

# ADVANCES IN SCIENCE

**Universidad del Rosario**

BOGOTÁ - COLOMBIA - No. 03 - YEAR 2019 - ISSN 2590-924X

**The URosario,  
with its first  
company for  
services of  
preventive  
and predictive  
medicine**

**It is the zero  
hour for  
asbestos in  
Colombia**

**The time has  
come to have  
a regulatory  
framework for  
migration**

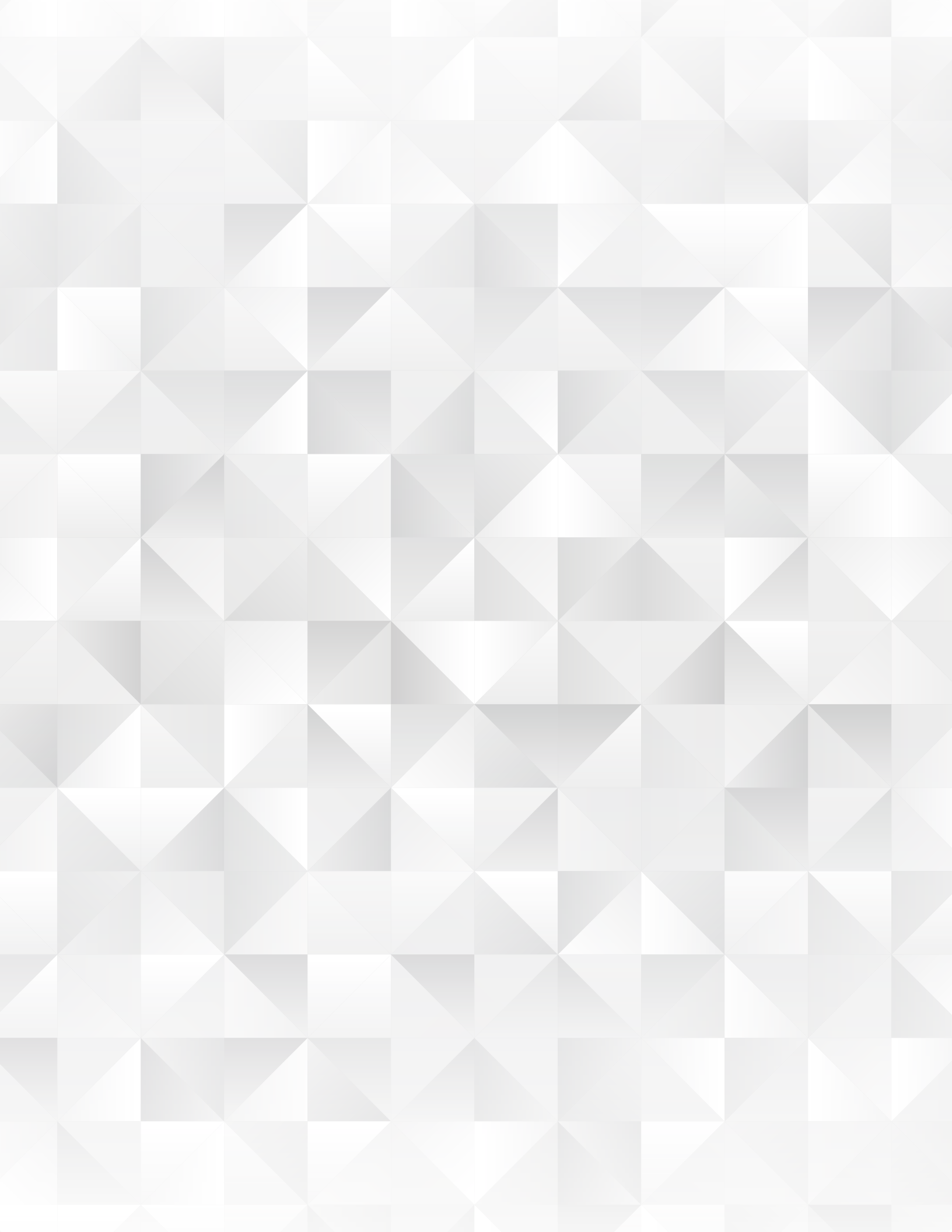
**A new damselfly  
species was  
discovered in  
Colombia**

## AND WE ARE GROWING OLD . . .

**How much does it  
cost to buy products  
in one or several  
supermarkets?**



**Universidad del  
Rosario**  
Founded in 1653





# ADVANCES IN SCIENCE

Universidad del Rosario  
**365 years**



Universidad del  
**Rosario**  
Founded in 1653

Universidad del Rosario  
December 2019

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# RESEARCH WITH A SOCIAL COMMITMENT



By: Juan Felipe Córdoba Restrepo  
Editorial Director

Photos: Leonardo Parra, Juan Guillermo Pérez

The university seeks to ensure that its research makes a contribution and is socially relevant, that it leads to new forms of understanding and knowledge.

The written discourse is one of the guarantees we count on in order to inform all of our readers about the developments, advances and results of the research projects undertaken in the Universidad del Rosario, which have a feature that we would like to note, and, to a certain extent, stress: Excellence. In this, the third issue of our *Revista Divulgación Científica (Advances in Science)*, we would like to explain the different subjects which the institution believes are beneficial to society and do it in an agile and simple way, in accordance with our editorial guidelines.

Research in itself is a valuable tool which society may employ. It is much more than a simple study. It may provide us with valuable information about different subjects of interest, in order to advance in analysis and foster the creation of networks of knowledge.

The production of knowledge leads us to consider the ideal of promoting a joint labor in every sense, as a shared enterprise which includes investigators, students and readers, but also involves institutions: The above aimed at and seen as a possibility, otherwise fortunate, for disseminating the research projects which are the fruit of the University's work, which, in line with its foundational principles, are done with a broad sense of the social in order to energize knowledge for the benefit of all.

The university seeks to ensure that its research makes a contribution and is socially relevant, that it leads to new forms of understanding and knowledge, which, of course, requires the right conditions to be achieved. It implies understanding the University's research as a product which is meant to help create developments for the population.

In a constant manner, the Rosario develops strategies which lead to the strengthening of the culture of research.

To teach, show and interest the public encourages the construction of a dynamic in which interlocution, debate and comparison stop being a marginal concern and turn into the actors for the advance and consolidation of our bodies of knowledge.

By way of closing this editorial, it would be useful for us to recall what some thinkers have stated about this field. In this issue, we look at what Norbert Elias told us:

*"In the developed sciences, the main criterion is the relation between the new results of a research project which are available in each case and the oldest knowledge in existence, that is, not something which may be expressed by static polarities of the 'true or false' kind, but precisely through references to what lies between them, based on the dynamic of scientific practices in the course of which theoretical-empirical knowledge becomes greater, truer and more adequate."*

(Norbert Elias (1982). *Sociología fundamental*, Barcelona: Gedisa, p. 63). ■





# THE ART OF ENTREPRENEURSHIP:

## A pedagogic initiative of the Rosario which is unique in Colombia

The wager of the President of the University, José Alejandro Cheyne García, is on entrepreneurship. He is convinced that training persistent and talented entrepreneurs, within an innovative pedagogy which involves art, is the key to Colombia's progress.

By: Inés Elvira Ospina

Photos: Leonardo Parra, Alberto Sierra

**T**he President of the Universidad del Rosario, José Alejandro Cheyne García, is convinced that any person can be an entrepreneur, entrepreneurship is a right and thus universities have an obligation to teach it. Guided by these three ideas and with an innovative pedagogy, the institution teaches and accompanies the young people who have decided to make entrepreneurship their life project.

The path to this pedagogical wager began in the School of Management and Business, where, to their surprise, the students found that all of the walls of the seat of the Entrepreneurship and Innovation campus were like a big canvas painted by the Impressionists. We refer to the pedagogical innovation of *The Art of Entrepreneurship*, a strategy which seeks to sensitize young men and women to art and calls on them to open their minds beyond everyday concerns, which, for the President of the University, is

one of the skills which an entrepreneur should have: The ability to take a "fresh look" at his or her surroundings. This relationship between art and entrepreneurship opened the way for a different training in which skills are developed in an integral manner, supported by settings which are positive for entrepreneurs.

President Cheyne is confident that this is the way out of that vicious circle of unemployment and poverty which the country is trapped in, since history has shown how countries in crisis have moved ahead thanks to what is known as the capitalism of entrepreneurship, which is none other than the driving force of the different enterprises which arise from ordinary persons. In the following interview with *Advances in Science*, the President explains what has been done in this field, how it has been done, the results and the plans to train the most talented entrepreneurs.







**Advances in Science (AS):** Entrepreneurship has always existed, but how has it changed in recent years?

**José Alejandro Cheyne (JAC):** Several decades ago, people didn't talk about entrepreneurship, they talked about the DNA of entrepreneurship. "Ever since he was little, that boy has been a great businessman," mothers would say. Then, it was believed that there were a number of circumstances which drove a person to become an entrepreneur, like having been born into a family of entrepreneurs. So, we all thought that it was a question of being very gifted and only for those with a very high I.Q.

That approach radically changed when it was understood that we can all be entrepreneurs. That we don't have to come from a business background, that it hasn't anything to do with our gender or socio-economic conditions, but is within the reach of ordinary men and women because entrepreneurship is a right. And in Colombia it is: If you have an entrepreneurial project, all you have to do is meet the requirements of a Chamber of Commerce and begin.

**AS: Speaking of that, should universities teach it in their programs?**

**JAC:** Yes, and that is why we have that strategy in the university. A number of authors believe that entrepreneurship is an obligation, and in line with that premise, what the universities must do is present entrepreneurship to their students and leave it to them to decide whether or not they turn it into their life project. That is, entrepreneurship has a triple dimension: It is for everyone, it is a right and it is an obligation.

**AS: Is that the key to success: Making entrepreneurship your life project?**

**JAC:** People talk about two kinds of entrepreneurs: The person who is one out of necessity and the one who sees an opportunity. The first is the person who, for example, loses his job and begins an informal business without planning or foresight: He or she does not have a process which



**“The entrepreneur needs to have the ability to think outside of the box, to see reality with a different optics, a skill which art strengthens”:**  
**José Alejandro Cheyne.**



is systematic, organized or planned. The second kind is just the opposite: When the person sees an opportunity and follows an organized process to ensure its success.

This difference explains what is happening in Colombia. The country is always ranked at one of the top places for entrepreneurship in the world in terms of the creation of companies, but it also is one of the leaders in their closure. That is why we must wager on the second kind of entrepreneurs, not those who do it by necessity, although we should acknowledge their value, because there are major entrepreneurs who start with empty pockets and are now great businessmen.

**AS: How do you teach entrepreneurship?**

**JAC:** Our method is not the usual one. We do not teach our students how to draft financial or business plans. What we do is to involve ourselves in the life project of the youngsters and help them to discover if entrepreneurship is or is not their life project.

Art allows us to discover their characteristic talents and awaken the sensibility of the people who perceive it. Often, the entrepreneur does not see business opportunities because he is not sensitive to the needs of people. That was the idea which decided us to promote entrepreneurship though the work and paintings of Impressionists like Monet, Renoir, van Gogh and others.

**AS: What skills does art hone for entrepreneurs?**

**JAC:** The entrepreneur needs to have the ability to think outside of the box, to see reality with a

different optics, a skill which art strengthens. He or she must work in a team, promote an entrepreneurship of solidarity which allows the person to work with others and we can learn a lot about that from the Impressionists. In their era, artists usually painted in black-and-white in their studios and the Impressionists decided to use colors and paint in the open air. What they did is admirable because their paintings were not exhibited in art galleries – people even made fun of them, which led them to work as a team. They joined together and supported each other in order to move forward. The same happens to entrepreneurs: Without a team, they go bust. An entrepreneur who begins on his own and works on his own closes his business on his own.

The third skill they have in common is a limitless surrender to their work. In his short life, van Gogh painted more than 800 pictures and Renoir, even at the height of his glory, continued to paint despite his chronic arthritis. The entrepreneur cannot think of limiting his work or stick to a timetable of eight hours and always relax on the weekends.

**AS: How did you implement the Art of Entrepreneurship? What were the results?**

**JAC:** We surprised the students at the seat of the Entrepreneurship and Innovation campus when we filled the walls of its corridors with pictures by the Impressionists and direct messages about entrepreneurship. A year after the Art of Entrepreneurship started, the students who wanted to be entrepreneurs multiplied by three.

**AS: How you work with those entrepreneurs?**

**JAC:** First, we undertake a process to sensitize them to entrepreneurship and those who decide that this will be their life project receive an additional training, at no cost, which works on their skills. Later we help and accompany them in the process of starting their company, and we support those who already have one in the process of making it grow.





Also, those who accompany them are not only our professors, but all of the actors who surround them. We organize activities and invite their families and successful entrepreneurs in order to support that training.

**AS: Entrepreneurs often stop due to the circumstances which surround them. How do you prepare them to not “give up”?**

**JAC:** That is known as a negative externality, that is, factors like uncertainty, a lack of infrastructure or little access to funding, all of which do not allow them to consolidate their enterprise. That is why you have to work on building an ecosystem which is in the hands of the State, but also in the hands of entrepreneurs and the private sector.

For example, we made an alliance, called *Mentes Valientes* (Courageous Minds), with the Centro Comercial Santafé (shopping center) in Bogotá, in which we were responsible for the pedagogy and the shopping center provided us, for several months, with venues to display and commercialize the products and services of different business ventures.

We are also going to create an entrepreneurship fund, so that there is an economic support, because we understand that every entrepreneur needs a supportive push.

**AS: Part of that ecosystem are your Laboratories of Entrepreneurship. What are they?**

**JAC:** They are laboratories at the service of entrepreneurs, so that they can undertake their process of learning and investigation there. The total investment is thirty thousand millions of pesos (approximately USD \$8,969,000) of which ten thousands were already invested in the first laboratories, which were opened last year.

The “*Shopper Lab*” and the Laboratory of Organizational Behavior are already functioning at the seat of the Entrepreneurship and Innovation campus. We expect the others to

be opened next year. They are the Laboratory of Logistics, with the whole supply chain; the Laboratory of Innovation, with 3-D printers and other leading-edge technologies; and one for Health Administration.

**AS: What is the Masters in Entrepreneurship and Innovation?**

**JAC:** There was a demand for formal programs, training and the teaching of skills. Hence, we created the only Masters in Entrepreneurship and Innovation in Colombia, which prepares the student during a period of 14 months and he or she only graduates when his or her enterprise is working and shows results in terms of sales and so forth.

**AS: What is the biggest challenge entrepreneurship faces?**

**JAC:** Strong and serious research, which is barely beginning. The problem is that entrepreneurs work at top speed and investigation barely reacts; but it is necessary so that it can be the foundation and linked with entrepreneurship in order to work on different challenges and problems.

Thus, José Alejandro Cheyne, who became the President of the University in October, 2018, has made this wager, unique in Colombia, to train a new generation of entrepreneurs, which, in the short term, will permeate all of the areas of knowledge and extend to all of the programs which are taught at the Rosario, because everyone can be an entrepreneur, from doctors to economists. ■



# THE ROSARIO TODAY: THE RESULT OF 20 YEARS OF CHANGE

Becoming one of the top-ranked universities on a national and international level, playing a leading role in the *Misión de Sabios, 2019* (2019 Mission of the Learned), mounting doctoral programs before the planned date and presenting novel projects to the country: These are some of the achievements which this institution can show, the result of its decision to wager on research and innovation. An interview of Stéphanie Lavaux, its lady Vice President and Provost.

By: Ángela Constanza Jerez

Photos: Alberto Sierra, Adriana Sánchez

A little more than two decades ago, the Universidad del Rosario implemented a measure which led to a major change: It decided to be a teaching university which undertakes research. Today, the results show that it was a wise decision. It is ranked among the best Colombian universities (for example, *QS Latin American Ranking* put it among the top five in 2019), its academics have published their studies in leading scientific publications and it participates in research consortiums, among other achievements.

In addition, its directors are proud of the fact that the university has been chosen to act as the technical secretary of the section of social sciences and equitable human development of the *Misión de Sabios, 2019*, the name of the group of academics, intellectuals and artists of the highest level who, since February, have been charged with the mission of guiding the course which Colombia should take in the fields of science, technology and innovation. And if that were not enough, one of those learned men and women is the director of the Center for Auto-Immune Diseases Research (CREA, in its Spanish acronym) of the School of Medicine and Health Sciences of the Universidad del Rosario, Juan Manuel Anaya,





who coordinates the Mission's focus on life sciences and health.

"These deeds are an acknowledgement of what we are doing, that the university knows how to rethink itself and generate changes on very solid foundations," says Stéphanie Lavaux, Vice President and Provost of this academic institution, who has held that post for nearly five years and has led a large part of the changes, several of which were accomplished before the planned date. For example, 20 years ago, the university set the goal of advancing to the point where it would offer its first doctoral programs in 2019: However, it achieved that several years ago and is currently working to accredit the high quality of its first doctorate.

"We are moving forward with our planning and we can even announce that, in 2020, we will have programs in two fields of knowledge which are new to the university: Engineering and Creation. Under an umbrella program which is called URTec (Universidad del Rosario Tech), we decided to open a School of Creation – a mixture of art, musical theater, design and architecture – and a highly innovative Engineering School so that, in alliance with the School of Management and Business and through science and creation, companies may work with the university in the search for solutions related to sustainability, innovation and all of the challenges of the fourth industrial revolution," the Vice President and Provost explains.

These new programs are framed within the three wagers on research which the alma

mater has made for the next few years: Technology and innovation, scientific talent and open science, which the Vice President and Provost speaks of in the following interview:

**Advances in Science (AS):** For nearly 20 years now, the Universidad del Rosario has been responsible for major transformations in the field of research.

**Which of them would you single out?**

**Stéphanie Lavaux (SL):** If we were to put it in order of importance, we've succeeded in advancing from a teaching university, based on undergraduate education, to a true teaching university which undertakes research.

It was not an easy decision. Those of us who were here then remember that we had to convince the administrative and professorial staff that we had to make big changes in order to promote and support research, that the basic thing was to create projects and to do that, we had to have professors with certain talents and profiles: Teachers with an experience of research who would link the work of research with the job of teaching.

The change took place when the decision was made and we have been consistent about it since then. That means that all of our strategic planning has had an emphasis on research.

The tools of promotion were changed, hiring policies were adjusted, new fields of knowledge were created. For example, the Faculty of Natural Sciences and Mathematics arrived, which is an outstanding accomplishment because it improved the model of teaching which undertakes research.

On another front, several international accreditation and evaluating agencies have opened up very important paths of reflection for us. I would underline the university's contact with the European University Association, which showed us how making the decision to put research at the heart of our mission would not only be seen in our undergraduate programs and human talent, but also in our postgraduate programs, Masters programs in research and doctorate facul-



ties, which is another of the qualitative leaps we made.

And, more recently, they encouraged us to undertake institutional wagers on open science, which includes open access to data, the training and enlistment of new generations of scientific talent, innovation and the transference of the results of research to society.

**AS:** Do the research incubators deserve a special mention, since they have shown a significant growth and have had a positive impact on the productivity of the research groups.

**SL:** They are consistent with the model chosen by the university, but they are also based on a diagnosis, which I find alarming, and that is that Colombia does not know how to spot scientific talent and encourage it in primary and secondary education. That does not happen in the countries of the Organisation for Economic Co-operation and Development (OECD), where it is usually found that 10% of the students with a high school diploma show an interest in science.

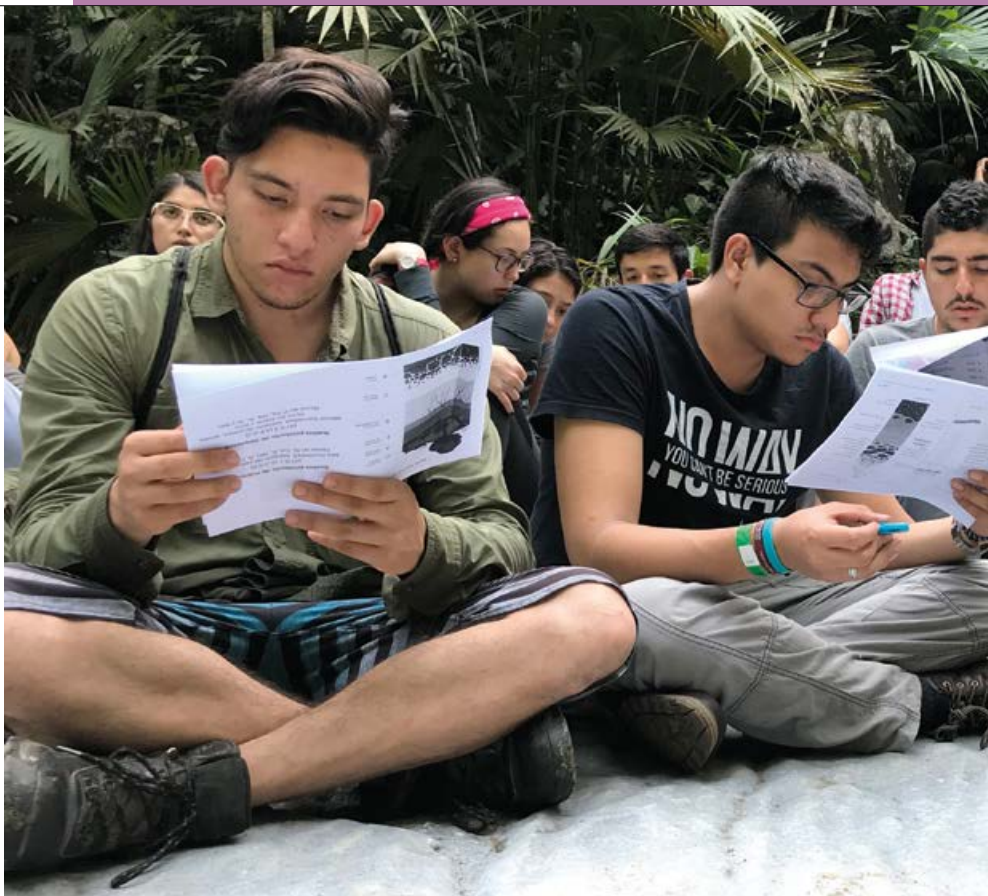
It is up to us, the universities, to find that talent, encourage it, train it, and later, provide it with the means to apply it. That has to change. I know that there are high schools who are following that path and there is the “*Ondas*” (Waves) program of Colciencias (the Colombian science, technology and innovation agency), but we need to do more.

In that context, this university, like others in the country, opened a space for training-linked research and training in research, in which the research incubators have an important role.

In addition, in recent years the Rosario destined resources, through open competitions, so that the research incubators may finance investigative projects and activities. It also consolidated a protocol for the creation of research incubators so that they can have what is needed in terms of training, projects and scientific integrity. That means that they are tied to a professor, a group and a line of research.

At the current time, we have 80 research incubators with a special characteristic: They do not follow the limits of a semester. The professor who commits himself or herself to lead it does it on a long-term basis, because there has to be a “learning to learn by doing” strategy and you cannot do that in four months. There is also a strategy of working with peers, a role in which undergraduate students are combined with those studying for a Masters or Ph.D., with the aim of passing knowledge from one generation to the next.

**AS:** How do you link all of that with the option of a coterminal degree, that is, with the



**possibility of connecting the undergraduate level with that of the Masters and that, with the Doctorate?**

**SL:** In accordance with the lessons we have learned, and with the idea of holding onto scientific talent, we opened up a route for studying science to students who want to develop that aspect of their education for professional and vocational needs, who want to be the new generation of scientists in this country. The route starts at the undergraduate level and finishes at the doctoral one, with the possibility of studying abroad.

The undergraduate students who wish to take that course are offered opportunities to test themselves as scientists – courses on the methodology of research and research incubators, for example – and when they are already finishing their undergraduate studies, we give them the chance to connect with the first semester of a Masters in research. As students for the Masters, they take their undergraduate examinations and in the Masters program, study subjects which are more demanding than those of the undergraduate course, which, when they pass them, are accredited to the Masters degree. And the same occurs at the doctoral faculties: They connect their Masters in research with a Doctorate at the University, with a single line of training.

It is like a Lego game: If the student has met all of the requisites and passes the first semester of the Masters in research, he or she can get his undergraduate degree. He enters his Masters program, moves on to a doctoral faculty and within a few semesters, will have his candidacy for the Ph.D. approved. It means that the student only needs to complete the part of formal research to get his program approved. With such experience in science, we can speed up the student's graduation, with a strong professional and vocational impact.





**AS: Considering all of these changes, what do you think are the most important achievements?**

**SL:** The biggest is the consolidation of all dimensions of research, which has enabled us to show the results we now have. We are obtaining results from initiatives which go back to the strategic decisions of nearly 20 years ago.

But the biggest, in terms of recent consolidation, is the increase of high-impact scientific productivity. It is a promising sign that more than half of our published studies are done with foreign co-authors and this figure puts us in the middle range of such collaborative studies on a world level, without having engineering programs, which are usually the driving force of research. The same applies to the fact that we are in the top five of Colombian universities and the top three in private universities in scientific terms.

What stands out is having ensured that the results of our research radiate out to society, from their basic social impact to a number of transfers of technology, with patents or innovative technological products, which also pertains to the social sciences and is not exclusive to STEM subjects (science, technology, engineering and mathematics), as usually happens.

Likewise, it is very important that we have established the first institute of research in the field of health sciences, after having consolidated our doctoral programs in almost all fields of knowledge, and are working on some doctorates, which will really break new ground in the academic and scientific panorama of the country, like the Ph.D. in Clinical Research.

I would like to finish with an achievement which shows how mature the university has become and it is in a field few universities are working in, and that is our wager on the idea of open science. Within this idea of providing access to

knowledge and ensuring its transference there is also the objective of making the inputs which allow us to produce new knowledge available to communities of scientific experts: To allow other teams to use our results and inputs so that they may continue to produce more results and because not having to start from scratch is an achievement in itself: World science has to be accumulative.

It began with open access and towards that end, in 2017, we signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, the first Colombian university to have done that and for which we gained a number of acknowledgments. We now have a policy of open data in research, which also includes the social sciences. To democratize and liberate knowledge is a big wager of the university.

**AS: With so many achievements, what are the challenges?**

**SL:** The challenge number one is to consolidate all of these wagers. To do that, we must permanently update our instruments of promotion.

The second challenge is to do with innovation and experimentation. We must experiment, not chisel anything onto stone; we have to be more dynamic and see how to lend more support to the projects of the scientific life both of the human beings who are doing research and the institution as a whole. To find new paths, new formats and not be afraid of anything.

