

# COMPANIES CREATED AT UNIVERSITIES

Spin-offs are a way to bring academic knowledge to society  
and to create jobs and income | Marcos de Oliveira

**S**tartup companies that are founded at universities and research institutes are called academic spin-offs. This name serves to differentiate them from spin-offs founded within the corporate world, principally at large companies. They form a category of startups, also nascent companies, many of which have a technological profile, but which were not necessarily founded at universities. The appearance of these spin-offs as a result of the shared contact and knowledge generated at these teaching and research institutions is a recent phenomenon in Brazil, which began towards the end of the 1990s, as it did in the more industrialized countries. Also known as spin-outs, academic spin-

offs have their roots in the encouragement of a professor, a conversation between students in a laboratory, in the licensing of a new technology or as the result of the entrepreneurial spirit of one or more students.

It is empirically known that the number of spin-offs has been increasing in recent years. There is no one single path for founding these companies, as shown by two studies presented at a seminar organized at the Center for Technology Management and Policy of the University of São Paulo (PGT-USP). “There are many ways to bring the knowledge generated at universities to companies, non-governmental organizations (NGOs) or to otherwise ensure that it reaches



society,” says Professor Guilherme Ary Plonski, the coordinator of PGT. “This can occur when an undergraduate student goes to work at a company or an NGO, when an entrepreneur uses his knowledge to form a new business or even through licensing of technology, such as patents.”

These two studies complement each other and present examples of successful companies to show how some spin-offs were created and evolved at USP, at the Federal University of Rio de Janeiro (UFRJ) and at the Nuclear and Energy Research Institute (IPEN). “Spin-offs leave universities with new knowledge and transform it into innovative products and processes. This is a way to transfer knowledge to society, says Claudia Pavani, who holds a PhD from PGT, and who wrote her dissertation on this topic under the advisorship of Professor Moacir de Miranda Oliveira Júnior of the USP School of Economics, Business Administration and Accounting (FEA). The dissertation profiled eight *spin-offs* in the area of engineering, and the factors that influenced their creation. “The companies are founded based on what they have attracted in the form of investors, partnerships and investments, such as the PIPE [FAPESP Innovative Research in Small Businesses Program]”, says Pavani.

#### **PARTNER WITH THE MARKET**

One of the companies studied by Pavani was Technomar, founded in 2002 in São Paulo by a former Master’s and a former PhD student of the Numerical Offshore Tank Laboratory (NTT), of the USP Polytechnic School. “Professor Kazuo Nishimoto, NTT coordinator, always had the vision that we should found a company and bring knowledge to industry,” says naval engineer Fabiano Rampazzo, one of the partners. At the beginning they provided technical services for the company. However, between 2010 and 2013, when two more partners joined the company, one of whom came from the financial market, the company increased its array of services and began to be managed more professionally. “We increased the number of projects in an attempt to get away from our exclusive dependence on oil and gas,” says Rampazzo. They added the possibility of developing ship maneuvering simulators to train captains and harbor pilots. “We participated in the development of a simulator with USP and Petrobras, which included a joint patent. Right now, we are working on a movement stabilizer for small pleasure boats, to prevent passengers from getting seasick from the motion of the boat.”

Another company studied by Pavani was PAM Membranas, in Rio de Janeiro. Specialized in polymer membranes for filtering water and treating effluents, the company was founded at the Membrane Separation Processes Laboratory of



## **The areas with the most spin-offs are information technology and computing**

the Graduate School and Research in Engineering Institute (COPPE) at UFRJ. The founding partners were three professors: Ronaldo Nóbrega, Cristiano Borges and Claudio Habert. Initially installed at the COPPE incubator, three years later they moved to the UFRJ Technology Park, where they produce membranes made of hollow fibers for micro- and ultra-filtration, used in water purification and treatment of effluents. “A former PhD student from the lab, Roberto Bentes, later joined the company as a partner and became the company manager,” says Borges. Over the years, some 12 former students from the UFRJ laboratory have worked at the company. Since its founding, PAM has had a technology transfer contract with the university.

