowledge, which differs in its objectives and practical nature.

These statements about innovation and technology suggest that innovation goes beyond technology, as it aims to successfully develop a new product or service, and its success is measured by market acceptance.

Therefore, to speak about the transfer of technology and innovation is the same as saying that university research groups are the privileged location for producing technology and innovation through applied research. They are then transferred to the company through contracts, which—as the reader will have already guessed—contain sections referring fundamentally to intellectual property (copyright and industrial property rights). This subject is of vital importance to the parties involved and warrants a separate chapter, as industrial property alone encompasses concepts such as patents, utility models, industrial designs, and brands in geographical indications, with each one of these forming part of other concepts.

Parra (2012) takes this idea further, suggesting that universities could start by reviewing their research infrastructure: policies, management support, equipment, and scientific capability. They could then use this inventory to design their portfolios, thinking in terms of quality, not quantity, and train human talent to formulate and structure research projects to seek joint funding and categorize target companies. An inventory of demand is also required to obtain a detailed list of the business needs in each segment. Using this, each university will know what it should offer to companies.

Given that there are not many companies in Nariño to attend to in terms of transferring research results, it is worth partnering with the Cauca department, as this will broaden the scope for both demand and supply. It is better to operate as a region—this way, the leading professionals produced by the universities can find work in the region—because until now we have seen attempts to make progress, but with few results to show for it.

In order to build this relationship of trust, the Cauca and Nariño University-Company-State Committee, with support from Colciencias, implemented the strategy of a Business Innovation Conference in 2012. This strategy, widely used in the rest of the country, especially in Antioquia, sought to motivate both businesspeople and researchers. In the conference, university research groups used portfolios to offer companies applied research for transferring knowledge and innovation, while the companies presented the research groups with their own requests and proposals.

Prior to the Conference, universities established a closer connection with the business community through activities that sought to characterize the demand for

transfer of technology and innovation in companies in Cauca and Nariño, to be provided by research groups.

In the Conference, previously arranged meetings were held between businesspeople and researchers in order to agree on possible deals for transferring technology and innovation. Before the Conference, these groups sought financing for their technology transfer initiatives by formulating joint projects.

The Business Innovation Conference generated a process for the meeting of technological supply and demand, and initiated a relationship for undertaking joint work and projects aimed at improving productivity and innovation in companies, within a framework of State financial support.

This strategy was implemented once again in 2013 in the Second Conference of Business Innovation in Pasto. To continue moving forward, there must be involvement from research groups focused on building portfolios of applied research projects in each of the region's universities, nearly all of which are located in the cities of Pasto and Popayán. It is up to these research groups to approach companies and sound them out about possible demand for technology and innovation in order to produce useful knowledge. Likewise, coordination also requires companies and businesspeople willing to demand innovation projects from universities with the aim of improving productivity and their competitive position, and it will be a significant moment in the history of Colombia when the State provides financing for this purpose.

Conclusions

Historically, although UCS coordination in Nariño has been rewarding, it has not been easy, as common themes have not been well defined, producing a tangle of internal interests which are not always clear. In this context, the university stands out as a producer of scientific knowledge with little or no application to problems. It has therefore been reduced to the role of being a respected voice on business and social issues, but one that does not contribute to the solution.

Despite its late arrival on the scene, University-Company-State coordination in Nariño has the responsibility and the opportunity to bring about a turning point in the relationship, if it can make progress in a type of applied research that facilitates the production and transfer of technology and innovation to companies in the department.

The future of UCS coordination in Nariño lies in the area of applied research. This research must begin right away to solve pressing business issues, thereby

endowing this budding relationship with sufficient trust, and taking advantage of the massive resources that the State has made available for this work.

Over the past two years the country has made rapid progress in its integration through the signing of trade treaties and agreements. In Colombia, and especially in Nariño, this is having detrimental effects on companies with weak productive and market structures, and may lead to their disappearance. In response, the CUEEN must help close the gap between production, knowledge, and business needs. This difficult situation is exacerbated by the rise of a new consumer who is highly informed, permanently unsatisfied, and who is a compulsive purchaser of new technology and innovations.

The two concepts of technology and innovation are still foreign to university research practice, and therefore it is anticipated that in the near future research groups will react by moving towards applied research, motivated by the massive resources provided by the State through Colciencias and the royalties system. The situation will be resolved to the extent that the administrative structures for university research, currently built only on basic research, are restructured to fully encourage researchers to conduct applied and experimental research, given that these will be offered in the market.

The transfer of technology and innovation is only possible for companies that have passed the stage of covering their basic needs. It is essential to segment the companies so that the universities can serve them through their students, teachers, or researchers, depending on their level of development.

The strategy of a Business Innovation Conference motivates researchers and businesspeople to make headway in the supply of and demand for applied research to solve business problems.

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