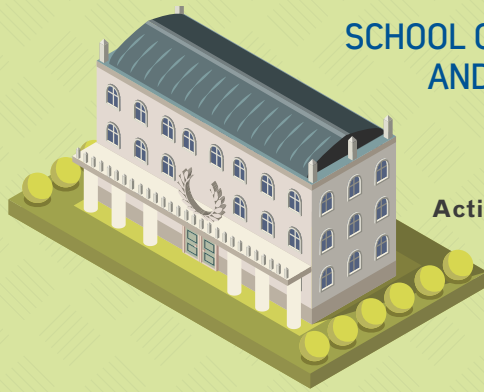
The third challenge, and it is a very immediate one, is to achieve a greater internationalization of research. This does not mean that Colombia is still not the heart of the work we do and the purpose of that work. It is not a question of our becoming more expert in a field in another country or choosing to solve problems in another part of the world. It is a matter of looking for expertise wherever it may be found in order to advance the basic sciences and build solutions for the problems of Colombia, where science has much to say.

This challenge entails creating mixed units of research, in which there are other researchers who have common wagers and resources. The ideal is that science at the Universidad del Rosario is not only done on its campus but we can have units of research in different parts of the world.

And the fourth challenge is to obtain more crossed international funding and have the leadership in initiatives for large research consortiums, like the one which “Colombia Científica” opened to us, that government program which supports projects of research and innovation which promote the development of the regions and respond to the needs of the productive sector. This will enable us to undertake inter-disciplinary research and work with different sectors on a national and international level. ■

# ACTIVE RESEARCH INCUBATORS

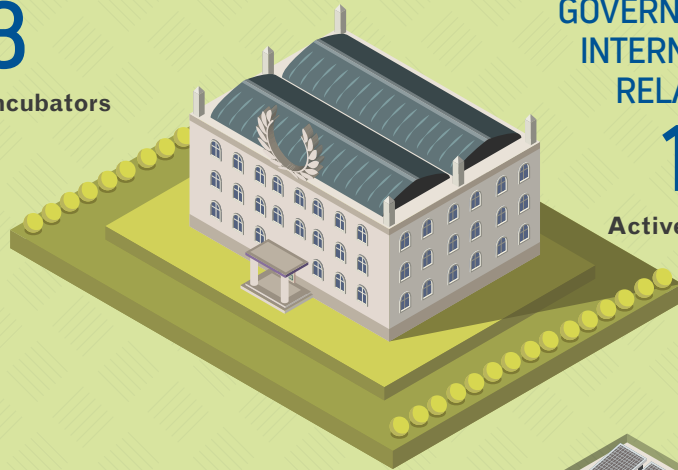
There are a total of 80 active incubators, arranged as follows:



SCHOOL OF MANAGEMENT  
AND BUSINESS

3

Active incubators



FACULTY OF  
POLITICAL SCIENCE,  
GOVERNMENT AND  
INTERNATIONAL  
RELATIONS

12

Active incubators



SCHOOL  
OF HUMAN  
SCIENCES

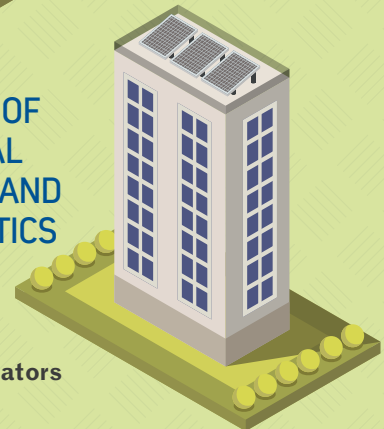
19

Active incubators

FACULTY OF  
NATURAL  
SCIENCES AND  
MATHEMATICS

9

Active incubators



MORE THAN 100  
PROFESSORS  
WHO ARE  
DIRECTLY  
INVOLVED



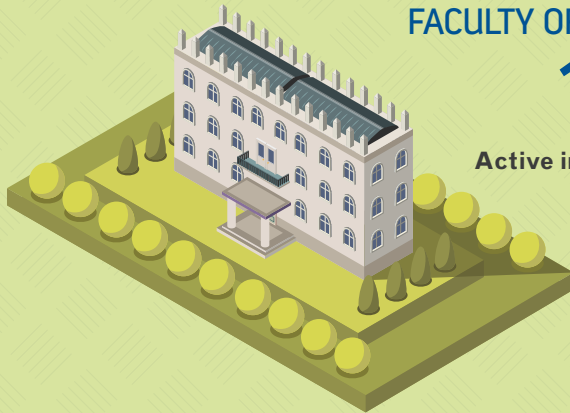
70% OF THE INCUBATORS WHICH WERE ACTIVE  
IN 2010 CONTINUE TO OPERATE



## FACULTY OF ECONOMICS

1

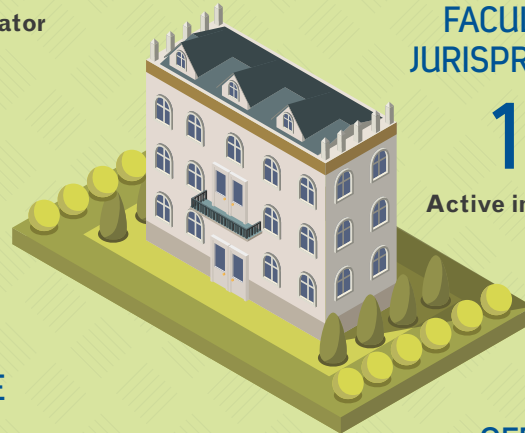
Active incubator



## FACULTY OF JURISPRUDENCE

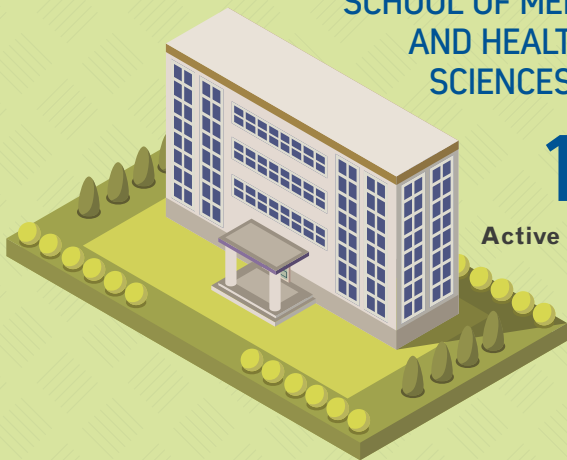
15

Active incubators

SCHOOL OF MEDICINE  
AND HEALTH  
SCIENCES

18

Active incubators

OFFICE OF THE  
VICE PRESIDENT  
AND PROVOST

3

Active incubators



51 INCUBATORS WITH FEWER THAN 10 STUDENTS

21 INCUBATORS WITH 10 TO 20 STUDENTS

8 INCUBATORS WITH MORE THAN 20 STUDENTS



Source: D1el –March 2019.

# HAVING AN IMPACT ON EDUCATION BY ASKING A RESEARCH QUESTION

With the certainty that supporting scientific talent strengthens the capacities of professors and students, María Martínez Agüero, Vice Provost of Research and Innovation, explains the scope of research training (*investigación formativa*) at the Universidad del Rosario.

By: Mara Brugués Polo  
Photos: Leonardo Parra, Dylan Carvajal

**L**ike a snowball whose size and impact grows as it rolls along, such is research in the Universidad del Rosario. Three years ago, its directors gave it an initial thrust by creating the Research and Innovation Office. Today, there are proven results and research permeates the whole of its scientific ecosystem, from undergraduate students to post-doctoral researchers.

It all began with a strong injection of resources and a new, more holistic approach to the job. In 2016, the maximum authority of the University, the Consiliatura (the University Council) approved a grant of 18,000 million Colombian pesos (approximately USD \$5,381,000) in addition to the resources for research, to implement a Promotion Fund (*Bolsa de Fomento*) to finance, during the following four years (2016-2019), the presentation of proposals for research to institutions which fund such projects, publish scientific journals, support and encourage scientific talent and grant monies through open





competitions, the latter to support the development of research projects which fall into six categories.

Since then, investment in science, technology and innovation has shown a sustained growth at the Universidad del Rosario. In 2018 alone, it committed 45,000 million pesos (approximately USD \$13,453,000) to research and the infrastructure required to advance it. In the end, this diversification of resources made the recent implementation of a new strategic view of educating students possible, the objective per se of the institution.

“Now, from the field of research, we link all of the actors of the system around training. With the question the research seeks to answer, projects are set forth which are no longer a matter of the researcher: They become more inclusive and collective, so that the student, whether he or she is an undergraduate or studying for a Ph.D., may play a specific role in the research, write his or her thesis and publish in scientific journals, among

other alternatives,” explains María Martínez Agüero, Vice Provost of Research and Innovation at the Universidad del Rosario.

### **The wager on talent is not an ephemeral decision**

Improving the basic skills of the students of the Rosario in order to awaken that curiosity about new knowledge which has an impact on their education is not a temporary or accidental matter. It is the result of implementing a scientific ecosystem which responds to the profile of new professionals, where research is set forth as a life choice but also as an activity which provides tools which are indispensable for any professional pursuit.

Martínez Agüero, who is also a biologist and professor at the university's Faculty of Natural Sciences and Mathematics, is very familiar with the coming challenges, but, more important, knows how to confront them. “With the whole team of the Vice President and Provost, we have prepared ourselves for making new schemes of research available to our students and professors, ones which support our academic units and strengthen our Masters and Doctorate programs.”





María Martínez: "With the question the research seeks to answer, projects are set forth which are no longer a matter of the researcher: They become more inclusive and collective, so that the student, whether he or she is an undergraduate or studying for a Ph.D., may play a specific role in the research."

That being so, the benefits are mutual. The students have the possibility of participating in research incubators: They choose the option of coterminal courses to advance their education and, at the postgraduate level, play the role of young researchers or graduate assistants, with the financial support of the faculty or school.

For their part, the professors are no less fortunate. In addition to linking undergraduate and postgraduate students to their research projects, they can count on a staff which is highly qualified in research. Towards that end, the university created the category of post-doctoral and adjunct (visiting) professors, who, during their stay at the institution, contribute their knowledge and experience in order to further research activities which, in the end, will have an impact on the undergraduate and Masters courses, as well as the doctoral schools.

In the opinion of the director of research, this is the right path to follow: "We are winning the wager on scientific talent. We now have more students who are linked to research in all fields; more funding for internal projects; more collaborative scientific publications; more doctorates who are working full time – some on fellowships and others on our staff – and more research groups, with more productivity."

In the end, it is a matter of ensuring that the research project is interdisciplinary, has an impact on the whole community and that it turns into a wager on the training revolving around its development. "We are going beyond obtaining funding. What we want is to teach people the basic skills of research, develop scientific talent at the undergraduate level and promote training in research at the postgraduate one, all of it based on the question the research projects asks," says María Martínez. ■

# SUPPORTING SCIENTIFIC TALENT

**Regulating the existing posts**

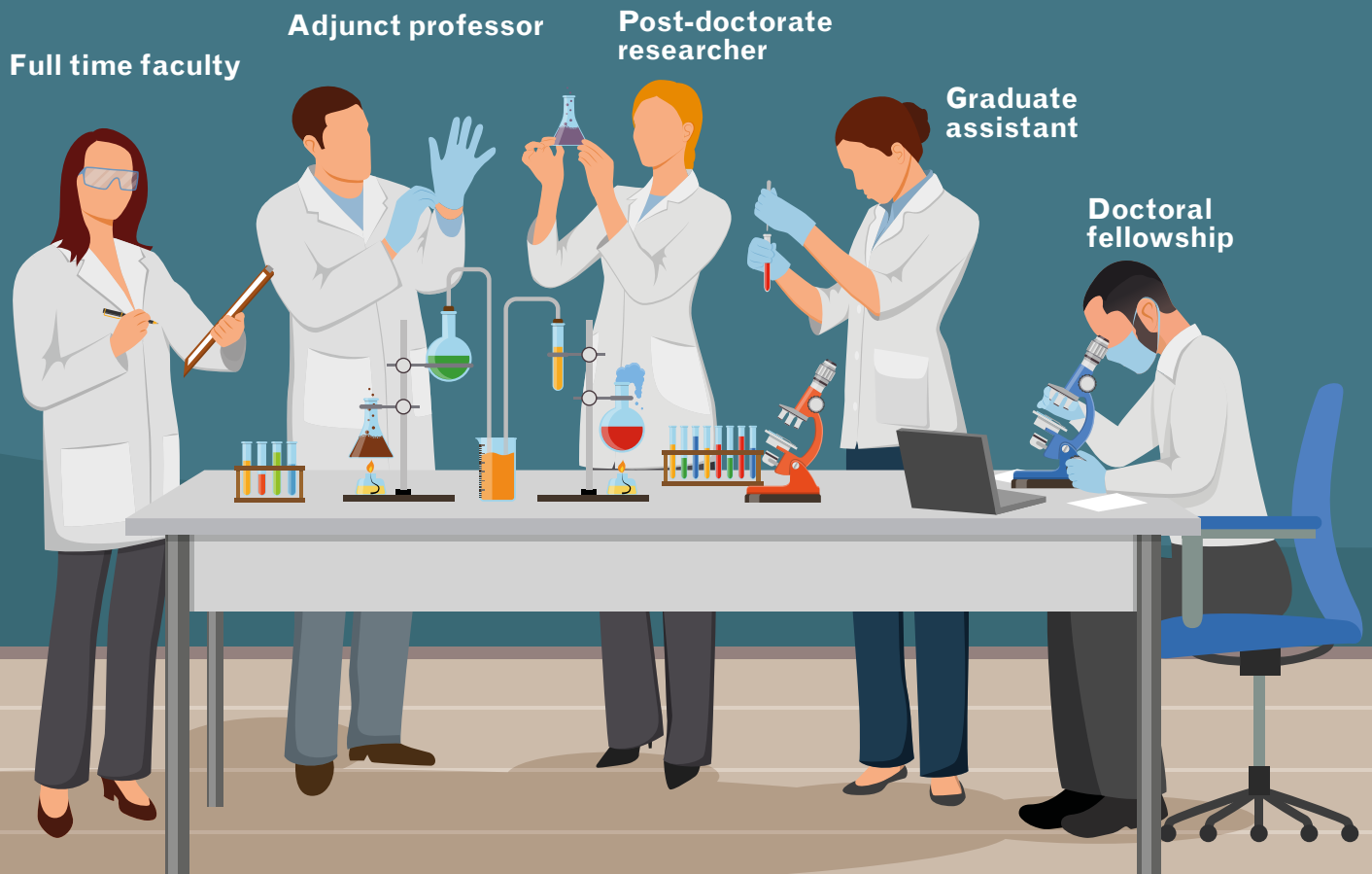
Young researchers

At the Rosario, research is set forth as a life choice but also as an activity which provides tools which are indispensable for any professional pursuit.

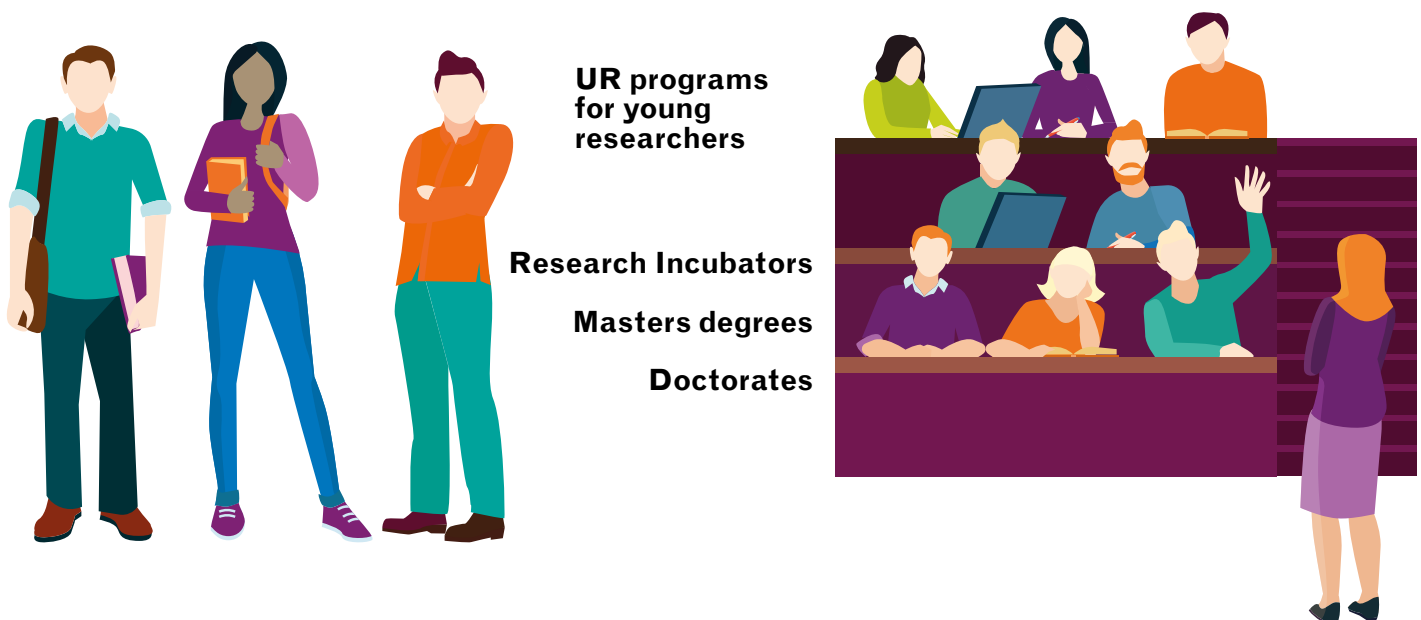




## Creating new posts



## Linking all of the actors with the research training strategies



# UNIVERSIDAD DEL ROSARIO GRANT FUNDS

**1. In 2002, the university decided to support the development of research projects**

- The “Fiur” Fund was created – the Research Fund of the Universidad del Rosario

- Projects requiring small amounts of funding

**2. The funds were restructured in 2016**

- Grant funds
- Six categories

**3. Annual invitation to participate**

- In 2018, the university decided to keep the category of Seed Funding open, with three evaluations per year



**Category 1.  
Large amounts**

**Category 2.  
Small amounts**



### Category 3. Seed Funding



### Category 4. Conferences and academic networks

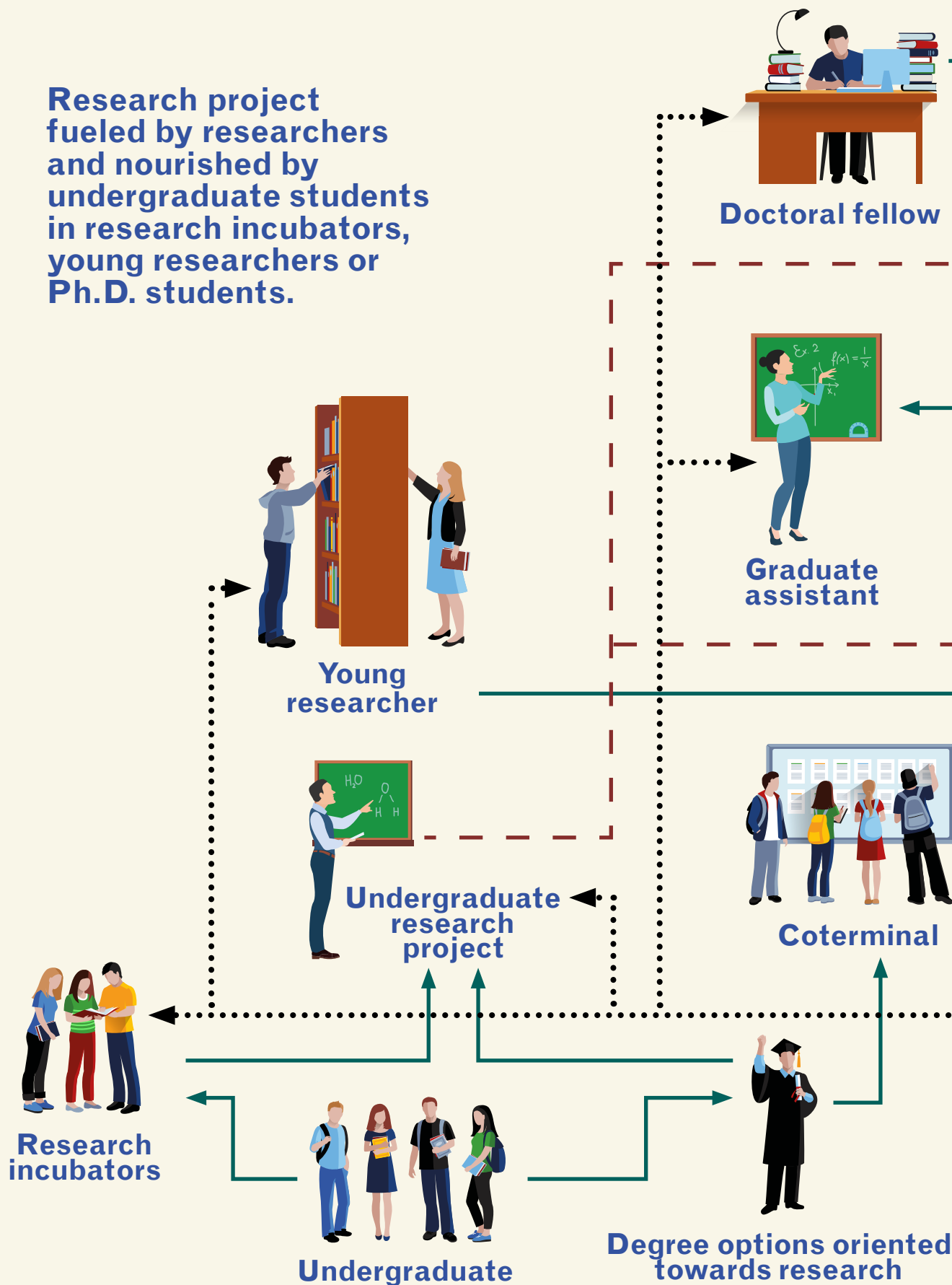


### Category 5. Innovation and Entrepreneurship

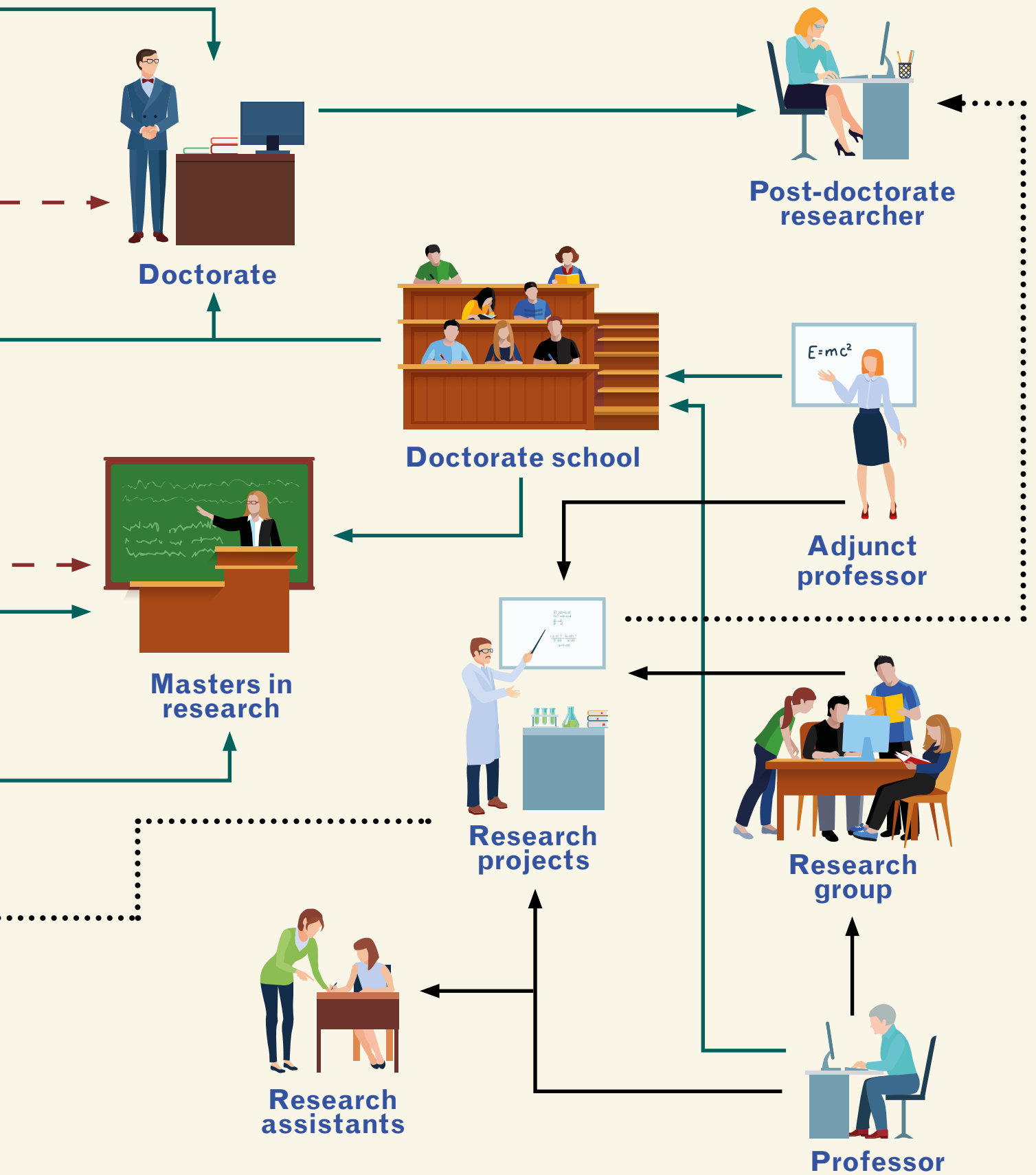


### Category 6. Research Incubators









# MORE THAN THREE CENTURIES PROMOTING RESEARCH IN COLOMBIA

Within the framework of the 365th anniversary of the founding of the University, *Advances in Science* takes us on a tour of what this institution of higher education has done in the field of research, where the Rosario laid the initial foundations for the consolidation of the scientific knowledge which it currently offers the country.

By: Luis Enrique Nieto Arango\*

**T**he history of education shows that the research which is associated with teaching is a recent feature of the Western model of the University. It was the Humboldt University of Berlin, founded by the great savant it is named after in 1810, which linked these two activities, which, for centuries following the Middle Ages, were separate: Universities were only devoted to teaching, that is, the transmission of knowledge, while research took place in other ambits, like monasteries or academies of science.