The other study on companies that were founded at universities was conducted by Paula Salomão Martins, during her Master’s degree studies at the USP Polytechnic School, under



A bundle of fibers from the PAM company forms membranes for filtering water (above). Use of laser for cutting metal, by the LaserTools company (side)

her advisor Ary Plonski. She researched spin-offs in physics and chemistry in São Paulo with connections to USP. “The areas with the highest numbers of spin-offs are engineering, information technology and computing. In the physics and chemistry courses, the students are not very enthusiastic about entrepreneurial initiatives,” notes Martins. “I found three cases at Cietec [Innovation, Entrepreneurship and Technology Center, located on the main campus in São Paulo].”

One of the companies analyzed by Martins was LaserTools, which does laser cutting and industrial molding. It was founded in 1998 at the IPEN Optical Division, was incubated at Cietec and today it has its own headquarters, headed by physicist Spero Morato (see Pesquisa FAPESP Issues No. 50 and 110). “It was important because it was created prior to the Innovation Act of 2004, which promoted the appearance of these companies, and the participation of researchers as partners,” says Martins.

One problematic issue for spin-offs is the fact that small companies must comply with the same legal requirements as large companies. An example of this is a company studied by Martins, Chem4u, which was founded by the couple Leila Keiko Jansen and José Ulisses Jansen, chemical engineers with experience at major corporations in this industry. In 2007 they decided to found a company based on the subject matter that José had worked on for his doctorate at Ipen, related to a process for synthesizing varnish using ultraviolet light and heat. “After a period at Cietec, we also began to develop nanostructured materials in which the focus was on a nano-additive with microbicidal properties for placement in polymeric materials,” says Leila. “We had problems in regard to environmental permits, which are the same for large, medium-size and small companies, which

becomes a heavy barrier to entry for new companies with minimal structure,” she notes.

The two researchers who studied the spin-offs noted that an important element that should be present at universities and research institutes is an environment favorable to the appearance of new entrepreneurs. “If there is no entrepreneurial culture, knowledge does not create income for society and for the country,” says Pavani.

The University of Campinas (Unicamp) is the institution that has provided incentives for entrepreneurial activities for the longest period of time. “Unicamp arose alongside companies, principally in the engineering field, with partnerships. This vision of entrepreneurial activity has been around for a long time, under several different university presidents,” says Milton Mori, executive director of the Unicamp Agency for Innovation. The most important showcases of this agency are the so-called daughter companies of Unicamp, which form Unicamp Ventures. At the end of 2015 there were 286 companies registered and active on the market. Of these, 52.3% of the partners are or were undergraduate students, 18.66% were graduate students, 3.08% were faculty, and 25.96% had some type of connection, such as licensing of patents or participation in the University’s company incubator program. The information technology area accounts for 45.5% of all the companies. In December 2015, these Unicamp daughter companies employed 19,200 people and sales totaled approximately R\$3 billion. The overwhelming majority of these companies (93.6%) are located in the state of São Paulo, 63.21% of them in Campinas.

Another recent initiative by Unicamp Agency for Innovation is Inova Ventures Participações (IVP), a company that invests in startups in Campinas. “It has 49 founders, including businesspeople, many from the daughter companies, who act as guardian angels for investments, but within a group,” says Bruno Rondani, president of IVP. “We invest between R\$100,000 and R\$400,000 in the initial phase of the company, after a selection process.” From 2011 to the present, five companies were chosen for investing, not necessarily those owned by students or alumni of Unicamp. ■

## Projects

1. Sema – Multi-active stabilizer system for small and mid-size boats (No. 2012/50482-9); **Grant Mechanism:** Innovative Research in Small Businesses Program (PIPE); **Principal Investigator:** Carlos Hakio Fucatu (Technomar); **Investment:** R\$287,063.93.
2. Laser applications in materials processing (No. 1998/07319-0); **Grant Mechanism:** Innovative Research in Small Businesses Program (PIPE); **Principal Investigator:** Spero Penha Morato (LaserTools); **Investment:** R\$59,722.00 and US\$151,872.00.
3. Study on feasibility of addition of nano-charges to electrical-insulating varnishes, resins and glazes (No. 2008/51829-7); **Grant Mechanism:** Innovative Research in Small Businesses Program (PIPE); **Principal Investigator:** José Ulisses Jansen (Chem4u); **Investment:** R\$87,036.00.