The model which Alexander von Humboldt implanted in Europe was later adopted in the United States, to start with at Johns Hopkins University, founded in 1876, the first devoted to research in that country, and whose example was followed by the eight private universities in the northeast which form what is known as the Ivy League, all of which were founded in the 18<sup>th</sup> century, except for Harvard (1636) and Cornell (1865).

In Colombia, the Universidad Nacional (National University), founded in 1867 and whose first rector was Manuel Ancízar, who was also a rector of the Rosario, was organized in accordance with the Napoleonic model, that is, as a

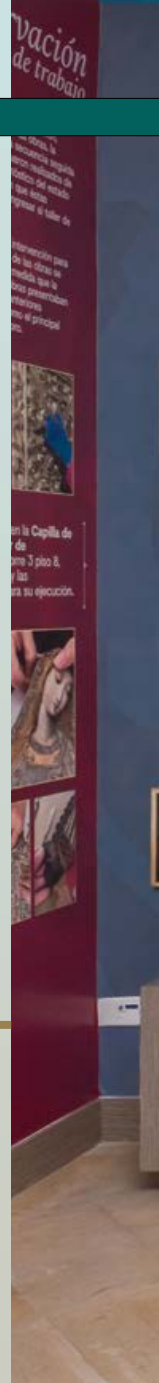
## MORE THAN THREE CENTURIES PRODUCING NEW KNOWLEDGE

The activity of research in Latin American universities is relatively recent; however, the Universidad del Rosario has been working on the production of new knowledge for more than three centuries, a period during which it has overcome the adversities of the political and social situation of the country.

**In 1999, it decided to transform itself and become “a teaching university which undertakes research.”**

Today, it is recognized for its achievements and its contributions to science and society.

Collections: Historical Archive  
of the Universidad del Rosario







←  
Luis Enrique Nieto.

## 1653 - 1654

Inauguration of the Colegio Mayor de Nuestra Señora del Rosario at a ceremony presided over by its founder, Friar Cristóbal de Torres, who, by a Royal Decree (Cédula Real) issued by King Philip IV of Spain, was authorized to create a private and autonomous institution to teach university-level courses to students who were later influential in and enlightened the Republic. **The first subjects which were approved to be taught at the University were theology, philosophy, medicine and civil and canon law.**



## 1653 - 1783

José Vicente Román Cancino, the first teacher of medicine, was responsible for the graduation of two doctors in the Nuevo Reino de Granada (the Vice-Royalty which roughly corresponded to present-day Colombia). **In 1761, José Celestino Mutis joined the Colegio Mayor de Nuestra Señora del Rosario and inaugurated the course on mathematics.** In 1783, Mutis began the research undertaken by the Royal Botanical Expedition (Expedición Botánica), accompanied by several members of the University.



Project of digitalizing the drawings of the Real Expedición Botánica del Nuevo Reino de Granada (1783 - 1816), directed by José Celestino Mutis: [www.rjb.csic.es/icones/mutis](http://www.rjb.csic.es/icones/mutis). Real Jardín Botánico - CSIC



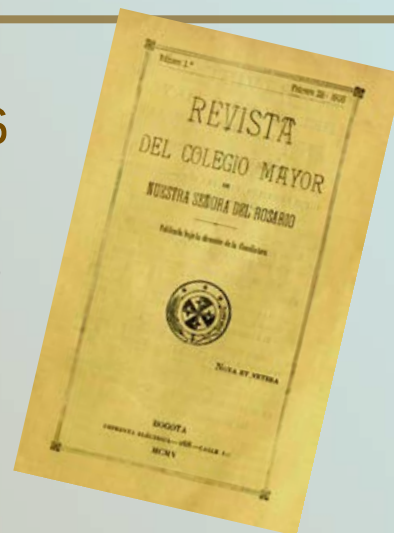
## 1801- 1864

For the first time (1802), the courses on medicine included an agreement between the Rosario and the San Juan de Dios Hospital, whereby the teaching of clinical practices was done with the patients of the Hospital. Mutis led the Botanical Expedition until his death in 1808 and had a strong influence on the academic and scientific life of the Nuevo Reino de Granada. During this period, the intellectual life of the country flourished and important newspapers were published and widely read.



## 1890-1906

In 1905 the first issue of an academic journal entitled the *Revista del Colegio Mayor de Nuestra Señora del Rosario* appeared, the first publication of that kind in Colombia: It is still published. In the following year (1906), the Faculty of Jurisprudence was reopened.



teaching institution which only entered into the field of research in the 1930's.

Hence, the Universidad Colonial, of which the Rosario was part, did not devote itself to research and, for that reason, its teaching program was limited to the three traditional subjects of Arts, Theology and Jurisprudence, since it was not possible to teach Medicine in an organized way, an aspiration of Friar Cristóbal de Torres, founder of the Universidad del Rosario, until the beginning of the 19<sup>th</sup> century.

Those subjects were taught in Latin, in line with the neo-Scholastic tradition of St. Thomas Aquinas and in accordance with the guidelines of the Council of Trent. Aquinas was the author recommended by Cristóbal de Torres, who regarded his philosophy as the foundation of the study of Arts.

This intellectual ambit went through a radical change when the physician José Celestino Mutis arrived in Santafé and, on March 13, 1762, set off an ideological and scientific revolution in Nueva Granada with his lectures on Mathematics at the La Bordadita Chapel of the institution, which marked the first time in Spanish America that there was knowledge of the work of Isaac Newton. Mutis likewise made the system of Copernicus known (who

had challenged Ptolemy and the scholastic tradition) and lectured on the principles of Modern Science and the Experimental Method.

### The strong impact of Mutis

José Celestino Mutis had a strong impact on the isolated and provincial society of Santafé, because, in addition to being a priest, he investigated the fields of mining, botany, public health, astronomy, cosmography, painting, linguistics and even the practical arts, like the distillation of rum. His only complete scientific publication was entitled *El Arcano de la Quina*, a study of Quina (or Chinchona) bark and its medical uses, especially to heal malaria, published in the *Papel Periódico de Santafé* (Newspaper of Santafé), run by the Cuban-born Manuel del Socorro Rodríguez.

There is no doubt that the strong influence of the multifaceted activities of Mutis and his ability to spread the ideas of the Enlightenment left a deep mark on his disciples at the Colegio Mayor of Nuestra Señora del Rosario (now the Universidad del Rosario) and fostered an intellectual movement which split the cultured class of Nueva Granada into two schools, the "Peripatetics" (Scholastics) and the "Innovators", one of the many dichotomies which have divided Colombians.

For all of those reasons, the doubts which a professor at the Rosario wrote down in the margins of a book at the *Biblioteca Antigua* (Old Library) of this institution is still an important reminder of that controversy. The volume is a commentary, by St. Thomas

## 2002-2005

Dual degrees and student exchanges were established. **For the first time the University obtained the High Quality Certification of the Colombian Ministry of Education.** Research training into Jurisprudence began with the first research incubator on Human Rights. **Today there are more than 80 research incubators in the Rosario.** A new campus of Entrepreneurship and Innovation was opened.



## 2007-2011

The Universidad del Rosario opened its first doctorate program in the Faculty of Economics. **It currently has five doctorate programs in: Biomedical and Biological Sciences, Law, Management Sciences, Political and International Studies, and Economics.** The Rosario, the Orden Hospitalaria San Juan de Dios (Hospital) and the Compensar (health provider organization) opened the biggest hospital network in the country, the Corporación Hospitalaria Juan Ciudad (**Méderi**).







## 1930-1968

In 1939, the first woman graduated from the University, **Carmen de Zuleta y Cebrian**, who was awarded a doctorate in philosophy. New faculties were created and others were revived, among them those of Economics, Business Administration, Rehabilitation and Human Development, and Medicine, the latter under an agreement with the Bogotá Society of Surgery. The University launched the first rehabilitation programs in the country.

## 1990-1999



Students of the Rosario took a leading role in campaigning for the inclusion of a “seventh ballot” (séptima papeleta) in the March, 1990 elections, the aim of which was to win the electorate’s approval of a constitutional reform which resulted in the new 1991 Constitution. The Faculty of Political Science, Government and International Relations was created, agreements were made with foreign universities **and the first steps were taken to create research groups, in accordance with the criteria of Colciencias**, the government agency responsible for science. The Faculty of Jurisprudence created the Public Actions Group, which is celebrating its 20th anniversary this year.

Aquinas, on books about physics and was published in Venice towards the end of the 16<sup>th</sup> century.

The gloss, in a translation from the original Latin by our erudite specialist at our Historical Archive, Mr. Jaime Restrepo Zapata, reads as follows\*\*:

*It cannot be clearly established whether these commentaries should be included, strictly speaking, in the oath which the members of this Colegio de la Virgen del Rosario (College of the Virgin of the Rosario) have sworn, since, today, no philosopher may allow himself to swear to the doctrine of a Maestro: Not only because of the progresses of science, but also because certain writings about nature wear out with the passage of time and lose their validity. In the year of Our Lord, 1779.*

This marginal note indicates a profound conflict of conscience and, according to the translator Restrepo himself, amounts to a paean to the free thought and intellectual independence which cannot be subjected to a loyalty oath.

With this example, to which many others can be added, one understands that while research did not take place during the colonial era, either in the Rosario or Nueva Granada as a whole – a situation which lasted practically until modern times – the seed of a true scientific curiosity had already been sown: The use of methodical doubt, the rejection of dogmas, the tireless search for the natural causes of natural phenomena and, in short, that whole intellectual atmosphere which encourages a profound

search for knowledge and implies, in turn, the reformulation of inherited truths and requires an effort to be objective in order to ascertain the truth.

That willingness to experiment, engage in controversies and freely discuss the subjects under study were the ideals which led one President of the Rosario to inscribe the following motto for the University on marble: “The home of the truth which makes one free”, a principle which now defines the Rosario as a **Teaching university which undertakes research**, by means of its 5 doctoral programs, 48 research groups and 55% of its professors who have a Ph.D.

For the Rosario and Colombia in general, this reality is still far from its optimal level, but, despite the difficult conditions which surround research in the country, it is a response to a sustained effort based on the idea its founder had when he created the institution in order to “Enlighten the Republic.” ■

*\*Director of the Cultural and Historical Patrimony Unit of the Universidad del Rosario.*

*\*\*<https://bit.ly/2IPr7Kv>*



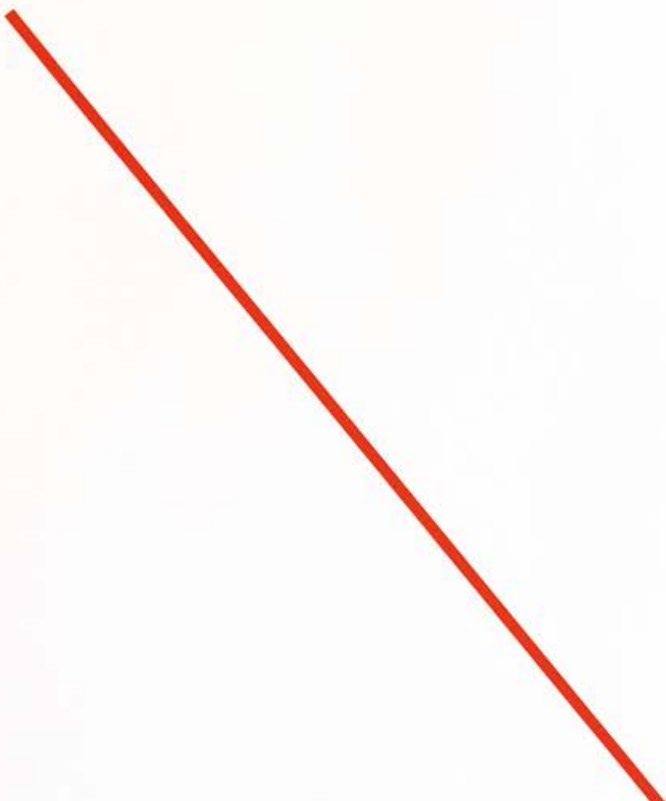
## 2012-2019

The University has **48 research groups** linked to its faculties and schools: The Faculty of Economics, the Faculty of Natural Sciences and Mathematics, the Faculty of Jurisprudence, the Faculty of Political Science, Government and International Relations, the School of Medicine and Health Sciences, the School of Management and Business, and the School of Human Sciences. **There are six funding schemes for research initiatives by students and professors.** The Rosario has an outstanding position in the **international rankings** of entities like the Scimago Institutions Rankings, the World University Rankings, the Times Higher Education Rankings and the Ranking Web of Universities. In 2014, it obtained its **first patent**, signed an agreement with the Fundación Cardioinfantil, and created the Rosario Institute for the Study of Aging and Longevity. **55% of its professors have doctorates**, it has more than eleven Observatories and 10 research journals.

# 1

**Inclusive  
research**







By: Amira Abultaif Kadamani  
Photos: Leonardo Parra, Alberto Sierra,  
Ximena Serrano

A pyramid is usually thought of as a solid structure which sits firmly on the long, broad base that supports all of its levels, which diminish in size as they rise. Traditionally, that was the right figure of speech for a graphic representation of the proportional distribution of a population's different age groups. But it is already beginning to be less adequate, because in Colombia and most of the nations of the world today, fewer persons are being born than before and those who are alive live longer, which challenges – if not checkmates – the way in which different societies have

built their pyramid of economic and social development. The famous population pyramid is becoming less and less of a pyramid.

According to the preliminary figures of the National Administrative Department of Statistics (DANE), based on the 2018 Colombian Census, for every 100 persons under the age of 15, there are 60 who are older than 59, and for every 100 individuals of a potentially productive age, there are 21 of a potentially dependent one. In addition, 40.4% of the elderly population is more than 74 years of age. Taking into account that the current average life span in the country is 74.4 years, and the age of retirement is 62 for men and 57 for women, the disequilibrium produced by the need to uphold the whole system of social security is alarming.

There are many variables and factors which determine and influence this meticulous scaffolding and in order to scrutinize, understand and interrelate them with scientific rigor, the Rosario Institute for the Study of Aging and Longevity (IREEL) has established an institutional proposal which will serve as “a space for the convergence of different disciplines which combine possibilities for the study and positioning of aging from



# AND WE ARE GROWING OLD ...

In 1964, 4.9% of the Colombian population was older than 60 years; today, according to the preliminary data of the 2018 Census of the National Administrative Department of Statistics (DANE), the figure is 13.9%. This happened more quickly in Colombia than in other parts of the world, like Europe, and it poses great medical, economic, cultural and legal challenges, both to the State and society, with the aim of ensuring that a natural process like aging is experienced as fruitfully as possible. The newly founded Instituto Rosario para el Estudio del Envejecimiento y la Longevidad (The Rosario Institute for the Study of Aging and Longevity) is tackling these challenges.

different standpoints, and also act as a voice for elderly persons within the framework of defending their rights,” explains its director, the doctor Catalina Latorre, researcher at the Universidad del Rosario’s School of Medicine and Health Sciences.

This initiative did not arise out of a void. On the contrary, it has nourished itself on many research projects which have been carried in the Universidad del Rosario for quite a long time and are parceled out among several faculties. The fundamental aim is to strengthen them, generate synergies, create new opportunities for analysis in academic venues and develop innovative proposals for improving the quality of life of the elderly, whether through private entrepreneurship or as an input for the creation of public policies.

It is little wonder that the Rosario has a group of more than 30 experienced researchers, who, in different disciplines, have made

contributions to our understanding and study of aging and longevity. The Institute has secured the support and opportunity for joint work with institutions like Boston University (sponsor the *New England Centenarian Study*), the Hospital Universitario Mayor - Méderi and the Fundación Cardioinfantil (Foundation for the care of childrens’ hearts), among others.

In fact, the rehabilitation programs that form part of the School of Medicine and Health Sciences, which provides training in speech and hearing therapy, physiotherapy and occupational therapy, are the intra-university ones which have the longest experience in dealing with the problems of aging, particularly the handling of disabilities and keeping the elderly active and well. In May, 2019, these programs celebrated their 50th anniversary at a ceremony held at the Symposium on Aging and Longevity.

## **Aging: The most important social change of the 21st century**

One of the guest speakers at the Symposium was the neuroscientist Diego Pinal, whose studies have focused on understanding how cerebral functions like working memory and short



term memory are affected by age and modifiable life-style factors, variables which give rise to cognitive processes that either lead to a successful aging or provoke neurodegenerative disorders.

This specialist has a first-hand knowledge of the reality of the situation both in Spain – his homeland – and Portugal – where he currently works – countries with a large percentage of the elderly. According to the predictions of the United Nations, by 2050 Spain will be the country with second highest percentage of the elderly and Portugal, the third (Japan will be the first).

The UN's *World Population Prospects*, published and revised in 2017, estimates that the number of persons older than 60 will double by 2050 and triple by 2100, rising from 962 million in 2017 (13% of the world population) to 2.1 billion in 2050 and 3.1 billion in 2100.

For that supreme multilateral body, "the aging of the population is about to turn into one of the most important social changes of the 21st century, with consequences for almost all sectors of society, among them, the labor and financial market and the demand for goods and services (housing, transport, social protection) as well as the structure of families and inter-generational links."

In this context, the IREEL plans to follow broad lines of research, a spectrum which studies basic, applied and even social sciences. We present a description and summary of the problems which some of them will deal with, as follows:

### Health prospects

Why do we grow old? What is the reason why some persons age better than others? How do you guarantee that the persons who reach the age of 60 years and live beyond that will be functional and more than active, productive? How must health agencies transform themselves in order to provide services of integral care to that segment of the population? What must health professionals do to respond to the needs of elderly persons?

These are some of the questions which the different research projects in the field of health are trying to answer and they have already detected evidences of the epidemiological changes which entail aging, since the scenarios of the reasons why people become ill have changed.

According to the 2015 "SABE" study (undertaken by the Colombian Ministry of Health and Social Protection to assemble and analyze information about the health and well-being of the elderly and serve as the foundation for formulating public policies), 84% of elder-



ly people suffer from comorbidity, that this, more than two health disorders. Arterial hypertension is the main one (60%), followed by arthritis-osteoarthritis (25%). In addition, 41% say that they suffer from symptoms of depression and 17%, from a slight cognitive deterioration.

According to the survey, their biggest fear is losing their autonomy and ability to function (much more than suffering from a pathology like cancer) and thus having to depend on



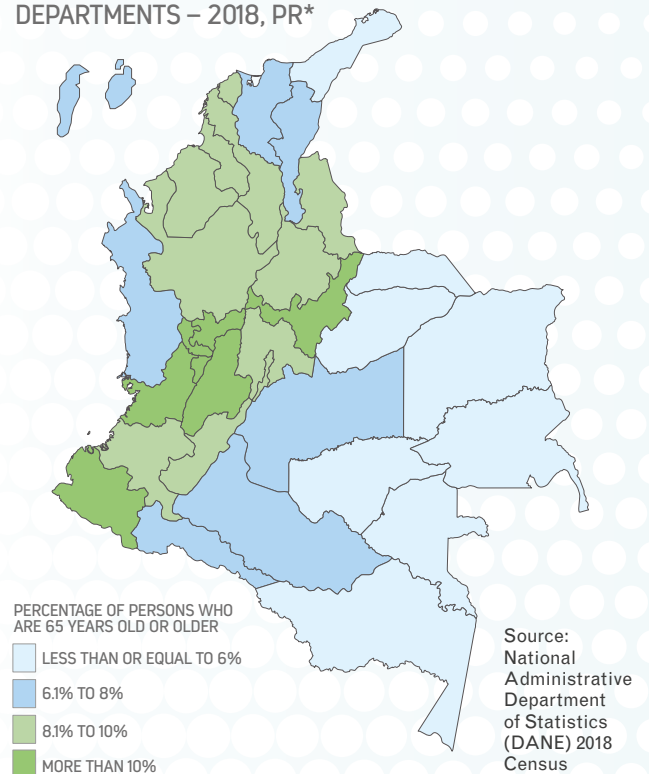


caretakers, who are mostly close relatives who are not trained to care for them nor receive, in turn, the care and support needed to undertake such a demanding job. Thus, caring for the caretakers is also crucial.

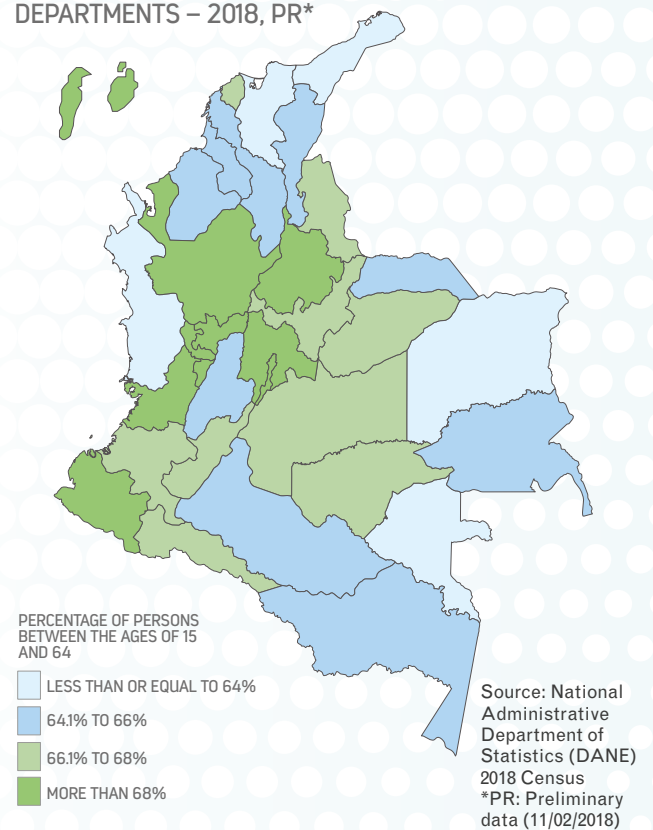
### Socio-cultural prospects

In cultural terms, how is aging perceived and assimilated? What social function do elderly persons perform? How can

PERSONS OLDER THAN 64 YEARS  
DEPARTMENTS – 2018, PR\*



PERSONS BETWEEN THE AGES OF 15 AND 64  
DEPARTMENTS – 2018, PR\*



we reverse the strong social exclusion of old people? How has the view and understanding of aging changed over the years?

The statistics show that aging is more and more a problem of women, that is, for every 73 men who are older than eighty, there are 100 women of the same age or ages.

What are the social impacts of this reality? In Colombia, 50% of its inhabitants have a negative view of aging, in contrast with what happens in other latitudes, like Spain and Portugal, “where the new generations of the elderly are much more active and demand more in the way of services and care because they still have a lot to live for. They regard it as a stage full of life and freedom,” remarks Pinal, who believes that this marks a big difference with the past few decades of the post-dictatorship period, when aging was thought of as the closure of the life cycle. Nowadays, the elderly are younger in terms of their capacities and spirit, and that means that they can devote their life force to caring for their grandchildren, which, in the opinion of this psychologist is positive, or engage in many activities in the form of their hobbies or fulfill more profound ambitions (study for a career, get up to date with technology, nourish their spirituality, support community enterprises, etc.).

### Economic prospects

How much can and should the State pay for the needs of elderly persons? What economic and social adjustments should the country make to help to sustain them? How will the rise in chronic illnesses which are under-diagnosed in Colombia (like cardiovascular ones, diabetes or mental disorders) change the State’s spending on health, along with others, like cancer, whose effects are



growing? What is the impact of the lack of a policy to support the caretakers of the elderly? How will such problems deplete the government’s pension bonds in the short and middle term?

One of the major economic problems related to aging is retirement, since at the current time two out of every three persons do not have a pension. The marked informality of the labor market which occurred in recent decades meant that people who are now elderly do not contribute to a pension fund or only did it for a short time, which forces many of them to continue to work in order to survive. According to the “SABE” survey, 60% of those who still work do it because they

## Neuroscience works for a healthy and productive old age

The brains of elderly persons go through important changes which affect their cognitive, physical and emotional capacities. Among the main changes there are: The loss of the integrity of white matter (responsible for interconnecting a person’s neurons), which leads to a reduction of the speed and efficiency of the processing of information; changes in the volume of gray matter (the body of the neurons themselves), particularly in the frontal area, which provokes a malfunctioning of cognitive control, planning and the carrying out of tasks which require the suppression of irrelevant information and other factors which interfere with the objective; and the loss of a functional connectivity between different regions of the brain.

These natural changes vary from individual to individual of course, depending on a combination of factors which occur in the course of life, like diet, physical exertion, educational level, socio-cultural activities and exposure to external natural agents, among others. However, such harmful effects can be lessened or counteracted in different ways, from cognitive training (for example, with exercises of working memory) to a non-invasive cranial stimulation. That is the field which Diego Pinal focuses his efforts on, a psychologist and neuroscience specialist, who, with his working team in the Laboratory of Psychological Neuroscience at the Universidad do Minho, in Braga, Portugal, has carried out a numbers of studied aimed at characterizing the aging process from a neuroscientific standpoint and discovering how to intervene in the disorders of the elderly to avoid or prevent their cognitive deterioration.





The neuroscientist Diego Pinal, whose studies have focused on understanding how cerebral functions like working memory and short term memory are affected by age and modifiable life-style factors.



"Among all of the reforms which Colombia made at the beginning of the 1990's, the weak point were pensions," remarks the economist Paul Rodríguez.



The Irel has established an institutional proposal which will serve as "a space for the convergence of different disciplines which combine possibilities for the study and positioning of aging from different standpoints", explains its director, Catalina Latorre.

have to and 13% to help their families. The country has tried to guarantee a minimum income for them, with the "Colombia Mayor" (Elderly Colombia) program, but it is not enough.

"Among all of the reforms which Colombia made at the beginning of the 1990's, the weak point were pensions," remarks the economist Paul Rodríguez, researcher at the Faculty of Economics of the Universidad del Rosario, who studies the economic impact of aging. The 1991 Constitution laid down the conceptual framework for ensuring that Colombians would enjoy many of their constitutional rights, hence the idea that "the State should pay for almost anything." "This has had many implications, among others, the resort to legal

appeals to secure medical assistance from the State, and it is therefore very difficult to check the increase in spending on health due to the pressures of the system itself," he points out. Although Colombia is not different from other member nations of the Organisation for Economic Co-operation and Development (OECD) in providing universal access to health and ensuring an objectively sound state of health for its citizens, there are big differences between different parts of the country. ■

Non-invasive cranial stimulation is a technique which has been used since the late 1990's and consists of placing at least two electrodes on the surface of the skull which set off a weak and continual current of electricity between one positive and another negative pole in order to stimulate some areas of the brain and inhibit others, depending on the patient's needs. "The technique is 100% safe and has no side effects, except, according to the literature, some cases where the part of the skin where the electrode is placed becomes red and itchy. The aim is to increase or inhibit the excitability of the cortex in order to improve the transmission of neuronal information," Pinal explains. So far, the results of his research projects have not been entirely positive in terms of the importance and permanence of the effects, since they are not statistically significant and are only registered online, that is,

while the stimulation takes place, not afterwards. Nevertheless, last June he and his team redesigned the initial framework of the study done of 54 healthy persons of advanced age and they are now more hopeful about achieving the expected results, backed by one certainty: "A recent review of the literature indicates that 80% of the studies which have used this technique have shown positive results, that is, an improvement in the realization of the cognitive tasks, which was what they aimed at. We are working on optimizing the equipment by changing the voltage and the placement of the electrodes, but I still cannot offer any further data which would tell us whether it works or not and at what ages," the Spanish doctor clarifies.



# WHEN SILENCE SPEAKS

There are all kinds of silences: Complicit ones, ones that betray or intimidate; strong ones, traumatic ones, mortal ones. . . In violent situations, muteness is also a striking revelation of the individual and collective deeds and events which form part of history and may have a great social resonance. To investigate some of them and give them a leading role is the purpose of the book entitled *Los silencios de la guerra* [The silences of war], edited by Camila De Gamboa and María Victoria Uribe, researchers at the Universidad del Rosario.

By: Amira Abultaif Kadamani  
Photos: Juan Ramírez, Alberto Sierra,  
Leonardo Parra

**W**hat do a prisoner in solitary confinement in a cell in the United States, the members of a community scourged by the mass executions done by Mexican gangs of criminals, the Germans who lived under the Nazi regime or the victims of the barbarity of the Colombian paramilitary leader, El Iguano, have in common? That all of them have been forced to practice the silence of the tomb, either because they are or were coerced by others or due to the very impossibility of finding a way to express themselves.

These, among other stories and situations, are analyzed in the book *Los silencios de la Guerra* (The silences of war), a collection of eight academic essays written by the same number of authors, who are from different countries and work in different fields of knowledge (philosophy, anthropology, history, literature and music). They provide a descriptive and analytical account of what silence – or silences – means in contexts of violence or conflict.

The idea for the book arose in the midst of the deafening roar which polarized – and still polarizes – Colombia, set off by the peace negotiations between the government of ex-president Juan Manuel Santos and the FARC guerrilla (*Fuerzas Armadas Revolucionarias de Colombia*). “In 2016, when the country was engulfed in the most critical point of the polarization which those talks caused and the languages of war and peace drowned out everything, we thought about dealing with silence, as an alternative approach to that other story which has not been told,” the anthropologist and historian María Victoria Uribe explains.

“There are many books about war and its consequences, but in Colombia there was no study of the silences it leads to nor the silent remains found in the spaces where a great deal of



violence has been lived through,” the lawyer and philosopher Camila De Gamboa adds.

So it was that these two researchers at the Universidad del Rosario asked Colombian and foreign academics to offer their views of silence from different experiences and standpoints, using, as the reference point, an essay on Walter Benjamin written by Shoshana Felman, who teaches comparative and French literature at Emory University in the United States and is an expert on trauma, testimony and psychoanalysis. In the opinion of Benjamin, the famous German philosopher of Jewish descent who had a first-hand experience of the devastating effect of two world wars, those wars marked the end of the art of narrating the experiences people live through and condemned that art to silence.

Felman points out that there were several causes of this loss (“the rise of capitalism, the sterilization of life by bourgeois values, the decadence of artifice, the growing influence of the media and the press”), but the first and most dramatic was the impact on society of the First World War. The destructive technology of that armed conflict and its scope were so great and unsuspected that it not only swept away the bodies of the combatants and millions of civilians along the way, it also did away with the survivors’ power to express themselves: They fell silent because they were not able to think about the unthinkable nor say the unsayable. The German philosopher went into shock after the suicide of his best friend during the First World War and years later, at the dawn of the Second, on the frontier between France and Spain, he likewise killed himself because he was afraid of falling into the hands of the Gestapo.

It is well known that history is usually what is told by the victors, but although the victims remain silent, they also weave a story; their silence indicate something else. What, then, is the relation between history and silence?, Felman asks. The answer: “In a philosophy of history which is focused (consciously or unconsciously) on power, those who lack power (the persecuted) are constitutively deprived of their voice. Given that the official history [of such events] is based on the standpoint of the victors, the voice which speaks with authority is a deafening voice: It does not allow us to realize that a discourse remains in that history which clamors to be heard but we are deaf to.”

It is that silence which Uribe and De Gamboa set out to hear from those who have not only lived through the reality of Colombia, but that of other latitudes; and that is the power which the different authors confer on the silent ones. Ana María Ochoa, a musician



by training, plunges into the strident silence of prisoners in solitary confinement in the prisons of the United States and Latin America, who have no contact with other humans or access to natural light – like the one in which the former president of Uruguay, Pepe Mujica, was confined –; cells which in themselves amount to a regime of torture which drives many of such prisoners into extreme states of psychosis.

Meanwhile, the sociologist Rigoberto Reyes deals with the silence into which small rural or semi-urban communities in present-day Mexico have fallen, in the face of the scourge of criminal organizations which have completely upset everyday life and shaped new states and definitions of silence in the affected populations. Mauricio Pilatowsky, a philosopher and historian, tackles another aspect of the same subject, the violence in Mexico which not only conceals political interests but also actors who theoretically represent the law but merge into organized crime. In addition, he thinks that the Spanish conquest and colonization of the territory of that country were processes which built a violent “enterprise” of terror which, in the end, wound up legitimizing hostile actions, conducts and languages which are very deeply rooted in Mexican culture.

Choosing a theme which is not very distant from those realities, the philosopher Ángela Uribe analyses the scope, limitations and characteristics of the apology Jorge Iván Laverde, alias “El Iguano”, a member of the now extinct United Self-Defense Forces of Colombia (*Autodefensas Unidas de Co-*



What is happening nowadays is that our societies are fragmented, because each social group hears what it wants to hear. We have become autistic, in a way, and that does not allow us to interact with others nor understand their diversity and cultural wealth", explains the lawyer and philosopher Camila De Gamboa.



tic challenges which traumatic experiences present and proposes the need for a grammar of silence. This idea is shared by another philosopher, Carlos Thibaut, who reflects on several kinds of silence, both positive and negative, the latter derived from the harms done by others. Dealing with and conceptualizing them not only require the right words, but also actions by institutions and human groups who should react to, not ignore them.

This is precisely one of the forms of silence which most strikes the editors of this book: That of the society which remains passive and defenseless in the face of the sorrow of others. It is an indifferent, complicit and even stigmatizing silence ("that must have happened to them for a reason"), which has become as natural as the violence which causes it.

But if our purpose is to build peace, then there is an urgent need to give a voice to those who do not have it and wish to express themselves, freely and genuinely. While one may think that this right is guaranteed in our present era of the Internet and social networks, Camila De Gamboa nevertheless believes that that is an illusion: "We have an enormous zeal to inform ourselves, but not to reflect on that which we inform ourselves of. All of these technologies are very suitable for enabling the little celebrity which is inside of us to be in the public eye, but not to create narratives which have a true meaning and much less lead to profound reflections. What is happening nowadays is that our societies are fragmented, because each social group hears what it wants to hear. We have become autistic, in a way, and that does not allow us to interact with others nor understand their diversity and cultural wealth." ■

*lombia*) made to his victims. To obtain the benefits of the Law of Justice and Peace, he asked for their forgiveness in a public act but without any sign of contrition when he spoke to the relatives of the 4000 people who had been his victims. In this case, Laverde believes, El Iguano should have kept silent, since his silence would have at least been a little more meaningful. For his part, the philosopher Wolfgang Heurer speaks of the paralyzing silence of the Germans after the horrors of Nazism

and how, decades later, literary and journalistic movements arose which set out to recover language and memory. The philosopher María del Rosario Acosta, in a rigorously philosophical analysis, approaches the linguis-



"In 2016, when the country was engulfed in the most critical point of the polarization which those talks caused and the languages of war and peace drowned out everything, we thought about dealing with silence, as an alternative approach to that other story which has not been told," the anthropologist and historian María Victoria Uribe explains.







# ECONOMIC REINTEGRATION:

## Second chances change lives

To give visibility to the economic reintegration into civilian life of former combatants, show what is being done and how it is done: This was the aim of the research undertaken by Merlin Patricia Grueso, professor at the School of Business and Management of the Universidad del Rosario. Her study found that the model implemented by the Sodexo company is not only successful, but it would be worth replicating and systematizing. She drafted a guide so that Colombian businessmen may see how second chances change lives.

By: Inés Elvira Ospina  
Photos: Leonardo Parra, Sodexo

**A**ccording to the *Agencia para la Reincorporación y la Normalización* (Agency for Reintegration and Normalization – ARN), of the more than 60,000 persons in the stage of reintegration, only around 1,700 have a formal job. While that figure does pose an enormous challenge for Colombian society, it also makes one think about the companies which are offering new opportunities to those who were involved in the armed conflict.

“There is something very valuable in this creation of jobs. It does not only change the life of the person who was involved in the conflict, it also changes that of his family, and of course, has repercussions in society,” states Merlin Patricia Grueso Hinestroza, professor at the School of Management and Business at the Universidad del Rosario, who led the research which resulted in the *Guide to sound practices for linking persons in the stage of reintegration to the labor market in Colombia and maintaining them, based on the “Employment with Support” model*.

The study, which resulted in a book, set out to encourage the participation of Colombian businessmen in the economic reintegration of the people going through that process,

through the design of a guide to sound practices. “Even though it is a complex subject to deal with, we found that there were many prejudices against them, due to ignorance, and that some businessmen were willing to commit themselves but did not know how to do it. That is why we decided to investigate the subject,” explains Grueso, a member of the University Council of the Universidad del Rosario.

Due to the confidential nature of the data, the researchers had to enlist the support of the *Agencia de Reincorporación* and the Agency suggested they have a look at Sodexo, due to its model of labor inclusiveness and its large number of such workers: 100, when their study began in 2016. This company provides on-site services of food, cleaning and maintenance, among others.

### Reconciliation and forgiveness in real life

The first task was to study the model of inclusion implemented by Sodexo since the demobilization, 13 years ago, of the combat-

ants of the *Autodefensas Armadas de Colombia* (Armed Self-Defense Forces of Colombia – AUC). The first surprise came when they compared what that company had done with models which were being implemented in other parts of the world, because they found it was very similar to the model of “Employment with Support” proposed by the European Union.

“I was very surprised to learn that what we had been doing in a somewhat intuitive way corresponded to a model which had already been established,” remarks Dalida Villa Vanegas, leader of the “Solutions Alliance” of Sodexo, for whom one of its wise decisions was to foster a permanent involvement in the lives of the beneficiaries.

An example of that was seen when the time came to think about including the demobilized members of the FARC guerrilla (the previous opponents of the AUC). “We asked the former members of the AUC what they thought about it and their answer struck us as incredible: ‘Don’t ask us. If you gave that opportunity to us, we don’t have the right to tell you not to give it to them,’” Villa Vanegas recalls. The same happened when the project also wanted to include the victims of the armed conflict in Colombia, “they were somewhat afraid of meeting up with someone they might have harmed, but they likewise said it would be wrong to deny them the opportunity,” she adds.

In the opinion of professor Merlin Patricia, this scenario is one of the most valuable aspects of the study. “It is here that you begin to understand the reality of everything we are hearing every day about forgiveness and reconciliation, ideals which many of us Colombians do not easily live up to. They have a valuable lesson for us: It is not worth persisting with hatred and resentment,” she stresses.

The next step was to make the work which Sodexo does better known. To undertake a systematic effort to show what is being done about reintegration and economic reincorporation to businessmen and the general public, how it is being done, its scope and different aspects, and the number of people whose lives are being transformed.

The experiences of 64 of the 100 persons involved in the program enriched the study. The remaining 36 had already finished their training and they were in another scheme of accompaniment. The fact is that the “Employment with Support” Model of Sodexo provides a differentiated attention, in accordance with the stage the beneficiaries are in and their particular situation. In addition to their work, when they enter the program they must par-



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ticipate in different kinds of activities which train them and develop their skills. As they advance and graduate, there is less and less focus on the accompaniment the program provides.

### Opposite shores, similar attitudes

As the study advanced, it found that the people who are part of the employment program at Sodexo (persons in the process of reintegration and victims) face similar difficulties, even though they were on opposite sides during the conflict.

The head of the study explains that the world of work places them in a common framework, but the capacity to handle the logic of a society which is new to them are strange. “For example, they plasticize a bank card or when they are sick, go to a drugstore for an injection instead of their health insurer. But, despite all that, they manage to enter into that emotional socialization, which is very recoverable,” she highlights and states that, in general, the study found that they are optimistic persons, with a valuable second chance.

Of course, they are not alone in the process. The Sodexo model implemented a series of principles for all of its activities and practices which give them tools to assimilate their new life. Among them, for example, there are ones for self-determina-





tion and individuality, two crucial aspects which help them to rebuild themselves.

Another similarity between those who once thought of each other as enemies or those who were in the middle of the conflict as victims is the way they look at urban life and enjoy the city from a different standpoint. For them, going to parks or public places without anxiety is novel: Hence, activities which allow for that link are included in the program.

### **The guide assesses whether companies are prepared for the program**

“We found that the ‘Employment with Support’ Model is one of the most effective ones. We believe that it is the first time this problem has been studied outside of Europe and with different populations, in a special conflict like our own,” professor Grueso explains. That is why it was decided to add a guide to the research, which explains the model applied by Sodexo, step by step. “To give that experience a name and an embodiment not only shows that it can be done but how to do it,” she remarks.

The Sodexo model consists of five phases which enable the businessman to play a more leading role. It details what the

company has to do and also some tools to facilitate its implementation.

The guide suggests, for example, that the process start with an evaluation of the company to determine whether it is prepared to receive persons on the way to reintegration. It advises the company to handle the process with a committee which includes senior executives and once it arrives at a positive diagnosis, decides on the jobs it will assign to the beneficiaries. “The design of that job must ensure that it is meaningful, because that is what the study generally showed,” professor Grueso explains.

The study also offers measuring tools, guides, recommendations, diagnoses and other means to make sure that the businessman is not left on his own. “This study gave visibility to practical exercises which are useful and the testimonies of those involved. It also provides tools which show how to do it and that is very valuable, because the companies are very pragmatic and want a specific scheme, with a guide to applying it,” stresses Mayra Iglesias, a professional and specialist in the Co-responsibility Group of the ARN, who was involved in the research from its start.

In the opinion of Iglesias, the publication is a striking testimony which helps businessmen to believe that they can help the ex-combatants. “It helps us to make them more aware that what is required is not an additional resource, nor a matter of higher expenses, but an investment, not only in their company but the future generations,” she says.

### **What's next**

The results have yielded a number of ideas that may be useful in the future. “We recently opened a line of research which is known as vocational psychology, which involves marginal populations with social disadvantages: It is already beginning to be applied, with refugees from Syria. In Colombia, we have a similar population: The victims of forced displacement in our own conflict and we are interested in studying their working experience,” the researcher Merlin Grueso tells us.

To do that, they have already contacted the Victims Unit of Colombia, which also has a model of inclusion in the labor market. It is a big challenge, since, according to the estimates of that institution, the number of displaced persons in Colombia is 8,816,304 and nearly 50% of them are of working age. However, they face the same problems as those who have demobilized: The consequences of being uprooted, lack of skills and the prejudices of the general public due to ignorance of their situation. ■

# ENVIRONMENTAL FACTORS WHICH TRIGGER SILENT DISEASES

A research project by the Center for the Study of Autoimmune Diseases of the Universidad de Rosario (CREA) showed that the surroundings in which we live and exposure to environmental factors cause alterations in the immune system and trigger diseases like lupus, rheumatoid arthritis, type 1 diabetes mellitus or multiple sclerosis, among others.

By: Ximena Serrano Gil

Photos: Leonardo Parra, Ximena Serrano

**H**air dye, cigarettes, acetone, asbestos and some environmental agents like ultraviolet rays, the quality of air or water, and lifestyle, together with a genetic predisposition, may be the causes of one or more autoimmune diseases, like lupus, rheumatoid arthritis, type 1 or Crohn's disease, among others. Researchers at the Universidad del Rosario are trying to find out which of those environmental factors cause such alterations.

In normal conditions, we all have a defense mechanism: The immunological system, whose purpose is to protect and defend us from everything which wants to attack us. But, on occasions, our defenses get out of control and instead of protecting, what they do is attack the healthy cells of the body. These kinds of disorders are known as autoimmune diseases. It is as though soldiers on a battlefield stop attacking the enemy troops and begin to attack themselves.

In Colombia these conditions are more common than is thought, with a prevalence of around 5%, that is, one in twenty.





ty persons suffer from such disorders. The rheumatologic autoimmune disease is more frequent in women, at a rate of 9 women to 1 man: It appears to have something to do hormonal problems.

Carolina Ramírez Santana, Yovana Pacheco Nieva, Yeny Acosta Ampudia and Diana Marcela Monsalve, researchers at the Center for the Study of Autoimmune Diseases (CREA) of the Universidad del Rosario, are working on projects in autoimmune ecology which have to do with the environmental factors which unbalance the body and lead to an alteration of the immunological tolerance which triggers such diseases.

The study, done within the framework of the “Common mechanisms of autoimmune diseases” project, combined the information obtained from surveys of patients with lupus and rheumatoid arthritis with the biological results of blood samples, in order to find out if there is a pattern of association with the development of those diseases.

### Triggers of the autoimmune disease

“Although, due to genetic inheritance, there are people who are more likely to suffer from one of these diseases, if they are exposed to those triggers, the disorders do not emerge. That is why it is important to learn about the surroundings where the patient lives and the number of years he or she has worked in certain places in order to find out the factor which has triggered the autoimmune disease,” remarks Carolina Ramírez, leader of the research project and director of the *Translational Medicine Group* of the Universidad del Rosario.

“This kind of research is difficult, since there are many confusing factors when it comes to exactly learning which components are triggering the disease. In this context, autoimmune ecology covers all of the internal factors (microbiomic and genetic) and external factors (toxic substances, air contamination, lifestyle, quality of water, tobacco, alcohol, etc.) which may contribute to the development of autoimmune diseases. The set of external factors to which an individual is exposed is called the exposome: Our study seeks to find out what the exposome’s effect on the development of a disease is,” explains Yovana Pacheco, biologist and immunologist.

In this process of inquiring into and finding associations between diseases and their environments, the patients are

surveyed on such details as whether they smoke, how much coffee they daily drink and whether they dye their hair, live near factories, cook with wood, work in flower-growing, shoe manufacturing or mining companies, among others. For example, it is known that those who work in greenhouses where flowers are grown are prone to scleroderma (the tightening and hardening of the skin of the hands), but the chemical which causes it is still unknown, one subject which is being investigated.

Carolina Ramírez Santana, a biologist and immunologist points out that some of the associations have been thoroughly studied: One is that between the Zika virus and the Guillain-Barré Syndrome, where some patients infected by Zika develop that syndrome. The question was: Why do some patients suffer from Guillain-Barré while others do not, if both were exposed to the Zika virus? According to a recent study by the Universidad del Rosario, the answer has to do with the amount of previous infections the patient has had.

On another front, the researchers are on the trail of a genetic mutation found in patients with Guillain-Barré Syndrome who had Zika as well. They are searching for the protein which this gene expresses and why it causes the syndrome. This



will be a great advance for science and personalized or translational medicine, since it will enable us to find a more specific treatment.

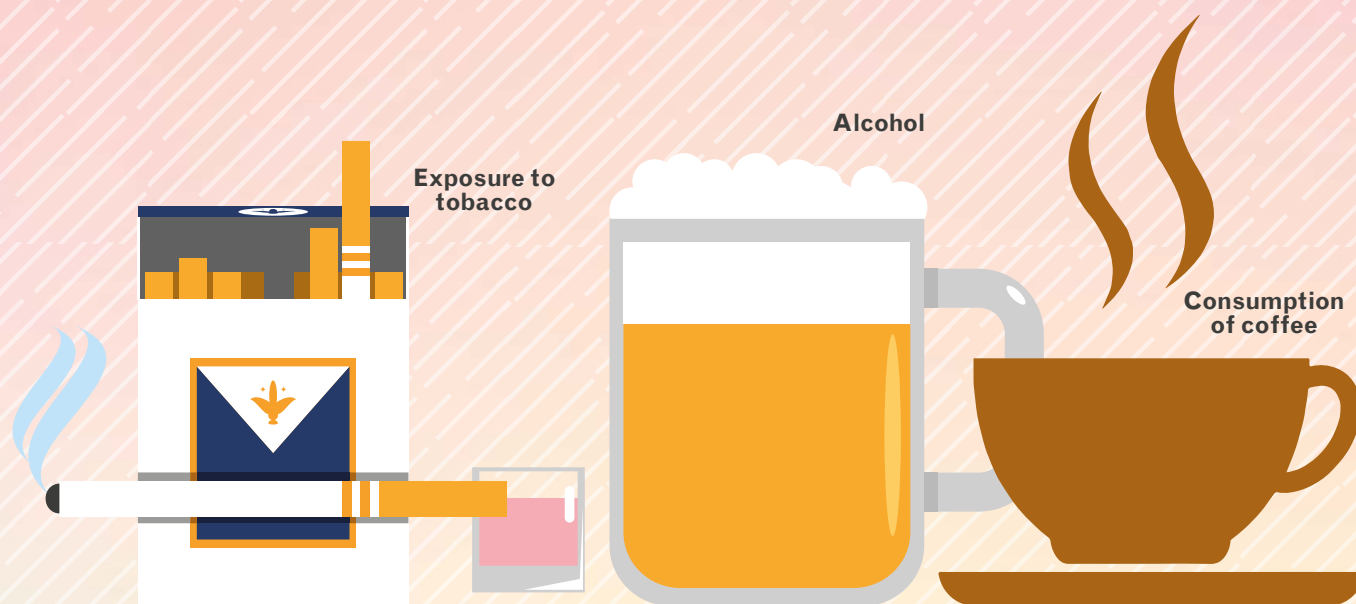
According to the publications of the research group, it has been scientifically proven that cigarettes are a factor which aggravates rheumatoid arthritis. Smoking makes it more serious and painful and difficult to treat. Likewise, the consumption of coffee seems to be a factor of risk for type 1 diabetes mellitus and rheumatoid arthritis, but drinking two cups a day may be a protective factor for multiple sclerosis and primary biliary cholangitis (cirrhosis).

### New paths of research

Considering the recent rise in environmental threats and that it is becoming more and more complex to study the effect of contaminants on the immune response with epidemiological studies, the Translational Medicine Group has shifted the guidelines of the research, varying epidemiological analyses with clinical and laboratory studies, since, as Carolina Ramírez underlines, “the core or nucleus of the group’s work is to transfer what you see in the clinic to the laboratory, and, in turn, enable the laboratory to contribute knowledge to the clinic.”

Those innovations consist of *in vitro* studies with the cells of the patients, which are exposed to different agents to find out how they immunologically respond to the stimuli of caffeine, nicotine and hair dye. According to the experts, this research project aims at discovering what the biomarkers of prediction

## EXTERNAL FACTORS WHICH MAY TRIGGER AUTO-IMMUNE DISEASES





are which will allow science to know what a person is prone to, and undertake treatments and forward-looking preventive actions.

In particular, there are some chronic diseases which have been found to be associated with external factors, like pulmonary fibrosis or cancer, which is related to asbestos.

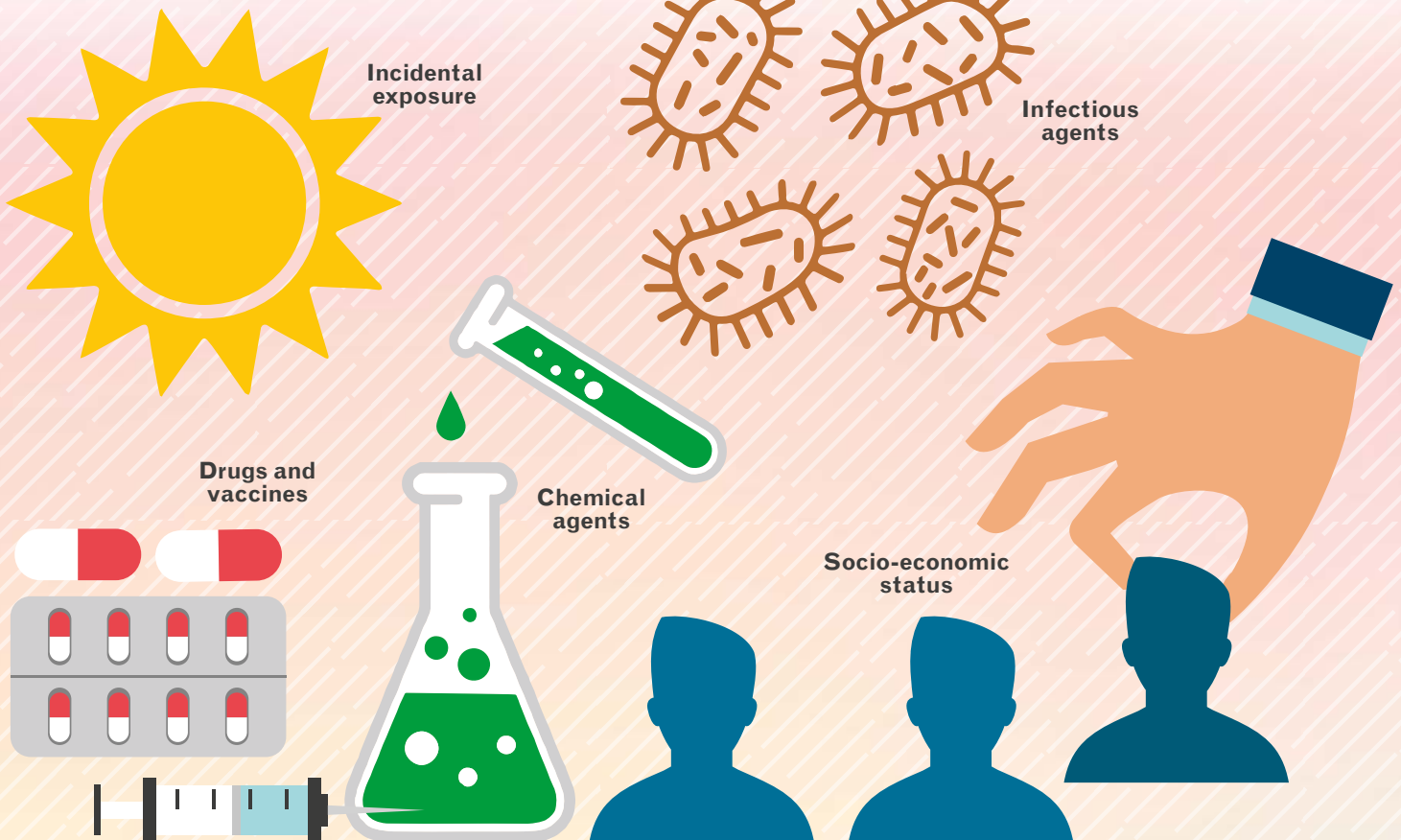
In the opinion of Yovana Pacheco, these studies of association are complex, because, for example, the old roof tiles with the brand name of *Eternit* contained asbestos and people are not aware of it. That is why they are carrying out *in vitro* studies to find out what the consequences of exposure to this mineral are in cells.

Speaking of these effects of asbestos, Carolina Ramirez explains that their research also found that it is possible that this substance is associated with patients who, due to their contact with asbestos, develop poly-autoimmunity, that is, they have more than one autoimmune disease. The results of their research project will shortly be published in a scientific journal.

The study of environmental exposure and the identification of the common mechanisms of autoimmune diseases will improve our understanding of these disorders and make it easier to categorize, predict and prevent them and find new therapeutic targets, conclude the researchers of the Rosario. ■



Carolina Ramirez and Yovana Pacheco are researchers at the Center for the Study of Autoimmune Diseases, whose scientific publications have proved that cigarettes are a factor which aggravates rheumatoid arthritis and makes it more serious and difficult to treat.



# THE LAW DOES NOT PROTECT THE MOST VULNERABLE WORKING WOMEN

Laura Porras and María Angélica Prada, professors of the Faculty of Jurisprudence of the Universidad del Rosario, devote a large part of their work to the empirical investigation of vulnerable communities, where, by means of different qualitative techniques, they try to understand the real-life situation of the women there. Their conclusion: The Law proves to be useless when it comes to protecting the most vulnerable women. Yet, it is necessary, however.







By: Carolina Lancheros Ruiz  
Photos: Juan Ramírez, Alberto Sierra

**"A**t times, the Law works more like a sword than a shield". With that metaphor, Laura Porras, professor of Constitutional and Labor Law at the Faculty of Jurisprudence of the Universidad del Rosario, explains the main interest of her research: The way in which the Law has a disproportionate effect on the most vulnerable people, especially women.

To start with, her work did not give a priority to the study of gender rather than class variables, but 18 months of ethnographic research in the marginal districts of Suba and Ciudad Bolívar in Bogotá led her to think about the way in which inequality hits women harder.

"The conclusion is simple: Poor people have fewer alternatives than rich ones, women have fewer alternatives than men and poor

women have fewer alternatives than wealthy persons (whether they are men or women) and poor men," she remarks in an essay about reconciling productive and reproductive work on the streets of Bogotá, done in collaboration with Andrés Rodríguez Morales, a student of jurisprudence in his final semester at the university. The article appears in an issue of the magazine *Revista CS*, published by the Social Sciences Department of the Universidad Icesi of Cali, in which 12 Colombian researchers discuss the idea that "the Law is useless when it comes to protecting the most vulnerable women."

The Labor Law currently in force was not designed for the self-employed, like the street hawkers whom Laura studies, but is drawn from countries which went through a thoroughgoing process of industrialization and not only in Europe. "We have not even gone through a process of industrialization like that in Europe, but we blindly copy their norms," she points out.

That is why there is a need to understand the current situation of the class of working women in the informal sector, in which around 69% of the workers are self-employed, that is, they do not have a contractual relation of dependence with an employer.

Around 82,000 people work on the streets of Bogotá, of whom nearly 60% are women. Considering that they still bear a heavy burden of tasks in their homes (cleaning, child care, etc.), it is more difficult for them to find the right balance between their domestic and working lives, because "neither the

mechanisms provided by Colombian Labor Law to reconcile the demands of family and work, nor the public offer of assistance are shaped to the hardships of scrabbling for a living on the street,” she points out.

For salaried workers or independent ones affiliated to the social security system, the laws on labor provide the right to a paid leave when they are pregnant and during the first months of their baby’s life, and protection from being fired. The Substantive Labor Code also establishes their right to two paid rest periods of 30 minutes during the first six months of the baby’s life and Law 1857 of 2017 requires employers to adjust the working hours of employees so that they can spend more time with members of their families.

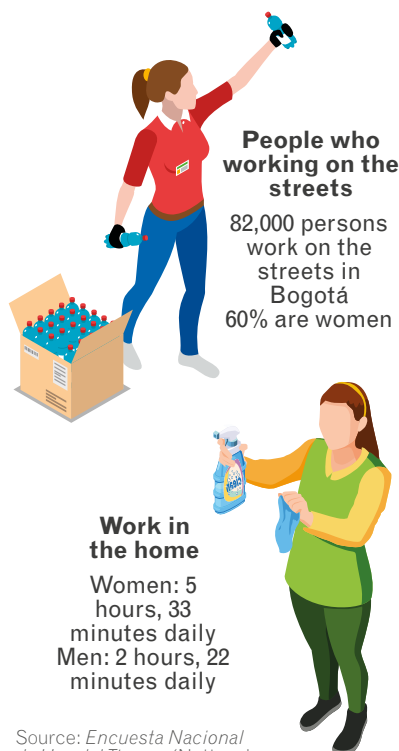
Of course, none of that applies to street sellers, whose working day also lasts longer than the standard eight hours of salaried workers, because they can only stop working after they have obtained the money needed for their basic daily subsistence.

Among other reasons, that is why the public offer of assistance in Bogotá does not take the conditions of working on the street into account and “requires conducts which are incompatible with the productive work of women,” Porras adds.

Thus, for example, the institutions which provide care for children in early childhood are only open for eight hours a day. They also insist that it is the mother, in the company of another adult, who should feed the child in the institution when the child does not want to eat and “threaten” to report her to the authorities when she does not follow their rules on the child’s growth and development.

Leaving aside the question of whether the norms provide the ideal conditions for the welfare of the children, such rigidity discourages women who “are on the periphery and not the center of the juridical framework”: That means those who have to leave their jobs in order to feed the child or spend time on non-urgent visits to a health center cannot earn the money they need to provide basic meals for their whole family, for example.

And so in order to care for their children, “the characteristic flexibility of the informal arrangements such working women make with their families or neighbors (especially with regard to their working hours and ways of paying) means that they prefer those informal services to the public offer of assistance, even though the latter not only costs less but is structured around ideals of child-rearing which may be better at developing the full potential of the children,” the research project has found.



Source: *Encuesta Nacional de Uso del Tiempo* (National Survey of the Use of Time).



This study, based on conversations with 13 women who sell on the street and have children under the age of five and the ethnographic work Porras did for her doctorate, confirms that “the Law does not take into account the need to balance productive and reproductive activities on the part of women who work on the street, because they are in a sort of ‘twilight zone’, where the law of the State is less applicable.”

### Invisible work

What happens when your work is not even acknowledged to be that? Professor Laura Porras, who has a doctorate in Law from the University of Ottawa, reviewed the rulings of the Colombian Supreme Court of Justice to determine the degree to which poor women achieve their most basic aspiration: That a judge acknowledges that domestic work or child care is work.

She and her colleague Karena Caselles, who was an auxiliary magistrate in the Labor Division of that Court for eight years and now holds the same post in the Constitutional Court, studied the rulings on that subject which were made over a period of fifty years (from 1948 to 2018). They found 579 in which the Court was asked to declare the existence of a contractual reality, that is, acknowledge a labor relationship independently of whether or not there was a formal contract or the term given to that relationship.

Of those, only five had to do with women whose payment – when they received it – was at most that of the monthly minimum wage and who had a high school diploma. They were women who worked in the countryside, on farms, or who were devoted to domestic work in the homes of families who did not pay them for their services. Only one acknowledged the rights of the woman: One in fifty years.

“In juridical theory, much has been written about the invisible work women do. What we tried to do was to show, through a study of real cases, that what is recognized in theory is also





true for the case of Colombia,” this researcher remarks, who also found that, at a rate of five in 579, the cases of vulnerable women do not even reach high State bodies, like the courts.

### Access to the judicial system is difficult

One of the reasons why those cases do not reach the judiciary has to do with the fact that it is not easy to accede to the courts. “We teach that the *tutela* [a writ for the protection of a citizen’s constitutional rights] was one of the great advances made by the 1991 Constitution, but undertaking it requires a high level of knowledge,” explains María Angélica Prada, professor at the Faculty of Jurisprudence who lectures on “An Introduction to Law and the Theory of Property.”

She too is interested in understanding how the Law affects social relations and lives of persons in highly vulnerable conditions and has spent the past two years on an ethnographic investigation of the popular movements in the informal neighborhoods on the flanks of the *cerros orientales*, the mountains which overlook Bogotá on the east.

“In their struggle to claim their rights, the leaders resort more to the rights of petition, which almost amount to a conversational negotiation between public agencies and the communities,” she explains. She has also found that the representatives of the communities are very committed: “They do a heap of non-paid activities in order to win services and rights for their communities which we, in other sectors of the city, take for granted,” she says.

In that regard, she highlights that it is precisely the people with informal jobs who are able to devote themselves to that, since, due to the flexibility of their working hours, they are able to talk to public officials or comply with the bureaucratic requisites more easily than those who are formally employed.

To that is added the fact that the representatives of those communities tend to be men, because the female leaders, like



“The law may be a tool for emancipation, but it does not solve all of the problems. However, to attain the equality of women, we are better off with the Law than without it,” María Angélica Prada.



Professor Laura Porras wanted to find out, on the basis of a review of the rulings of the Colombian Supreme Court of Justice, the degree to which poor women achieve their most basic aspirations: That a judge acknowledges that domestic work or child care is work.



other women, are busy with their domestic tasks.

Therefore, “it is very rare that such women can go to the venues of participation because the cost is not only economic, it also implies abandoning the care of their families,” Prada notes, who believes it is remarkable that the leadership undertaken by women is also based on a concern for caretaking: “They have a very maternal role in the community and it is that which makes them feel empowered,” she concludes.

That observation highlights the dilemma of such women: Their work as caretakers makes them powerful, but the fact that they bear the weight of that responsibility makes them vulnerable. What should the Law do to right that imbalance?, the researchers ask. ■

The background features a light gray grid pattern. Overlaid on this are several geometric shapes: a green square in the top left with a white window-like pattern; a large red triangle pointing downwards in the top right; a light green triangle pointing upwards in the middle left; a light blue triangle pointing upwards in the middle; and a dark blue triangle pointing upwards in the bottom right. A large black number '2' is positioned in the upper left quadrant.

# 2

**For an  
ecologically  
sustainable  
environment**







*Cora verapax* sp. nov is the newly discovered species that belongs to the *Polythoridae* family



# A new damselfly species was discovered in Colombia

There are no more than 80 experts in the world who are devoted to studying this group of insects. Currently, this insect order has approximately 6,000 species on the recent red list of endangered species, where Colombia has the highest number endangered species within the neo-tropical region.

By: Ximena Serrano Gil  
Photos Ximena Serrano, Melissa Sánchez,  
Adolfo Cordero Rivera

There was an era in the history of the Earth, before the dinosaurs, when gigantic insects conquered the skies for the first time: They were the earliest dragonflies and damselflies. Their evolutionary success has turned into an important aspect on environmental sciences research. Today, approximately 300 million years later, Colombian scientists continue to make important contributions to science with the discovery of a new species and the spotting of another 12 which had not been register before in the protected areas of the country.

Colombia is one of the most mega-diverse countries on the planet, but, paradoxically, it is one of the least explored. Its internal conflict has prevented exploration in its jungles, mountains, forests and whole regions, hence, a large part of its biodiversity is still unknown, among it, its dragonflies and damselflies. The recent findings have revealed a link which connects a whole bio-geographical corridor between Central and South America which runs from the south of Mexico to the Argentinan pampas. The latter has enabled scientists to establish conservation strategies, as they rethink their hypotheses about endemism and endangered species.

The newly discovered species, whose scientific name is *Cora verapax* sp. nov, belongs to the *Polythoridae* family. This family comprises 57 species grouped in seven genera, and now, *Cora verapax* has turned into number 58th.



### EQUILIBRIUM AND RESISTANCE

In addition to their magical wings and agile flight, dragonflies and damselflies prey on other organisms during their whole life cycle. In their immature stages, they live in freshwater habitats, like rivers and lakes. They are important regulators in trophic chains, both in aquatic and terrestrial ecosystems, therefore they of special interest for ecological studies. And they can be excellent sensors for monitoring water quality and ecosystems over time.

“Dragonflies and damselflies have inhabited these aquatic environments for many millions of years, which has enabled them to create certain tolerances and adaptations for their survival during periods of many geological and climatic changes. Therefore, they turn into sensors of past ages, which can also provide possible solutions for our future.

The fact that there are so few species, in comparison with other groups of insects, like beetles, enables us to undertake comparative studies which cover the entire 6000 species,” explained Melissa Sánchez, researcher at the Evolutionary Genetics, Phylo-geography and Ecology of Neo-tropical Biodiversity group of the Universidad del Rosario, where she is also a professor in the Biology Program of the Faculty of Natural Sciences and Mathematics.

These characteristics are not only an important aid for finding out how many species of these insects there are, but they also provide scientists with evidences which enable us to explain the origin of the biodiversity we have. Parallel to the discovering and registry of this species, there is a study which assesses the genetic diversity and origin of the group of damselflies to which *Cora verapax* belongs, the family *Polythoridae*. This project is being funded by Colombian institutions like the Universidad del Rosario and Colciencias (the government agency which supports the development of science, technology and innovation in Colombia) and international ones, like National Geographic and the Waitt Foundation.

Very few scientists in the world are devoted to studying this group of insects: Estimates are around 80. Colombia has been one of the most active groups in undertaking research into these neo-tropical insects during the past ten years. However, many of the researchers are young students, with meager financial support,

The new individual has a very special morphology. Its abdomen is longer than the usual one; above its cercus there is a very long spine lacking in other species and its wing are colorless. It was found in the Tatamá National Natural Park.







← Studying dragonflies and damselflies means that Melissa Sánchez has to go deep into the jungle, walk along rough tracks, plunge into puddles or waterfalls and fly in a light plane to reach some part of the jungles of the Pacific region, but she also has to maintain her girlish spirit as she chases after them with a collecting net. All part of the adventure of science.

which is why there are very few studies which analyze the genetic diversity and morphology of the different species.

### Networks in action

On the recent red list of endangered species, Colombia shows the highest number of dragonflies and damselflies endangered species in the neo-tropical region. However, researchers guess that this might be because there is a lack of sampling and the legal obstacles to undertaking new studies within protected areas. "It is difficult to know if those reports are due to the lack of data from the protected areas or the absence of protected areas in some strategic regions" the researchers explain.

In view of the little research being done in this field, they assembled a compendium of the literature on the subject, along with samplings in six protected areas in Colombia, in an inter-institutional project with other researchers who belong to the Network of Biodiversity and Systematics of the Institute of Ecology of Xalapa, Mexico; the Entomology Group of the Universidad de Antioquia; and the Biology Group of the Universidad El Bosque. The areas that were studied were the Tatamá, Sumapaz, Chingaza, Chibiriquete, Serranía de la Macarena, Serranía del Cocuy and Sierra Nevada de Santa Marta National Natural Parks, among others.

The study revealed 12 new registers of damselflies and dragonflies, meaning it is the first time they have been found in Colombia. And the discovery of a new species named *Cora verapax* sp. nov., collected after more than 300 days of field work

### In the distant past, some dragonflies and damselflies were as big as pelicans

The fossil remains of dragonflies and damselflies show that they have lived for 300 million years. They go back to the Carboniferous Period and became as big as a pelican. Species which are relics of this period have been found: For example, the *Petaluridae*, which, according to molecular data, go back 250 million years and are the same species, that is, they still exist.

Dragonflies and damselflies are colored insects which survive as predators during their whole life cycle, both as adults and in the larval stage. Their life cycle is known as a hemimetabolous one or that of an incomplete metamorphosis. From an egg they turn into a nymph and continue to grow until they become adults. The whole of the nymph stage takes place in water and may last up to a year, when they emerge as adults and develop the adult stage out of the water.

In contrast with the Coleoptera (beetles) or butterflies, which have millions of species, dragonflies and damselflies only fall into the thousands, around 6000 species worldwide and most of them are found in the Neotropics. They are a very small and little known order.

in the Tatamá National Natural Park, situated in the Western Cordillera in the Colombian Departments of Chocó, Valle del Cauca and Risaralda.

Among the 12 new registries, some species were thought to have been endemic to Panamá and Ecuador, that is, they were only to be found there. That implies that they have always been there and finding them allows us to find a link in the biogeographic corridor which runs through Panama, Colombia and Brazil. "This finding shows that there are many things we can still discover and that we don't know what we have. Due to its geographical position, Colombia represents a gap in South America. We need more researchers and more support so that we can learn more about our biodiversity. That is why it is important to make inventories of species in these special territories and contribute new data for conservation efforts, like a red list assessment or plans for future management," she stresses.



## Damselflies and dragonflies in flight

Dragonflies and damselflies are divided into two large groups, in accordance with the shape of their wings. The *Anisoptera* (aniso=unequal, and *ptera*=wing) and the *Zygoptera* (Zygo=equal/the same). The *Anisoptera* are the ones which are vulgarly known as dragonflies. They have strong bodies, compound eyes covering the whole of their head and when they are still, they usually spread their wings. While, *Zygoptera* often go unnoticed commonly known as damselflies: They are more slender, their eyes are on the sides of their head and when they are at rest, they close their two pairs of equal wings. In some Spanish-speaking countries, they are vulgarly called "caballitos del diablo" (little devil horses).



### A rare species

When this individual was found in the Tatamá National Natural Park, the researchers saw that it had a very particular morphology. When they made molecular examinations of one of its feet, they discovered that it was unlike that of any previously described species. Its abdomen is longer than the usual one; above its cercus there is a very long spine lacking in other species and its wing are colorless.

In order to determine which groups, independent lineages or species the specimens belong to, molecular studies are not sufficient: It is also important to know the relation between some and others and study the geographical or morphological barriers which enable one species to evolve a specific morphology that turns it into a new species.

"Finding a name for this new species was not easy. We took into account its special morphology, the ephemeral nature of its discovery (only one individual) and our interest in portraying the special time in Colombian history due to the peace agreements, and that is how we end up with the name *Cora verapax*: From the Latin words *verus*, which means truth, and *pax*, which means peace," explains the researcher Melissa Sánchez.

### And who is the new species related to?

In addition to studying the relations between one species and another and finding guidelines for the morphologies of those groups, Sánchez studies the origins and evolutionary history of the *Polythoridae*, the family this




new species, *Cora verapax*, belongs to. It is part of the *Zygoptera* group, which are known as bannerwing damselflies because many of the species have colored patterns in their wings. They are only found in the neo-tropical region, especially in riparian forests near waterfalls. They are spread over the Amazon region and in the Andes, in places which are below 3,000 meters above sea level.

Most of the damselflies in this group have colors on their wings and many descriptions of the species depend on these colorings, since the other classic structures which are used to classify them are very similar. "Therefore, my work began with the following questions: If these wing colorings are really distinguishing among these species? What is the evolutionary history of this particular group? Which characteristics do not follow the norm when you compare them with other species of damselflies?," she remarks. She also seeks to find out how long they have been in existence and how they have spread over the continent in the course of their evolution, using methods which combine genetic data with fossils of their ancestral related lineages, who were in the Mediterranean, with some others in North America.

After the Miocene epoch, there was a great upsurge of diversity as the Andes rose: A large part of the continental area





The species discovered by the research group of the Universidad del Rosario is called *Cora verapax* sp. nov. It belongs to the *Polythoridae* family, which comprises of 57 especies grouped in seven genera. Now, *Cora verapax* has become number 58th in the family.

of South America was an ocean, which caused many geological movements and led to the formation of the Amazon, which, in turn, came to be responsible for the number of species we now have. "My hypothesis is that this family has always been a tropical one. It originated in the Eocene epoch, fifty million years ago, and the creation of suitable habitats during the Miocene epoch enabled it to consolidate itself. Its evolutionary success lay in the fact that it has always been a predator (it eats what is at hand) and does not depend on others organisms in order to survive," Sánchez explains.

### Environmental DNA

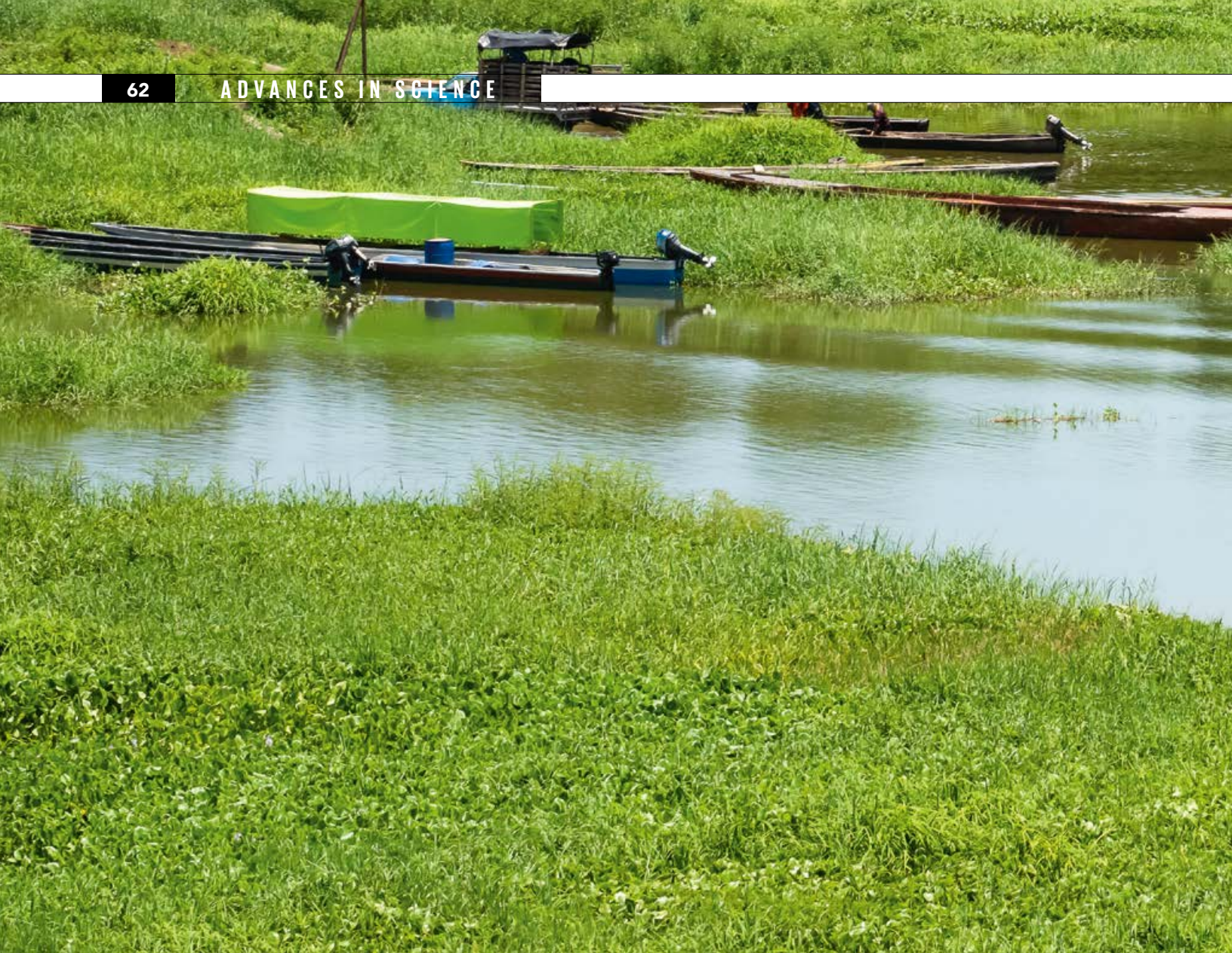
In order to give continuity to their studies, the research group obtained funding from the Colciencias call proposals, *Retos: Conocimiento verde* (Challenges: Green growth), to carry out a study called *Pescando libélulas* (Fishing Dragons: Mitogenomes, barcodes and DNA of odonates), where they will use these insects as sensors to establish a conservation protocol based on the environmental DNA found in freshwater habitats.

Like a big sieve which filters enormous amounts of water, the environmental DNA technique sets out to recover particles of DNA from the organisms which live in the water, and when they are compared with the genetic reference library of the species of interest, will allow us to determine whether that species is or is not found in the water. This procedure can be used for species which are vulnerable or have a very small distribution. The latter will create monitoring mechanisms which do not depend on an active collection of such organisms but will establish new objective strategies for the conservation of their habitat.

With the new technique of environmental DNA, scientists hope to discover new species not only of damselflies but other organisms which live in water like fishes, frogs, aquatic insects, etc. A test of the procedure will be made in the reservoir of the Anchicayá hydroelectric power plant, in the Valle del Cauca, with the aim of discovering how anthropic intervention plays a role in the environment.

These processes will be repeated in the Tatamá National Natural Park and the rest of the country's protected areas, since "in the end what we want to do is to establish protocols and assemble reference database for all of the damselflies in the country. This project will lead to international collaborations. It will make Colombia a referent for initiatives in studying the evolution of these insects and allow us to find more biodiversity," the researcher Melissa Sánchez concludes. ■





# A COMPOSTING MACHINE BASED ON SOLAR ENERGY: AN AGRO- ECOLOGICAL BOOM





Researchers at the Universidad del Rosario invented a machine which transforms two species of invasive plants that cause environmental harm into compost for crops of onions, potatoes and strawberries. It is a pioneering effort in Colombia.

By: Magda Páez Torres  
Photos: Leonardo Parra, Milagro Castro

An informal chat between a physicist and an ecologist over a cup of coffee was the start of a solution to environmental problems in the form of a new composting machine, which works with solar energy and is unprecedented in Colombia. What triggered this invention, which will not only benefit the environment but Colombian agriculture as well, was concern about the environmental harm done by two species of invasive plants, which grow on the shores of lakes in the surroundings of Bogotá and whose vulgar names are *helecho* (fern) and *junco de agua* (water rush/reed). Their botanical ones are *Azolla filiculoides* and *Typha latifolia*, and when they are cut for land restoration projects, they leave residues and bad odors, with a proliferation of vectors.

The researchers are the physicist Fredy Mesa and the ecologist Francisco Escobedo, professors at the Faculty of Natural Sciences and Mathematics of the Universidad del Rosario, who joined forces and combined their knowledge to do the job. “We formed a team to find a solution to a local problem with technology. We already had an initial idea and Francisco guided us in how we might come to use a product which is usually thrown out,” Mesa relates.

For professor Escobedo, there were evidences that the decomposition of these plants acted normally when they were composted, a situation which led them to think of using this product and speeding the process up in order to turn it into fertilizer. With the support of the physicist Mesa and due to the limited electricity supply at the *laguna Chocolate* (lake) in the municipality of Une, where the study took place, they resorted to a clean and efficient modern system, solar energy, that is, the use of photovoltaic panels to enable the system to operate, which is economic and environmental-friendly.

One of the limitations which small farmers in Colombia face when it comes to producing compost – a product which supplies key nutrients to their crops – is precisely the lack of electricity. Therefore, most of them make compost manually, which requires a lot of time and a strong physical effort.

“Our aim was to eliminate the small farmer’s need to rotate a drum in a mechanical way. Basically, we began by thinking about





"We formed a team to find a solution to a local problem through the use of technology," explains Fredy Mesa.

the kind of bio-reactor that would be needed, what the system would be like – the chamber the material would be put in – and what would be needed to avoid moving it by hand, that is, how to install some automatic casters or rollers which would be able to turn that drum, which we call the bio-reactor," professor Mesa explains.

So, after thinking about it and doing studies and tests, the machine was invented, which they plan to patent, and according to their estimates, it will have a useful life of up to 25 years, so long as its mechanical systems are subjected to maintenance on a regular basis.

### **An environmental solution which helps agriculture**

The *Azolla filiculoides* and *Typha latifolia* plants, which served as the inputs for this study, grow in lakes and wetlands and are classified as invasive because they affect the quality of the water and environment where they spread. Paradoxically, they are no longer regarded as a problem because they have turned into a double solution.

The procedure for obtaining a patent generally takes two years. The application has already been made, thanks to a competition, sponsored by Colciencias, which the researchers won. After that, it will be scaled up to industrial standards and then the machine can be commercialized. It is estimated that that will happen in around three years.

The researcher Escobedo explains that when these two species are dug up, the organic material which is being degraded becomes a potential danger for the environment, because it emits a large amount of carbon dioxide (CO<sub>2</sub>), which causes grave atmospheric harms and leads to an increase in global warming. "This machine allows to close the carbon cycle with regard to greenhouse gas-effect emissions. We reuse that organic material, the result of restoration projects, so that other plants may grow and capture the CO<sub>2</sub>. To sum up, we are talking about a solution for ecological restoration," he remarks.



The problem is that alarming amounts of carbon dioxide are annually emitted in the world. During the U.N.'s Annual Conference on Climate Change last year, the Global Carbon Project and the University of East Anglia (United Kingdom) revealed that there was a 2.7% increase of such emissions in 2018.

In the case of Colombia, a study, made in 2016 by its Institute of Hydrology, Meteorology and Environmental Studies (Ideam, in its Spanish initials) and the United Nations Development Programme (UNDP), reported a 15% increase in CO<sub>2</sub> emissions in the past twenty years. At that time, Bogotá was responsible for 10.58 million tons of CO<sub>2</sub> (MTON).

These data show the urgent need to work with science to reduce environmental impacts and highlight the importance of this machine, which will reduce the greenhouse gas-effect and, at the same time, produce compost through clean technologies.

The compost which is obtained by this system can be used on crops of potatoes, onions and strawberries. "We made an analysis of the two plants and found that they had nutrients which are used to fertilize products in the region, which was perfect for us to advance," says Escobedo. It is worth stressing that 37% of the potatoes in Colombia are grown in Cundinamarca, (the Department where the plants were studied): It is one of the leading crops in Colombia, with 2,690,585 tons grown in 2018, reports the Colombian Ministry of Agriculture.

In this case, it is as though science were knocking on the doors of the community. It means that technology is entering into the homes of many small farmers who currently must pay for the transport of agrochemicals, which are sold in Bogotá, about two hours by road from the town of Une. Once they have this machine in their houses, they can produce their own compost.

With this invention, the process for producing compost, which usually takes six months, can be done in only six weeks, which will boost their earnings and overall efficiency. "We are reducing the process by thirty weeks, and that means saving a lot of money. You don't have to use trucks to transport the material, everything is local and it can be used on the crops in the region," the researcher Mesa stresses.

### A pioneering machine

This machine, which is on the point of being put on the market, is a landmark in the development of a new technology in Colombia. "There is still not a system in the country which works with motors run by solar energy and with micro-controllers, electronic systems for the supply of oxygen and the measurement of temperature and PH, which are sent via a data logger. There is no system that is autonomous and produces these highly feasible results in accordance with the Colombian norm which regulates these kinds of products," professor Fredy Mesa points out.



"This machine allows to close the carbon cycle with regard to greenhouse gas effect emissions," Francisco Escobedo remarks.



**With the help of physics, the researchers dealt with the problem of the limited electricity supply at the *laguna Chocolate* (lake) in the town of Une, Cundinamarca, where they undertook their research and resorted to a clean, modern and efficient system – solar energy – with the use of photo-voltaic panels which operate the system in a way that is economical and friendly to the environment.**

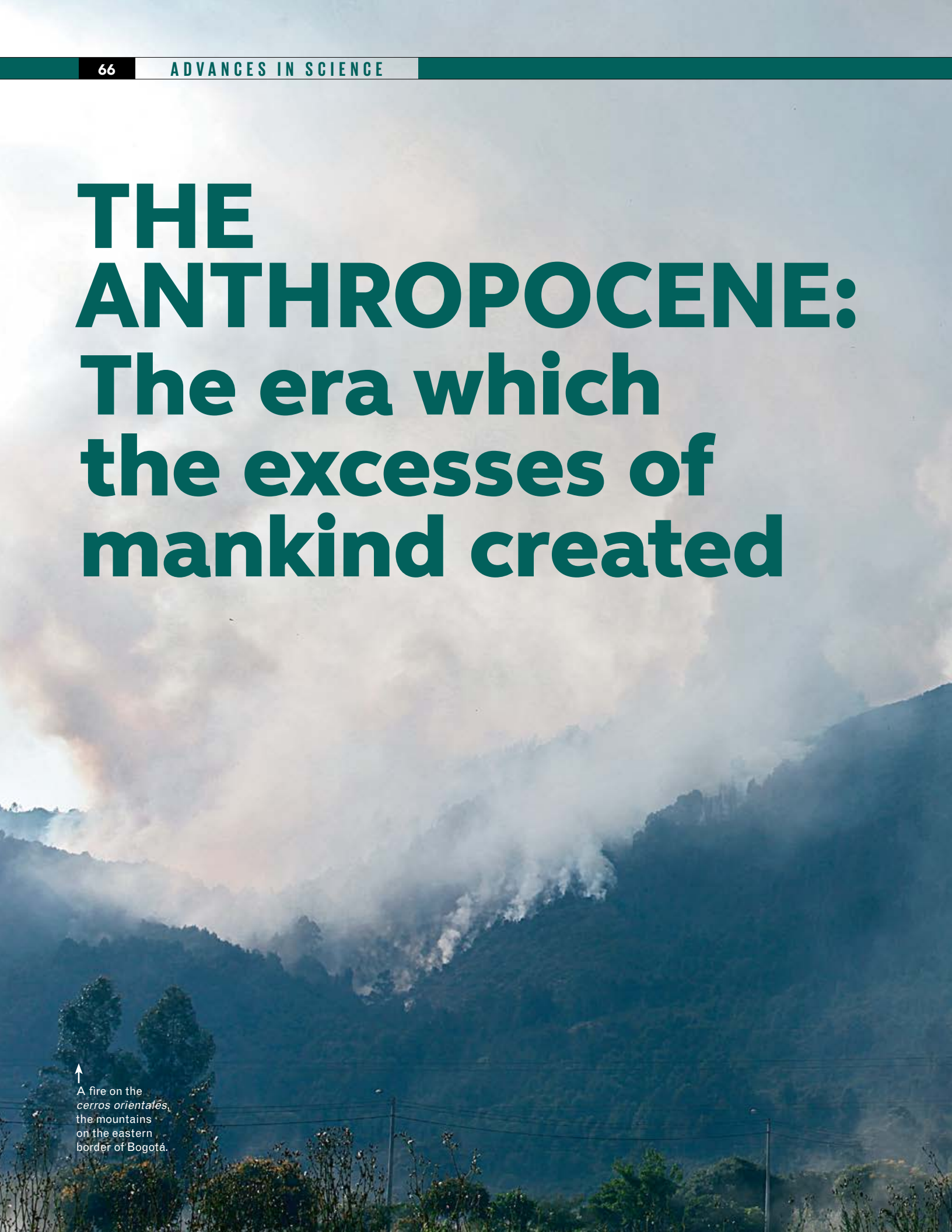
The procedure for obtaining a patent generally takes two years. The application has already been made, thanks to a competition, sponsored by the government's Administrative Department of Science, Technology and Innovation (Colciencias), which the researchers won. After that, it will be scaled up to industrial standards and then the machine can be commercialized. It is estimated that that will happen in around three years.

Once the requisites for its commercialization are completed, the idea is train small farmers so they can operate it in a simple way. While the product has a cost, it would be accessible for such farmers, who would save money in the transport and purchase of agro-chemicals.

The hope is that this machine will serve as a pilot program whose functioning will be replicated in other regions of the country and with other kinds of plants, so that its use spreads to a larger number of crops. "It may benefit many regions, even Bogotá, which, while it has interconnected systems, does not count on fast and efficient methods to produce compost, despite being a mega-city. In addition, we have begun to explore many fields in which physics can collaborate with many ecological and nano-technological projects," Mesa comments.

For now, this physicist and this forestry engineer have promised that they will keep drinking coffee together and discuss the possibility of scaling up projects and uniting different fields of science, with the aim of a country that is more technological but also more kind to the environment. ■

# THE ANTHROPOCENE: The era which the excesses of mankind created



↑  
A fire on the  
*cerros orientales*,  
the mountains  
on the eastern  
border of Bogotá.



The impacts of humans on the planet have forced their leaders and societies to make joint, cooperative and radical decisions about ways to prevent future scenarios of great suffering. Researchers of the Universidad del Rosario and the Universidade de Brasília have joined the scientists who are urging mankind to enter a new geological stage and face up to all it entails.

By: Alejandro Ramírez Peña

Photos: Alberto Sierra, Ximena Serrano

A publication of the UNESCO states that “the term Anthropocene has been coined to designate the repercussions on the climate and biodiversity of both the rapid accumulation of greenhouse-gas effects and the irreversible harms caused by the excessive consumption of natural resources.”

The article likewise addresses the debate about whether that term can be used to define a new geological epoch that will succeed what is known as the Holocene era, an opinion held by a good many scientists. The researchers Matías Franchini, professor at the Faculty of Political Science, Government and International Relations of the Universidad del Rosario, and Eduardo Viola, professor at the Postgraduate Program on International Relations (IREL) of the Universidade de Brasília share this idea of going into a new stage of life on Earth.

In their study, entitled *The challenges of the Anthropocene; from an international environmental policy to global governance*, they underline that the planet is, in fact, entering a new geological era and that this change, which is so fundamental in terms of the physical and chemical functioning of the terrestrial system, obliges us to undertake a series of profound changes. It forces us to question how humanity should behave in the face of the challenges the new era poses.

“We are entering terrains which are very unknown, that is, where humans are starting to inhabit a planet which has only existed for a short time, the world which humanity has developed during the past 12 millennia. When we settled in it, we created agriculture, we began to raise animals, our culture solidified and after that, we created cities, States, etc.,” Franchini notes.

In his opinion, this situation shows that our political, domestic, economic and international institutions are not prepared to deal with these kinds of issues and problems, which are global to a large extent.

Along the same lines, professor Viola believes that the most important challenge for everyone is climate change. From the environmental point of view, he is convinced that this is a challenge which has repercussions on all of the other global environmental problems, like those to do with the preservation of ecosystems, biodiversity and pure potable water; the protection of the ozone layer; and soil loss, among others.

He equally underlines that in most countries, carbon emissions (from greenhouse gases) are related to pollution at a local level, that is, the same industries and means of transport which emit carbon also affect human health, unless they have sound filters or other mechanisms of control.

“There are other very big challenges which are not linked to environmental problems. They have to do with the governability of disruptive technologies, which fall into three large groups – artificial intelligence, synthetic biology (genetic engineering) and leading-edge nanotechnology – and are accelerating at an exponential rate: We must ensure that their handling and use do not go beyond our control,” Viola explains.

To that is added another alarming factor, characteristic of the history of evolution: Our custom of only reacting to immediate problems. According to these researchers, the idea of the Anthropocene era is to encourage humans to think about long-term problems which are cumulative and not immediate, with an additional aspect: The solutions must involve all of the inhabitants of Earth.

Francini singles out this situation as a major challenge in terms of social psychology, because it means that we must stop thinking in an individual and tribal way and do it in a collective one, on the understanding that, as members of humanity, we have a common destiny. And while this may seem utopian, it is becoming more and more necessary, since problems like climate change are “nourished” by the actions of everyone, as is the one of emissions.

“If there is no cooperation between countries, companies, non-governmental organizations and individuals, there will be no possibility of finding an optimal solution to such problems. The lower our level of cooperation, the weaker our capacity to respond to these new challenges and the corollary of that is, basically, more human suffering,” declares Matías Franchini.

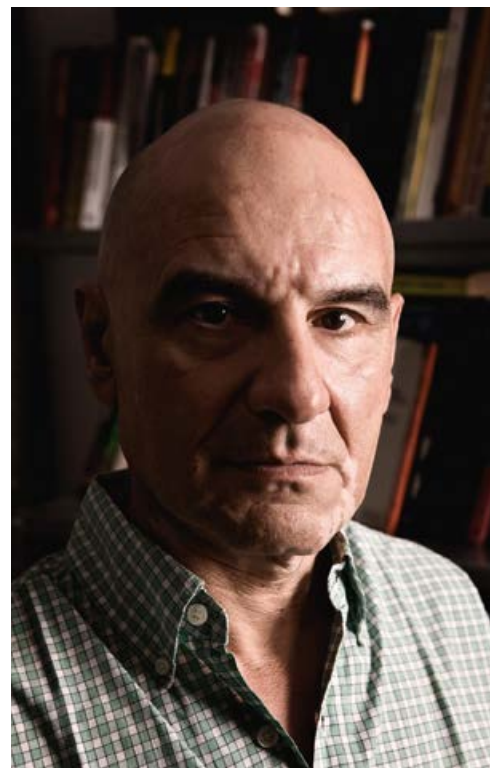
### Global determination

These problems are even more worrying when we reflect on the true awareness and determination of our world to construct and maintain what the study defined as “a space where humanity can safely operate.”

The two professors are saddened by the fact that this possibility of cooperative efforts does not exist at the current time, as is shown by the different agreements and negotiations which have aimed at the mitigation of climate change. They began in 1992 with the Río Convention but since then, carbon emissions have



There are challenges which are linked to environmental problems and others which have to do with the governability of disruptive technologies: Artificial intelligence, synthetic biology and nanotechnology, Eduardo Viola explains.



continued to increase, year after year, and the problem has worsened. “Despite all of the scientific knowledge which we now have, the reality is that the large majority of countries in the world lack policies which really aim at the de-carbonization of the economy,” says the researcher Franchini.

As for the need for a global governance, the authors of the study believe that, despite developments of some importance in the 1990’s (after the end of the Cold War) and the following decade, things have gone backwards in recent years, since nationalism has increased in the countries of the democratic world, like the United States, and obviously in the authoritarian ones as well, as happens in China, Russia and Turkey.

That has been aggravated by the political tensions between those same actors, due to their commercial differences and radically different positions on situations like the one Venezuela is in, which makes it even more difficult to bring them together to work on joint issues that are as important as the one the Anthropocene era represents for mankind.

“That is why our proposal and the main message of our research has to do with ending what we think of as the exclusive focus of governments on sovereignty, which, at the current time, is more of a normative convention in the sense that if we want to deal with the common problems of cooperation or governance which humanity is clamoring for, and not only in the field of environmental change, but also that of the economy, human rights and all the other issues which are increasingly global ones, then the countries of the world should abandon their selfish interests,” remarks professor Franchini of the Universidad del Rosario.

He and his colleague likewise argue that we must gradually replace our short-term approach to such problems with a view





"If there is no cooperation between countries, companies, non-governmental organizations and individuals, there will be no possibility of finding an optimal solution to such problems. The lower our level of cooperation, the weaker our capacity to respond to these new challenges and there will be more human suffering," declares Matías Franchini.

The authors of the study underline that the planet is, in fact, entering a new geological era and that this change, which is so fundamental in terms of the physical and chemical functioning of the terrestrial system, obliges us to undertake a series of profound changes. It forces us to question how humanity should behave in the face of the challenges the new era poses.

towards the future. Such problems are not only a feature of our present time, they are also long-term ones, which means renouncing the short-term logic which now governs the functioning of our political and economic systems.

But the difficulty is finding how to make that happen. If you want to be optimistic about it, Franchini would point to certain indications that we are already on the right path, like the growth of an individual, national and global awareness of the need to do something at once, plus the fact that the number of companies which are installing environment-friendly technologies is growing.

If, on the other hand, you want to be pessimistic, he would point out that these positive attitudes lag behind the rhythm of our environmental problems. Global environmental changes and all the problems they entail are growing at a much faster rate than the solutions. In that regard, we may need to wait for human suffering to reach a point where we have to react.

"If that is so, the worst that can happen is that we will reach the end of this century with a five or six degrees increase in temperature and a rise of several meters in sea levels, and that will lead to drastic changes in the cycles of rainfall and atmospheric cycles in general that will harm the production of food. We are already exposed to more frequent waves of extreme heat and cold, hurricanes and the extinction of many species: We are basically living in a world that is more and more hostile," Franchini notes.

That is why the two scientists recommend that we do not sit around and wait for such a drastic scenario to happen. The world must prepare itself and fight to ensure that the future of humanity does not reach those extremes of suffering: We should abandon the selfish positions of the world leaders of nations and States. ■

# MAIN INTERNATIONAL ENVIRONMENTAL REGIMES

## CLIMATE CHANGE

AGREEMENT	YEAR	OBJECTIVE	RESULTS
United Nations Framework Convention on Climate Change	1992	The stabilization of concentrations of greenhouse-gas effects in the atmosphere to a level which prevents dangerous anthropogenic interferences in the climatic system	Failure: Global emissions rose at a high enough rate to surpass the limit, making a dangerous climate change nearly inevitable
Kyoto Protocol	1997	The countries set a goal of reducing emissions by 5.2% on average by 2010, compared to the level in 1990	Most countries reached the goal
2 <sup>nd</sup> Commitment Period of Kyoto Protocol	2012	Average 18% reduction of emissions in 2020, compared with 1990	Minimum attainment of the goal: The participating countries are barely responsible for approximately 12% of global emissions
The Paris Agreement	2015	Reduce global greenhouse gas-effect emissions, with the participation of all countries, but without a specific mitigation target	Each country has committed itself to mitigation goals for 2030, but they are not enough to stabilize the system. There are no mechanisms for monitoring or enforcing the national goals

## OZONE LAYER

AGREEMENT	YEAR	OBJECTIVE	RESULTS
Vienna Convention for the Protection of the Ozone Layer	1985	Protect human health and the environment from the adverse effects which result or may result from human activities that modify or may modify the ozone layer (Art. 2)	Successful: A gradual reduction of chlorofluorocarbon emissions
Montreal Protocol on Substances that Deplete the Ozone Layer	1987	Control the emissions of substances which destroy the ozone layer	Successful: A gradual reduction of chlorofluorocarbon emissions





## BIODIVERSITY

AGREEMENT	YEAR	OBJECTIVE	RESULTS
Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention)	1973	Regulation of the trade in endangered species to avoid an exploitation incompatible with their survival (Art. 2)	A varied impact, depending on the particular region in the world, and a significant increase in the visibility of the problem
Convention on Biological Diversity	1992	Conservation of biological diversity, the sustainable use of its components and the fair and equitable distribution of the benefits derived from the use of genetic resources	Failure: The frontier of biodiversity has been surpassed to the point where humankind is creating the sixth mass extinction in the history of the Earth
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization	2010	Regulate access to genetic resources and the distribution of the benefits deriving from their use	It came into force in October, 2014. The limited information available so far shows no progress in its implementation

## CHANGES IN USE

AGREEMENT	YEAR	OBJECTIVE	RESULTS
United Nations Convention to Combat Desertification	1994	Combat desertification and mitigate the effects of drought in countries affected by grave droughts and/or desertification, especially in Africa	Ambivalent effects: In general, the process of desertification has continued but there was a positive change in some regions

## CHEMICAL CONTAMINATION

AGREEMENT	YEAR	OBJECTIVE	RESULTS
Stockholm Convention on Persistent Organic Pollutants	2001	Eliminate and restrict the production and trade of persistent organic pollutants	In force since 2004. The problem is determining the results in view of the extreme geographical complexity and heterogeneity of the effects
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1989	Control the movement of hazardous wastes following the principles of a prior and informed consent to their import, export and transportation	Successful: The international trade in hazardous wastes was gradually reduced and became more regulated and transparent

Source: *Los desafíos del Antropoceno: de la política ambiental internacional hacia la gobernanza global* (The challenges of the Anthropocene era: From international environmental policy to global governance).

# THE FIRST FOSSIL OF A MARINE TURTLE HAS BEEN FOUND IN COLOMBIA: AND THE TURTLE WAS PREGNANT!

The discovery of a 125 million years-old fossil not only makes it possible to understand the evolution and reproductive aspects of these ancient reptiles, but it also throws light on their current descendants. The findings of the research enable us to understand the history of biodiversity and thus heighten awareness of the need to conserve fauna, particularly marine turtles which are severely endangered by the contamination of oceans, indiscriminate hunting and the effect of climate change. The study was led by Professor Edwin Alberto Cadena, of the Faculty of Natural Sciences and Mathematics.

By: Inés Elvira Ospina

Photos: Leonardo Parra, Edwin Cadena

**E**dwin Alberto Cadena was born and raised in Zapatoca, Santander, one of the few places in the world where you find an intact fossil beach that is 135 million years-old. That is why collecting marine fossils became a passion of his when he was a boy. He remembers that, when he was six, his collection of stones drove his mother “a little crazy.” “She was always asking me what I was going to do with it and what use it would be in my life,” says this researcher from the Faculty of Natural Sciences and Mathematics of the Universidad del Rosario.

Years later, his passion for fossils led Cadena to become the researcher of one of the most important scientific and paleontological discoveries, both in Colombia and the world: The remains of an animal which lived 125 million years ago and turned out to be the first marine turtle bearing eggs.

“Colombia is a mega-diverse country but we know little about why and how it became one. This is precisely one of the

most interesting things about this discovery: It helps us to retrace that history and make it known. To teach children that we have fascinating species in Colombia, like *Desmatocheilus padillai* (the world’s oldest marine turtle) or *Titanoboa cerrejonensis* (the biggest snake which has ever existed),” he stresses.

In the opinion of Professor Cadena, learning about such fossils and studying their history is important, even for the conservation of our current biodiversity, because many of those species are relatives of animals which are alive today. “Understanding where and how a species has lived, or if it no longer exists and why, is important for conserving living ones. It enables us to make history accessible to people and for example, when they are eating a turtle during Easter Week, tell them that that species has lived for two million or more years and their consumption of the turtle will make the species extinct in only a few years,” he explains.

Another benefit of this study is the protection of our patrimony. Cadena believes that







a recent measure, the Decree-Law no. 1353, which regulates the country's paleontological and geological patrimony, is a sound way to advance the study of paleontology in the country, a field which is highly important for science and scientific research.

### **The paths which led him to Villa de Leyva**

125 million years ago, the town of Villa de Leyva in Boyacá lay under a shallow sea. That is why it has turned out to be an ideal place for the discovery and study of fossils. Edwin Cadena became acquainted with it when he was studying geology at the Universidad Industrial de Santander (UIS –Industrial University of Santander), the subject he chose when he finished high school.

Once he obtained his undergraduate degree, he traveled to the Panama Canal to do a two-year internship with the Smithsonian Institution and he then went to the University of Florida for his Masters. He obtained his doc-



torate in North Carolina and traveled to Germany on an Alexander Von Humboldt Fellowship for his postdoctoral studies between 2012 and 2015.

"After I returned, being in Zapatoca, I discovered something which led me to follow the path of the vertebrate animals, especially turtles. I refer to the oldest little turtle which we have in the north of South America and with that, I had the opportunity to go to the American Museum of Natural History in New York and work with one of the best experts in the field," recalls this co-director of the new program on "Earth System Sciences" at the Universidad del Rosario. It was during that period that he noticed that there was a big gap in the documentation of the turtles of northern South America and thus got interested in that subject.

Cadena then went to the Department of Boyacá and joined the recently-opened *Centro de Investigaciones Paleontológicas* (CIP-Center for Paleontological Investigations). The Center had been set into motion by the Padilla brothers, both of whom are passionate about paleontology and invested their own resources in it. Along with Mary Luz and Juan de Dios Parra, a local family who had studied the terrain for years, they built a good infrastructure to undertake their investigations there.

"They had the infrastructure and the fossils, but they lacked the scientific personnel who were needed to study and work with them. That is how I have had the opportunity to work with all of that material which they had already collected," explains Professor Cadena, who has collaborated with the CIP for the past eight years. Due to that work jointly done with Santiago Padilla and the Parra brothers, they are now the co-authors of Cadena's articles. "We have already published about three or four articles in international journals, not only on the subject of turtles, but also dinosaurs, fishes and other marine reptiles which were found in the place," he explains.

### Novel methods enabled the researchers to see the 51 eggs between the carapace and the bottom half of the shell

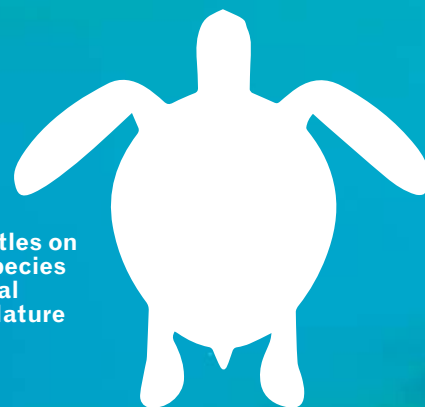
During those years, Cadena studied a fossil which was guarded on the shelves of the CIP. It had been discovered by Juan de Dios ten years before, on the desiccated slopes of the mountains between Villa de Leyva and the town of Sutamarchán, and Mary Luz had prepared it for study. During this investigation, they found that the animal was two meters long and was part of a super-family of marine turtles known as the Cheloniidae, of which there are still seven living species which live in the oceans and undertake long migrations, like the green turtle (*Chelonia mydas*) and the *hawksbill* sea turtle (*Eretmochelys imbricata*), known as the *tortuga Carey* in Spanish.

## WHY WE COLOMBIANS SHOULD CARE ABOUT THIS DISCOVERY?

Our country has the second-highest diversity of marine life in America.

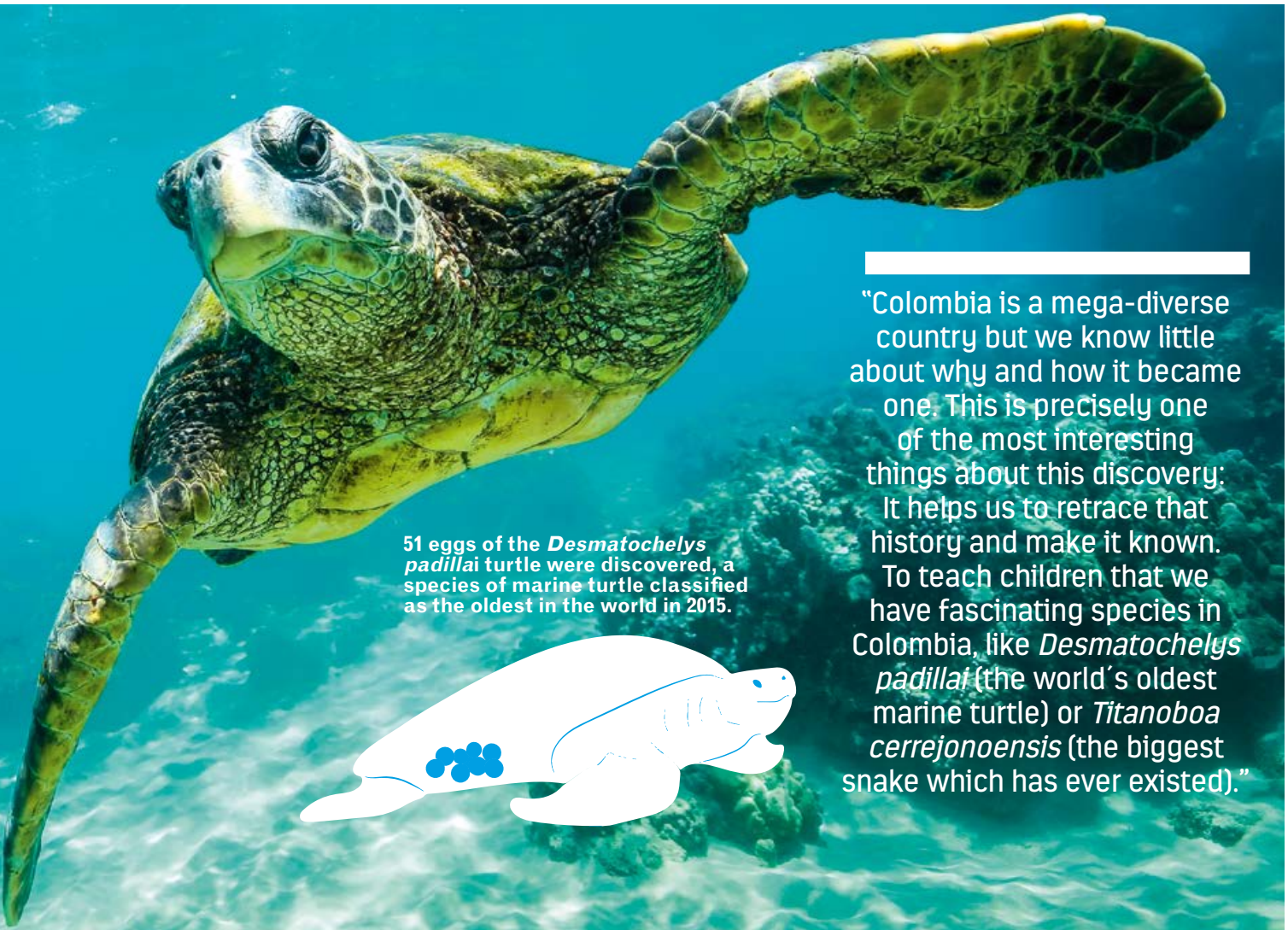
Five of the seven marine turtles on the red list of endangered species compiled by the International Union for Conservation of Nature (IUCN) live in our seas.

Colombia is in seventh place in the world in the number of continental, terrestrial or sweet water species of turtles and the second after Brazil in South America; but of the 27 species which live in the country and are found in its 32 Departments, 11 are in danger of extinction.



← The most important feature of the discovery is that there were still 51 eggs of the *Desmatochelys padillai* turtle between a large fragment of its shell or carapace and its plastron (the bottom half of the shell), which has enabled us to enrich our understanding of the evolution of marine turtles," Edwin Cadena explains.





51 eggs of the *Desmatochelys padillai* turtle were discovered, a species of marine turtle classified as the oldest in the world in 2015.

“Colombia is a mega-diverse country but we know little about why and how it became one. This is precisely one of the most interesting things about this discovery: It helps us to retrace that history and make it known. To teach children that we have fascinating species in Colombia, like *Desmatochelys padillai* (the world’s oldest marine turtle) or *Titanoboa cerrejonensis* (the biggest snake which has ever existed).”

The most important feature of the discovery is that there were still 51 eggs of the *Desmatochelys padillai* turtle between a large fragment of its shell or carapace and its plastron (the bottom half of the shell). In 2015, that species of marine turtle was first identified as the oldest in the world. “What most interested us was that we would be able to enrich our understanding of the evolution of marine turtles,” Cadena explains.

During the investigation, they employed some conventional scientific methods like computerized tomography, which revealed that the diameter of the nearly spherical eggs varied between 32 and 43 millimeters. They also used a scanning electron microscope, a novel way to analyze the specimen without covering it with gold or carbon, which enabled them to analyze the mineral structure of the eggs and discover that they had a rigid shell, like the one of land turtles, and not a soft and flexible one, like the marine turtles of today.

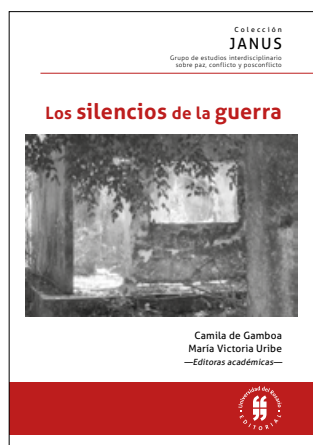
The adjustments done with the electron microscopy analysis enabled the researchers to avoid contaminating the specimen and thus be absolutely certain that they were in fact eggs, and they potentially preserved remnants of their original compounds. This discovery, which is very important for the world, has opened up new paths for scientific research. In

collaboration with Colombian and foreign institutions, the Universidad del Rosario is now sponsoring several projects in those fields. One, a joint effort with the Smithsonian, is studying fossils in places very close to Bogotá and seeks to understand how the tropical forest and everything which now surrounds it arose.

Another project is being carried out in the desert of the Tatacoa, and also focuses on a species of turtle, one that is likewise of a large size, but “younger”, since it is barely some 13 or 14 million years-old.

“There is a lot to do in Colombia and this should help to encourage those youngsters who, at times, do not want to risk studying something outside of the traditional subjects. If they do things with passion, and enjoy them and are talented and persist, they will surely achieve their dreams and broaden the spectrum of science, which is something our country strongly needs,” concludes Cadena. ■

# URosario: Scientific divulgation and visibility

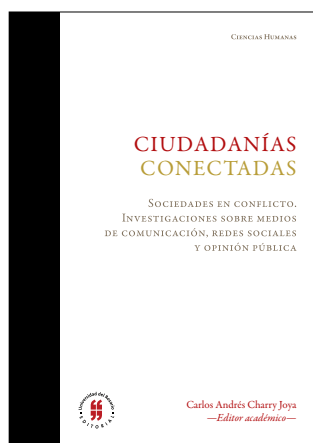


Page 38\*

## THE SILENCES OF WAR

**Camila de Gamboa, María Victoria Uribe**  
[Academic Editors]

We live in uncertain and turbulent times in which war is not only being waged in trenches or on battlefields but also in the most varied scenarios. During the 20<sup>th</sup> century and the 21<sup>st</sup> so far, we have witnessed many wars, which have claimed millions of victims and left testimonies and silences. The authors who contributed their intellectual insights to this book come from a variety of countries, like Colombia, Germany, Mexico, Spain and the United States, and, work, in turn, in different disciplines, among them philosophy, history, literature, music, sociology and law. Basing themselves on their particular field of knowledge, they reflect on the silences of war and its relation to memory and language, harm, psychoanalysis, the acoustic devices in prisons, trauma, violence and forgiveness. Some essays in this book analyze and explain the realities of the authors' countries and others approach the subject from a theoretical standpoint but always with a concrete point of view. We invite our readers to undertake this surprising and revealing journey through the many silences which violence, war and totalitarian regimes leave in their wake.



Page 94\*

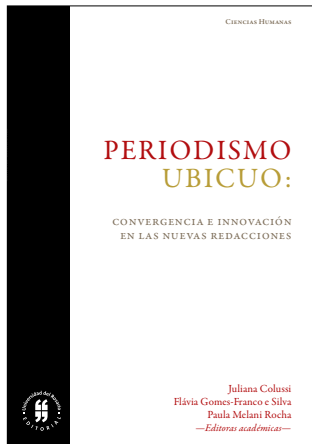
## CONNECTED CITIZENRIES SOCIETIES IN CONFLICT: STUDIES OF COMMUNICATIONS MEDIA, SOCIAL NETWORKS AND PUBLIC OPINION

**Carlos Andrés Charry Joya**  
[Academic Editor]

During the last decades of the 20<sup>th</sup> century, most countries in the region introduced major constitutional reforms which, in some cases, subjected their citizens to neo-liberal models, while others did just the opposite, wagering on new forms of socialism. However, in almost all of them, indigenous, Afro and LGBTI social movements have shown that there are new approaches to citizenry which deserve to be acknowledged and enjoy a social, cultural and political legitimacy. Without trying to assess the results of those social experiments here, which speak of a continent whose countries are experiencing ever more complex realities, we believe that the truth is that the influence of the communications media and new technologies have not only enabled more and people to be connected with each other in real time but they have also resulted in a greater flow of and access to information. For that reason, what was once thought of as an unfortunate shift from the traditional communications media to the social networks has really opened a window of opportunity which has enabled a variety of both social and interest groups to establish closer links with their followers.

\*THE PAGES REFER TO THE ARTICLES ABOUT THE SUBJECT  
IN THIS ISSUE OF ADVANCES IN SCIENCE NO. 3 – 2019





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## UBIQUITOUS JOURNALISM: CONVERGENCE AND INNOVATION IN THE NEW EDITORIAL APPROACHES

**Juliana Colussi, Flávia Gomes-Franco and Silva, Paula Melani Rocha**  
[Academic Editors]

Due to technological advances and the change in the way of consuming information, the communications media are reinventing themselves, so that the institution of journalism is now in a stage of constant transformation. Their editorial staffs have become integrated as they combine the skills of journalists and professionals with other kinds of specialized knowledge, all of whom work in multi-disciplinary teams in order to develop new narratives and new journalistic products adapted to the era of Apps. The job of the journalist is no longer that of writing an article or interviewing someone with a video camera: It has turned into a multi-task profession. In this context, the faculties of journalism and communications have reformulated the contents of their curricula with the aim of training professionals who are suited to the new media. This book is the result of studies, of a theoretical-practical nature, of the training and updating of professional journalists, the development of new interactive and dynamic products, and different ways of spreading the contents of these media, among other subjects of interest to professionals and students of communication.



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## ENHANCED PRODUCTION OF COMPOST FROM ANDEAN WETLANDS BIOMASS USING A BIOREACTOR AND PHOTOVOLTAIC SYSTEM

**F. Mesa, J. Torres, O. Sierra y Francisco J. Escobedo**

*Azolla filiculoides* and *Typha latifolia* are two species of invasive plants which have a negative impact on the waters and environmental quality of Andean wetlands.

This study discovered the speed of aeration which is needed to accelerate the process for composting the biomass of these two plants, using an improved bioreactor that is semi-automatic, closed and controlled, powered by a photovoltaic system. A system of this kind, which uses the biomass of invasive aquatic plants, can be used to produce compost in rural areas which are remote and mountainous and it requires a minimal infrastructure.



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## PEDAGOGICAL INNOVATION: THE ART OF ENTREPRENEURSHIP

**Andrea Ávila Tinoco, José Alejandro Cheyne García, Margarita Guzmán Bejarano**

Because we humans are so complex, it is necessary for us to understand that we are the sum total of different aspects. One example is when we agree that rationalism is an invaluable tool but not the only one: The possibility of surprising ourselves and seeing beyond what is evident makes us unique. In the particular case of entrepreneurs, we see how, just like artists, they allow a "brushstroke of light" to inspire their business projects. It requires a unique and unrepeatable sensibility which is the result of their physical, intellectual and spiritual capacities. Art maximizes these dimensions, since it enables us to perceive the beauty of reality, just as true entrepreneurs discover opportunities in a sea of possibilities.

A decorative geometric pattern on the right side of the page, consisting of various colored triangles and polygons in shades of blue, red, orange, yellow, and grey.

# 3

**Thinking about  
matters on  
the national  
agenda**





# THE TIME HAS COME TO HAVE A REGULATORY FRAMEWORK FOR MIGRATION

Colombia changed from a country which saw its citizens emigrate to one which receives immigrants from other nations, especially Venezuela. The new situation obliges the State to come up with an integral migratory policy which transcends the government which happens to be in office and responds to the short, medium and long term needs of the country. An investigation done by 21 universities, led by the Universidad del Rosario, sets forth guidelines for the creation of such norms.

By: Ángela Constanza Jerez  
Photos: Leonardo Parra, 123RF

**A**s of the 31<sup>st</sup> of January this year, 1,200,000 Venezuelans were living in the territory of the nation, according to the figures of “Migración Colombia”. That estimate does not include those who are in an irregular situation and thus not known to the immigration authorities, a fact which causes anxiety, a feeling shared by many local authorities and ordinary citizens, who now have to deal with a scenario of emerging migration, due to the massive flows of migrants from Venezuela.

Both the national and local governments have responded to this new reality with





guidelines, resolutions and suggestions for short and middle term solutions to this humanitarian emergency. In the opinion of professor María Lucía Torres Villareal: “It is all very well that they want to stay afloat with temporary measures to deal with the situation. It is all very well that the administration of president Iván Duque has continued with the actions taken by the administration of Juan Manuel Santos and hasn’t reversed them, but the basic fact is that we cannot go on like this without a normative framework. Nor should we go the other extreme, like now, when there are several bills about migration before the legislature. The positive message of all this is that the time had come for the Colombian State to implement an integral migratory policy.”

Torres teaches at the Faculty of Jurisprudence of the Universidad del Rosario and is a co-researcher in the research project entitled a *Regional Diagnosis of migration in Colombia, with a focus on Human Rights, 2014-2018*, which counted on the participation of 21 universities from six regions of the country (the northeast, center, Antioquia, Caribbean coast, Coffee

Zone and the south). The Universidad del Rosario acted as the director of the project on a national level.

Although the results of the information which was gathered by the different teams and the respective analyses of the framework which the educational institutions employed (which measured access to the rights of health, education, work and justice) are still not definitive, the tentative conclusion is that Colombia must take a great leap forward to deal with the current reality of migration, and that it should do it with a policy of integral care linked with human rights and not only aimed at Venezuelan citizens, but Nicaraguan and Chinese ones as well, among others. In other words, the policy should aim at the protection of the rights of all foreigners in Colombia.

María Teresa Palacios Sanabria, the director of the *Human Rights Research Group* of the Faculty of Jurisprudence of the Universidad del Rosario and head of the research project, explains why this reform is needed: “Colombia has not been sufficiently prepared to deal with the reality of a migration which has changed in recent years. We have always been characterized as a country of origin or transit, but not one that is a destination. This situation took us by surprise, without being able to come up with a change in the norms which would be sufficiently solid to secure the rights of those who arrive here.”

The university teachers who are involved in the project have called on the authorities to deal with the situation and design a policy which takes its different aspects into account. The most important one: To understand that it is crucial to respect the dignity of the individual. “The *pro persona* principle should be applied. If we interpret it in the light of this principle, we are always going to find sound practices or a broader standard for human beings,” Palacio points out.

The international obligations in the field of human rights which Colombia has assumed are another important feature which should be taken into account; and, recently, its signing of the Global Compact for Migration, adopted by the General Assembly of the United Nations on December 10, 2018, which sets forth 23 objectives based on a number of ideals agreed on by the signatory States. They are: Prevention, access to all rights, the compilation of statistics to have a clear idea of the dimension of migrations, a differentiated approach to care, campaigns against discrimination and the possibility of regarding migration as an opportunity for the recipient nations.

### Other findings

In addition to the evident need to count on a migratory policy, the study also showed that the different regions do not have the same capacities or resources and are hampered by many particularities which should be taken into account.

The researchers suggest that the norms should have an integral perspective and be socialized in each entity which plays a role in the migratory process, so that they may be applied in accordance with the spirit of the reforms. “They must be accompanied by a pedagogy for the public officials who, at one time or another, are in contact with the migrant. The person who should be familiar with the law is not the migrant: The Colombian official is the one who has that duty. Ignorance of the norms may be a stumbling block for the migrant’s access to his or her rights,” Torres explains.

Along the same line of thought, the academics who made the study suggest that such knowledge should be extended to the whole of the Colombi-

an population to eradicate discriminatory practices against the migrants: To show that we have a different reality, that Colombians are not the only ones who live in our territory, there are many foreigners as well.

Finally, they single out another finding, which is the fact that migration was usually thought of in terms of countries, but the current exodus is a matter of regions. In the case of Venezuela, the Colombian State should be summoned to play a leading role in different international bodies, like the one it presently has in the Group of Lima, with the aim of discussing solutions on a regional level. In that way, plans for global governance may be made.

“Let us hope that, with the subject of migration, we may establish an integral policy as a State and ensure that the same thing which weakened the policies on forced displacement does not happen, where a judge had to fill the legal gaps and all of the needed changes were left in the hands of the judiciary,” remarks Palacios. ■





## RESULTS BY REGIONS

Each university which participated in the study chose a target population to compile information (documentary, working panels with diverse actors in the migratory process, interviews) and undertake the analysis. Thus, the northeast zone focused on Cucutá (communes 3, 4, 6, and 7) and Bucaramanga. The central node focused on Zipaquirá, Bogotá, Soacha and Neiva. The Antioquia node focused on Medellín. The Caribbean coast node focused on Barranquilla and Santa Marta. The Coffee Zone node focused on Pereira and the southern node on Pasto.

In broad terms, it was found that there is not a complete characterization of the migrant population nor are there reliable figures on the number of migrants, since they vary from institution to institution, as happened with forced displacement. In addition, it was never foreseen that the Venezuelan migrants would decide to remain in Colombia. For a long time, they were regarded as a floating population. Migrants in transit are usually found in cities like Tunja, Paipa and Pereira.



←  
“The positive message of all this is that the time had come for the Colombian State to implement an integral migratory policy,” says professor María Lucía Torres Villareal.



←  
“Colombia has not been sufficiently prepared to deal with the reality of a migration which has changed in recent years,” the researcher María Teresa Palacios points out.

**Bogotá**

Suba

Engativá

Fontibón

Kennedy

Santa Fe

In Bogotá, most of the migrants are clustered in five districts (Santa Fe, Kennedy, Suba, Fontibón and Engativá) and say they encounter problems with employment, access to health services and their extra-legal status.

# OBJECTIVES TO ENSURE A SAFE, ORDERLY AND LEGAL MIGRATION



1

Compile and use data which is precise and arranged in categories to formulate policies.

2

Minimize the adverse and structural factors which force people to leave their country.

3

Provide precise and timely information in all of the stages of migration.

4

Ensure that all migrants have proof of their juridical identity and adequate documentation.

5

Strengthen the availability and flexibility of the routes to legal migration.

6

Facilitate equitable and ethical employment and safeguard the conditions which ensure decent work.

7

Deal with and reduce the vulnerabilities of migrants.



8

Save lives and undertake coordinated international initiatives on migrants who have disappeared.

9

Strengthen transnational responses to the illegal trafficking of migrants.

10

Prevent, fight against and eradicate the White slave trade in the context of migration.

11

Manage frontiers in an integrated, safe and coordinated manner.

12

Strengthen the certainty and predictability of migratory procedures for the adequate verification of the background, evaluation and origin of the migrants.

13

The detention of migrants should only be used as a last resort.

14

Improve the protection, assistance and cooperation of consulates in the whole migratory cycle.



15

Provide migrants with an access to basic services.

16

Empower migrants and societies in order to achieve their full inclusion and social cohesion.







17

Eliminate all forms of discrimination and encourage public discussions of the situation.

18

Invest in the development of skills and facilitate the mutual recognition of skills, qualifications and talents.

19

Create the needed conditions for migrants and the subjects of exodus to be able to fully contribute to sustainable development.

20

Promote more rapid, safe and economical methods for remittances and encourage the financial inclusion of the migrants.

21

Help to facilitate the return and readmission of migrants to their countries of origin in conditions of security and dignity.

22

Establish mechanisms to transfer social security payments and other benefits the migrants have acquired.

23

Strengthen international cooperation and world alliances for a safe, orderly and legal migration.



## TESTIMONIES OF MIGRANTS WHO WERE INTERVIEWED IN THE FRAMEWORK OF THE PROJECT

### Access to services:

*"There is housing, the services are also expensive for a migrant who arrives without sufficient resources to sustain himself or herself."*

### Reasons for migrating:

*"My cousin has been living here for two years: It was he who told me to come. I chose this country because I had relatives here."*

*"The situation in Venezuela was very difficult. You couldn't buy food and I had to close my business," testimony of a migrant.*

### Access to employment:

*"I have managed to find work in construction, but to start with, I met up with a gentleman who wasn't very decent and things didn't work out, but I managed to find and work for a new boss who pays me and I do different construction jobs."*



The study was undertaken by the following institutions: The Universidad [U] de Santander, U. Santo Tomás, U. Antonio Nariño, U. Simón Bolívar, U. Libre, U. Sergio Arboleda, U. del Atlántico, U. Pedagógica y Tecnológica de Colombia, U. de Boyacá, Fundación Universitaria Autónoma de las Américas, U. Surcolombiana, U. La Gran Colombia, U. de Antioquia, U. de Nariño, Corporación Universitaria Rafael Núñez, Corporación Universitaria Remington, Unicoc, U. Cooperativa de Colombia, U. de Medellín, U. del Magdalena and the U. del Rosario.





# CULTURAL DIPLOMACY: The profession of a few, the task of everyone







In a global scenario whose State and non-State actors are being reshaped, the role of diplomacy in establishing and improving the relations between countries has acquired a new dimension. With an in-depth cultural diplomacy, a concept little studied in Colombia so far, one can change the image and positioning of the country on an international level, argues Sandra Montoya, professor at the Faculty of Political Science, Government and International Relations at the Universidad del Rosario.



By: Juliana Vergara Agámez

Photos: Leonardo Parra, Alberto Sierra, Juan Ramírez

Let us go back, for a moment, to 1999. The president of the United States, Bill Clinton, dances to the rhythm of *vallenatos* (popular music from the Caribbean coast of Colombia) sung by a group of Colombian children in the White House and both in the U.S. and abroad, the press does not stop reporting on the event. That charming moment, with a touch of folklore and culture, makes the public acknowledge that Colombia is an ally, very close to the United States in the war against drugs and marks the start of the Plan Colombia. The scene therefore had a political and strategic importance whose real impact was not known at the time that it happened. None of it was accidental.

Cultural diplomacy is a subject Sandra Montoya Ruiz has analyzed during the past seven years: She is a professor at the Faculty of Political Science, Government and International Relations of the Universidad del Rosario and also studying for a doctorate in Political and International Studies. In her view, the importance of cultural diplomacy in Colombian foreign policy has grown in a slow and varied manner. This was shown by her study, which runs from 1991, with the establishment of the new Colombian Constitution, to 2014, the end of the first term of former president Juan Manuel Santos.

Its focal point are the strategies of cultural diplomacy in different countries, especially Latin America. In the case of Colombia, she proposes that the concept of a profound or in-depth cultural diplomacy be applied to the post-conflict stage of its current history. This field has been little explored in the country, which is why this political scientist highlights that “the power of culture to create and build relations of understanding in different scenarios is fundamental for analyzing the place it has secured in foreign policy, as a strategic tool.”

But what is cultural diplomacy? Clarifying that it is a recent concept, although it has been practiced for thousands of years, Montoya specifically defines it as “the set of actions which use attributes of the culture, ideas and customs [of a country] to wield a ‘soft power’ and reach objectives in a framework of respect for diversity and mutual understanding.” “Soft power” is understood to be the skill at obtaining what one wants by means of the attraction which lies in the culture, political ideals and foreign policies of countries. As Joseph Nye points out, this kind of power is based on persuasion – not manipulation or propaganda – and he finds that cultural diplomacy is one of the ways to deploy it to achieve the objectives of foreign policy.



←  
 “When we leave the country, we are all natural ambassadors,” so that we have to act in a responsible way, remarks professor Sandra Montoya.

### Our wealth is here

Before becoming an academic, Sandra Montoya Ruiz held a number of posts in international cooperation organizations, the private and public sectors and social programs concerned with human rights, extreme poverty, food security, health, arbitration and peace-building. In the course of those jobs, she had the opportunity to become familiar with 27 of the country’s 32 Departments and came to some very interesting conclusions. One of them is that the foundation of the country’s cultural wealth is vast and marvelous, “but we haven’t given ourselves the chance to become familiar with its different regional expressions.”

In her view, it also involves questions about the inhabitants of the regions most affected by the armed conflict, who are still the subject of her current research. For example, how have they managed to survive in the midst of the conflict? Part of the answer lies in their music, dances and traditions, which have helped them to keep going, both in joyous and anguishing times. And they now represent opportunities for a satisfying life for children, youngsters and communities who have survived in the midst of the war.

Unlikely as it may seem, this is not a wholly unexplored path and there are examples which may be followed. In historical terms, culture (the different expressions of art, ideas and customs) has been an essential aid to bringing different human groups together and it has been successfully used by countries in very difficult situations. Germany is an example of that, due to the way it managed to resignify itself after the Second World War on the basis of its exact and social sciences, technology and education and thus managed to

win the respect of the world at the same time that, on an internal level, it committed itself to facing up to the troubled story of its recent past.

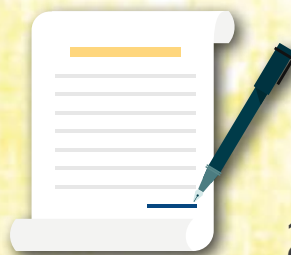
Those educational and cultural exchanges have played a leading role in Germany’s foreign policy and are synchronized with the activities of the agencies who are responsible for them, along with its ministries, universities, schools and German international non-governmental organizations. Likewise, one can see interesting cases along the same lines in Latin America, in Mexico and Brazil, for example, and in Asia, in Turkey, South Korea and China, among others.

### We are all ambassadors

One of the possibilities which cultural diplomacy offers is to explore a country’s local, regional and national cultural patrimony and find representative features of it which can lead to conversations and exchanges with the rest of the world. In that way, spaces are opened for communities and regions to participate in broad and concerted activities. The recognition of the country’s cultural diversity by its 1991 Constitution was the start of including other views of what being a Colombian means.

There thus changed the idea that diplomacy is the exclusive concern of chancelleries and ambassadors who take part in major international events and have their photos taken at cocktail parties. To resort to the power of culture is to wager

## COLOMBIAN CULTURAL DIPLOMACY 1991-2014



### Antecedents

Belisario Betancur was the first Colombian president who made agreements to display the country on an international level. These initiatives were continued by the presidents in office between 1990 and 2014.



### 1990-1994 (César Gaviria)

One cannot speak of an agenda of cultural diplomacy, but there were signs of a diversification of the agenda on foreign policy, with a stronger focus on Latin America, Europe and Asia.

What was known as the “*Apertura económica*”, the “opening-up” or liberalization of the economy, led to alliances with Mexico and Venezuela in the G3 and the Andean Community (the CAN). There was a boom in Latin Rock in the region, with the active participation of Colombian bands.



on the recovery of the value and ethical power of negotiation. This focus allows for the participation of a larger diversity of actors: From the traditional ones of the public sector to universities, academics, artists of all genres and athletes, reaching to the organized civil society and ordinary citizens.

But, as we know, there are also a number of stigmas which are difficult to challenge and are quickly noticed by Colombians when they travel abroad. As Montoya points out, “when we leave the country, we are all natural ambassadors,” so that we have to act in a responsible way. Similarly, the everyday activities of the inhabitants of every town and city in a country which is attracting more and more foreign tourists, students and investors are also important and can make a difference to the image of Colombia they retain.

On her recent visits to Europe, Montoya has been able to confirm that “we are not aware of the impression we make abroad,” especially with regard to the expectations of those, in foreign countries, who perceive a genuine wish for peace in Colombia, based on the central role of the victims and an acknowledgment of their rights. That is why it is important for the agenda of cultural diplomacy to be consistent with the country’s internal political agenda, since, while the former may be very sound, technically speaking, if it clashes with the reality of concerns like security and the defense of human rights, for example, it will not be effective nor will it obtain the expected results abroad.

Sandra Montoya is about to present these ideas, as well as the findings of her doctoral thesis, at the International Congress on Political Science, in Monterrey, Mexico, organized by the Latin American Association of Political Science (ALACIP) and the Mexican Political Science Association (AMECIP). At that event, she will discuss the experiences of three Latin American cases where cultural diplomacy was used to fight against stigmatization at the start of the challenging Post-Cold War period. ■

## A world of challenges and opportunities

Among the challenges faced by the State and the other actors who participate in cultural diplomacy, Montoya singles out the following:

- To investigate representative cultural initiatives, letting their different voices enrich the narrative.
- To compile the existing studies on diversity and identity.
- To consult with the regions and communities to find out their views of the proposals.
- To link the local, regional and national actors and the social, economic and cultural sectors.
- To reconnect with Colombians who live abroad, especially those working in the field of culture.
- To open spaces for training in cultural diplomacy for career diplomats.
- To link the results of academic studies with the challenges the country faces.
- To present constructive recommendations, with specific proposals.



### 1994-1998 (Ernesto Samper)

There was an effort at independence and the leverage of Colombians living abroad who act as natural ambassadors. The Movement of Non-Aligned Countries became an important scenario to give Colombia more visibility.



### 1998-2002 (Andrés Pastrana)

Failed peace talks with the FARC guerrilla (*Fuerzas Armadas Revolucionarias de Colombia*). Internationalization of the armed conflict and the war against narcotics-trafficking (*Plan Colombia*). The promotion of a new images of the country, linked to art and culture, and the recognition of the dignity of the communities hardest hit by the violence.



### 2002-2010 (Álvaro Uribe)

Continuity given to some aspects of the previous diplomacy and a shift to the technification of cultural diplomacy. A specific agenda for the promotion of Colombian culture. The Minister of Culture, María Consuelo Araújo, becomes the Minister of Foreign Affairs. The creation of a very specific agenda for the images of Colombia which should be disseminated abroad.



### 2010-2014 (Juan Manuel Santos)

Acknowledgment of the armed conflict and peace talks with the FARC guerrilla. A technical platform and a leveraged agenda, with a coherent message. The outside world saw that there was a genuine determination to attain peace and the international community supported Colombia. A recognition of the value and power of the voices of the victims, by means of cultural and sports events and international exchanges.

# FOREIGN INVESTMENT is not always welcome

The Colombian State is being sued for billions of pesos at the International Centre for Settlement of Investment Disputes by foreign investors who came to the country under the protection of bi-national treaties. The International Law Research Group of the Universidad del Rosario analyzed the implications of those agreements and the importance of counting on clear policies on foreign investment, with a robust model for measuring its benefits. Laura Victoria García and Enrique Prieto, professors at the Faculty of Jurisprudence, explain their findings.

By: Inés Elvira Ospina  
Photos: Leonardo Parra, 123RF

In March, Camilo Gómez Alzate, director of the country's National Agency for Juridical Defense, announced that a number of multinationals are suing Colombia in international tribunals for the sum of 14 billion pesos. Among the plaintiffs there are the multinational mining company Glencore, the Spanish Gas Natural Fenosa company (for the case of Electricaribe) and the multinational Gran Colombia Gold, which has brought three lawsuits against the country.

While the news was a surprise to Colombians in general, it was not for the members of the International Law Research Group at the Faculty of Jurisprudence of the Universidad del Rosario. "When the Colombian State began to be the subject of lawsuits in 2014, we were worried and began to investigate why; also, the circumstances of the country at that time meant that attention was focused on the dispute with Nicaragua and the peace negotiations," explains Enrique Prieto Ríos, the main researcher of the study entitled *International Law on Foreign Investment: A limit to the Regulatory Capacity of the Colombian State*.

The project sought to analyze the limitations of the country's regulatory capacity, based on a study of the notification of law







suits foreign investors brought against Colombia. “I don’t think we can say that those Free Trade Agreements were poorly designed, simply that they failed to deal with some subjects which made Colombia weak in the face of foreign investors,” Prieto Ríos clarifies.

To understand the lawsuits against the Colombian State, it is important to understand three historic moments which governed the course of foreign investment in the country. The first took place after the administration of former president César Gaviria Trujillo, when the first agreements were signed, which were a faithful copy of the ones already in force in the world.

The second important event was the modification of Article 58 of the Constitution, which

deals with private property and had not authorized the signing of those kinds of agreements. And the third occurred during the administration of former president Álvaro Uribe Vélez, when other agreements were negotiated with the aim of making some changes in the protection of the financial sector and some industrial sectors, although they were not major ones.

These events showed that Colombia felt an urgent need to attract foreign investment. “The discussions about the need of developing countries, like our own, to sign these bilateral investment treaties were based on the premise that foreign investment is beneficial for their development, in terms of creating jobs, improving technology, innovation, increased taxes and other gains,” explains professor Laura Victoria García Matamoros, Vice-Dean of the Faculty of Jurisprudence and a member of the research group.

The project wanted to find out precisely what is promoted by a bilateral investment treaty and what the State obtains from it in the end, particularly one like Colombia, which does not necessarily have coherent plans in terms of economic, social or juridical policies.

“For me, the problem lies in the fact that the country lacks a policy for foreign investment and the handling of lawsuits. At times, it seems like the only policy is to attract foreign investment and hire good lawyers to defend us; however, the ideal would be to ask ourselves about the kind of foreign

investment we need to attract and what are the clauses which are needed to avoid these lawsuits,” Prieto says.

### The lawsuits which Colombia faces and will face

The first clarification Prieto, the main researcher, makes is that Colombia no longer faces the five law suits which had been lodged in the courts at the time of the study, since there are currently 11 in the arbitration stage and 9 in the pre-arbitration stage. The best known case has to do with the *páramo* (high Andean moor) of Santurbán. “It is a typical example of the State’s schizophrenia. First, there are reforms, laws, decrees, decisions of the Constitutional Court and permits for exploitation, then they are withdrawn or annulled,” adds Enrique Prieto.

These experts explain that, to start with, there was no knowledge of the secondary effects bilateral agreements might have and there was no awareness of the impact they might have on the regulatory capacity of the State. And many of these law suits are the result of a policy for protecting the public interest, which covers the protection of human rights, the environment and minority communities, among others. In fact, the lawsuits are the result of decisions to that effect by the Constitutional Court.

“What this shows is a conflict between a number of international obligations which Colombia has acquired and other, national ones, which are set forth in the Constitution. In my analysis, this winds up with some investors exploiting that “disorder of the State” and they ask for more money than they were going to obtain, because the situation also allows them to ask for an amount based on their expectations,” professor Prieto explains.

To the above should be added the fact that some of those investors sell the lawsuit to international funds, companies which are interested in becoming involved in such litigation in countries like Colombia.

### A look at the past helps us to understand the future

The main aim of the international law on foreign investment is to protect the rights of foreign investors when they arrive at another country and it is expressed in international treaties like the free trade agreements between countries. These treaties aim to protect investors from political, juridical or economic risks which are regarded as the responsibility of the State where they carry out their operations.

For example, Cemex operates in Colombia under a free trade agreement with Mexico and the aim is to protect the company from the adverse effects of decisions taken by the Colombian Sta-



**There is a movement in Latin America which seeks to rethink how it can continue to be part of the international community and attract investment, but with a preventive handling of the lawsuits.**

te, including its three branches and its autonomous watchdog agencies like the Comptroller-General’s Office (Contraloría) or Procurator’s Office (Procuraduría).

This right goes back to 1959. However, it only came into force in our country with the “*Apertura económica*”, the liberalization of the economy undertaken by the administration of César Gaviria, which began to negotiate bilateral treaties to encourage and protect foreign investment. But it was only in 2014 that the effects of those treaties came to the attention of ordinary people, due to the lawsuits which foreign investors brought against the Colombian State.

“The interesting thing about this system is that the international law on foreign investors allows private-sector companies to directly sue the State when their interests and rights have been violated,” notes Prieto, who also points out that it allows individuals to take their cases to international courts and thus, they no longer need to exhaust their possibilities of success in the national courts.





A number of multinationals are suing Colombia for the sum of 14 billion pesos. Among them are the multinational mining company Glencore, the Spanish Gas Natural Fenosa company and the multinational Gran Colombia Gold.

In the opinion of Laura García, the problem arises when the free trade agreements are implemented, because the affected States face a contradiction. The idea is attract such investors, but when the State takes measures to protect the environment or local communities, for example, they wind up harming the interests of the investors and the lawsuit results.

### Ideas for a solution

Due to the abovementioned vulnerability, the countries of Latin America are the subject of many lawsuits at the International Centre for Settlement of Investment Disputes. The most dramatic case is that of Argentina, which is still facing the consequences of the measures it took to deal with its financial crisis. Bolivia, Ecuador and Venezuela are also on the list. None of the lawsuits brought against Colombia has been ruled on so far.

The reaction to these circumstances is beginning to be seen. There is a movement in Latin America which seeks to rethink how it can continue to be part of the international community and attract investment, but with a preventive handling of the lawsuits. That is, says Vice-Dean García, the idea is to work on clear policies on foreign investment, analyze which sectors require it and whether they are vulnerable or not and what limits should be imposed.

The approach of Southeast Asia is a good example to follow. "It is not quite true that those countries are an example of how foreign investment is necessary, because they were absolute-



The researcher Enrique Prieto is convinced that the Free Trade Treaties were not poorly designed but that they simply failed to deal with some aspects which left Colombia weak in the face of foreign investors.



The Vice-Dean of the Faculty of Jurisprudence, Laura Victoria García, believes that the discussions about the need of developing countries to sign these bilateral investment treaties were based on the premise that foreign investment is beneficial for their development.



ly strategic about deciding what investments they needed, what amounts they would allow and how long they would let them enter their countries," she explains.

In the face of such lawsuits, countries like Bolivia and Ecuador have taken measures to avoid the abovementioned problems. The former decided to reject any further foreign investments in its natural resources and the latter denounced its treaties, which, in international investment law, means informing the counterpart that it will no longer adhere to them.

They are now working on their own model of a bilateral treaty which would allow them to strengthen their negotiating power. "The most important feature is that these models result from a measurement of risks and a number of coordinated policies on the part of the State. That is what we are seeking with our study, to contribute to this discussion," Laura Victoria García concludes. ■






# PEACE:

**A hot potato for the  
communications media**





A study by the Universidad del Rosario concluded that the journalistic coverage of the peace negotiations with the FARC guerrilla by the communications media was biased, since it focused on two broad trends: One positive and the other negative. Its neutrality timidly surfaced in a fleeting moment of the talks.

By: Magda Páez Torres

Photos: Alberto Sierra, Leonardo Parra

For more than 50 years, Colombia dodged bullets coming from all sides. Many towns suffered from the onslaught of violence, especially in peripheral and remote regions where the FARC guerrilla (Fuerzas Armadas Revolucionarias de Colombia) had a strong presence: Bombings, extortions, armed seizures of town and kidnappings monopolized the attention of the public. The conflict became part of daily life and almost obligatorily, featured in the headlines of newspapers and the lead stories of television and radio news programs.

However, the negotiations between the government of president Juan Manuel Santos and the FARC, which began in Havana, Cuba in 2012, imposed a new agenda on the communications media and, along the way, public opinion. Peace burst its way through in the midst of the bombs, and, in the wink of an eye, took over the front pages of the papers.

Nevertheless, changing the chip has been a troublesome job. The definitive peace agreement which was signed on November 24, 2016, has become a kind of hot potato for journalists, who, accustomed to the conflict for more than half a century, now face the challenge of talking about the reality of the country from another angle.

The researcher Carlos Charry, of the Sociology Program of the School of Human Sciences at the Universidad del Rosario, and Diego García and Germán Ortiz, professors at the Journalism Program of the same university, analyzed the way in which the communications media covered the peace talks with the FARC and the implementation of the agreements. This joint project, based on the analysis of the three researchers, was undertaken by the *Applied Ethics, Labor and Social Change Research Group* and resulted in two studies: *Tracking the peace. The communications media and the forming of public opinion about the*

*peace negotiations in Colombia*, written by professor Charry, and *The media's coverage of the peace agreements in Colombia at the start of the era of [president] Iván Duque. Between pessimism and negativism*.

These studies concluded that, for the most part, the journalistic positions were biased and the attitudes towards this important national concern broadcast on television, heard on the radio and read in print journalism permeated public opinion.

"The media began to organize the information which was broadcast about the peace negotiations in accordance with two trends: One positive and the other negative. Journalism is supposed to be neutral and objective, but only in a few cases was it like that," professor Charry pointed out.

To start with, the communications media tended to associate the talks, initiated by the then president Juan Manuel Santos, with the failed ones at El Caguán undertaken by the government of former president Andrés Pastrana between January 7, 1999 and February 20, 2002, which were remembered for the failure of the guerrilla group to honor its commitments and the government's cession of a no-go zone which the guerrilla used to continue with its criminal activities. Hence, the polarization between the defenders and critics of the negotiations in Cuba became more acute.

It is worth noting that between February, 2013 and October 2014, the tendency to be neutral dominated coverage of the talks, that is, the news items which were published were impartial, above all. During those months, the media faced up to their responsibility to public opinion and, without any apparent subjectivity, reported on the course of the negotiations.

Between November, 2014 and July, 2015, there was a shift towards a positive slant, an interval of optimism, which tended to favor the talks between the government and the

FARC. It should be noted, however, that this honeymoon between the communications media and the peace negotiations was marked by strong and recurrent peaks of negativism, caused by cases like the kidnapping of general Rubén Alzate in the Chocó and the retention of two soldiers in Arauca, at the end of 2014. That episode was so tense and critical that the newspaper headlines predicted – and sometimes even advised – that the talks should be halted. The same pattern was seen when the FARC assaulted a number of towns, for example, the clash with the armed forces in Buenos Aires, Cauca, where eleven soldiers were killed by the FARC.

In July, 2015, following several disagreements and cold spells, the communications media's support of the negotiations in Havana was accentuated, a trend which lasted until December 2016: Thus their neutrality continued to shine by its absence.

To a certain extent, this tendency to see everything in black and white explains the polarized result of the plebiscite by which the Colombian government called on the electorate to endorse the peace agreements: They were rejected by a narrow margin: 50.23% of the voters opted for "No", while 49.76% opted for "Yes". "Since the talks went on behind closed doors, when information about them was divulged, it was not sufficiently ample for the media to say what the consequences might be. Some media even published sections in which everything was a matter of choosing between "Yes" and "No", as the titles of those articles clearly showed, as though all of the information had to be reduced to a favorable or negative opinion, without regard to the nuances, the many grey areas there might have been," Charry explains.

### And how do we change the agenda now?

One of the conclusions of the study is that, in the face of the challenges posed by the coverage of peace, some journalists have chosen an incendiary approach, professor García believes. "There are no longer wounded soldiers in the Military Hospital, there is no longer any fighting, so the question arises of how we measure the peace accords. Thus, many professionals resort to the clashes between politicians who do not agree on this topic," he points out.

On the basis of that thesis, professor Charry thinks that journalism turned into a window on the talks with the FARC and remained indebted to its public because it did not give an in-depth explanation of the points on the agenda of the negotiations. In his view, its coverage focused on the "tug of war" between those who supported and those who opposed the peace agreement. Its audience was forced to witness



"The media began to organize the information which was broadcast about the peace negotiations in accordance with two trends: One positive and the other negative. Journalism is supposed to be neutral and objective, but only in a few cases was it like that," professor Charry pointed out



Diego García believes that people look for information which confirms their beliefs rather than changes their opinions. Along that line of thought, if one of the communications media makes its political orientation clear, public opinion would know, beforehand, where it should look.



a tug of war waged on microphones between one side of the debate and the other.

"When the information about an agreement on some point of the agenda was broadcast, there was no enquiry into what its consequences, good or bad, might be for Colombian society, but everything was focused on the view the political parties had of that agreement. There was little effort to consult opinions that were more technical or neutral," he says.

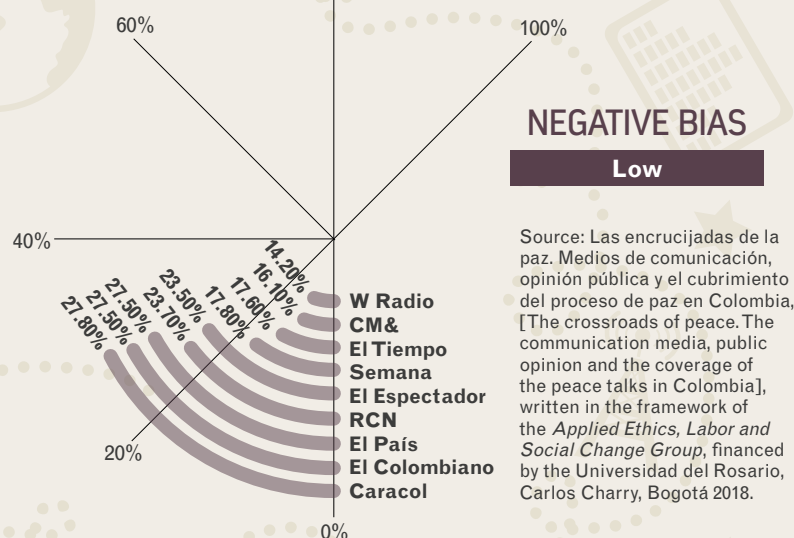
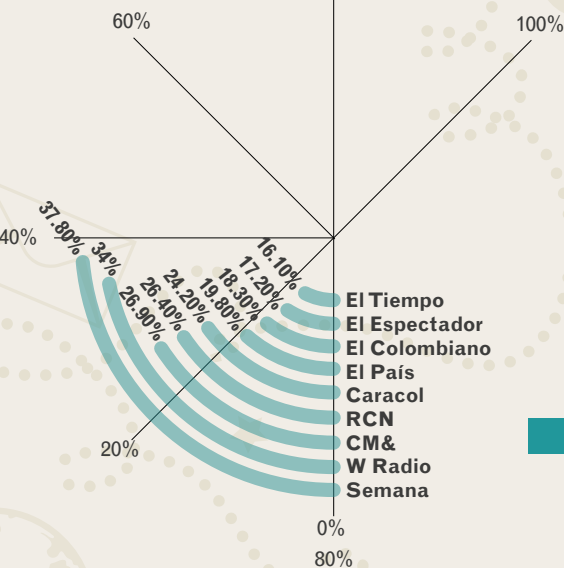
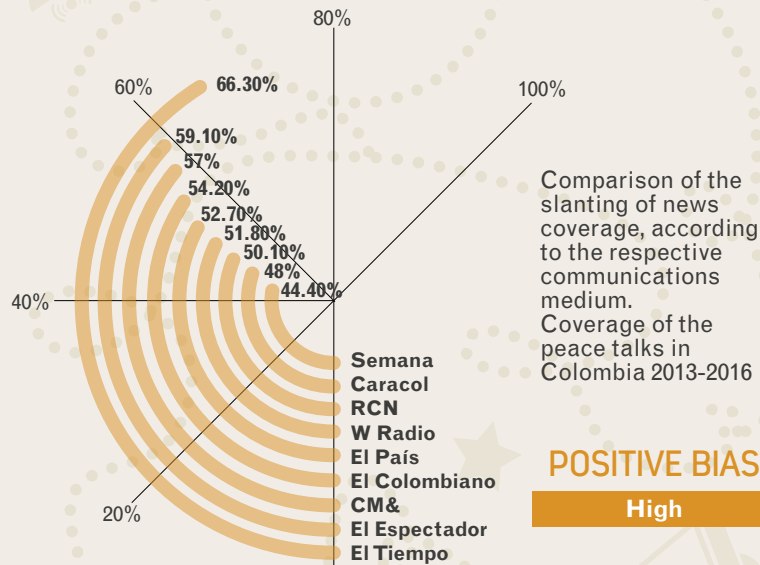
It was precisely when it analyzed the themes on the agenda of the peace negotiations that the study showed specific biases. On points like lands, narcotics-trafficking and victims, the view of the media was slightly optimistic. In matters like political guarantees, electoral participation and others, the media tended towards a neutral position, while aspects like the post-conflict stage and the peace talks were regarded in a positive manner, with percentages of 70% in the first case and 60% in the second.

In the case of news items about International Humanitarian law, the media were divided between optimistic and pessimistic positions. According to the findings of the researchers, out of the 9 media which were chosen, the ones with the strongest positive slant were *El Tiempo*, *El Espectador* and *La W Radio*, while a negative slant was most noticeable in *Noticias Caracol*, *El Colombiano*, *El País* and *Noticias RCN*.

### The weight of the language the media used

Another fundamental feature which the study looked at in order to spot the tendencies of the media was an analysis of





the language used to describe a news item which reached the public. The study found that the word most used by the pessimists was “FARC”, while the one most used by the optimists was “peace”. In addition, the words “arms”, “no” and “Álvaro Uribe” (the former president of Colombia, who led the opposition to the peace talks in Havana) were used with more assiduity by the negative media, while the ones used by those who were positive were the words “Santos”, “conflict” and “yes”.

Both researchers agree that the problem is not that a news outlet fails to be objective and expresses a given opinion on a subject. The real core of the problem is that they do not openly make their position clear to the public.

“Objectivity may be a matter of acknowledging the difficulties I face and explaining them, clarifying that my positions are reflected in the information I publish. I am not referring to the fact that a certain newspaper or television station is affiliated to a political party, but the existence of a political orientation which is found in the editorial rooms or the editorials when they place an adjective on a headline. The effect which this has on the public is enormous,” Charry says.

This clarity would enable the public to be freer to choose the outlet which it prefers, adds García, who thinks that people look for information which confirms their beliefs rather than changes their opinions. Along that line of thought, if one of the communications media makes its political orientation clear, public opinion would know, beforehand, where it should look.

He also warns that the social networks are strengthening this polarization of the citizenry even more and that, in the end, it is difficult for the consumer to avoid a biased account of the news or find a true neutrality.

“There is a concept which is known as the filter bubble. That is, if we turn to Twitter and Facebook for information, the algorithms those networks use make an effort to ensure that contents which ratify our preferences reach us. Thus, it is very difficult for us to accede to information that is different from the kind we like to consume. We wind up navigating around the same circle, we put ourselves into a bubble,” García remarks.

In the face of this panorama, society faces an uphill struggle. So long as journalism assumes the enormous responsibility of being honest with its audience, public opinion will face up to the challenge of filtering, discerning, contrasting and choosing in the midst of the avalanche of information which has flooded the contemporary world. ■

# ONLINE GOVERNMENT OPENED THE DOORS

The use which public agencies make of Information and Communications Technologies facilitates the inclusion and participation of the citizenry in the State.

How has public administration in Colombia moved from hermeticism or secrecy to the democratization of information and what still has to be done to reach the ideal state depicted in the norms? This is the question which interests Diana Carolina Valencia Tello, researcher at the Faculty of Jurisprudence of the Universidad del Rosario.

By: Carolina Lancheros Ruiz  
Photos: Alberto Sierra, 123RF

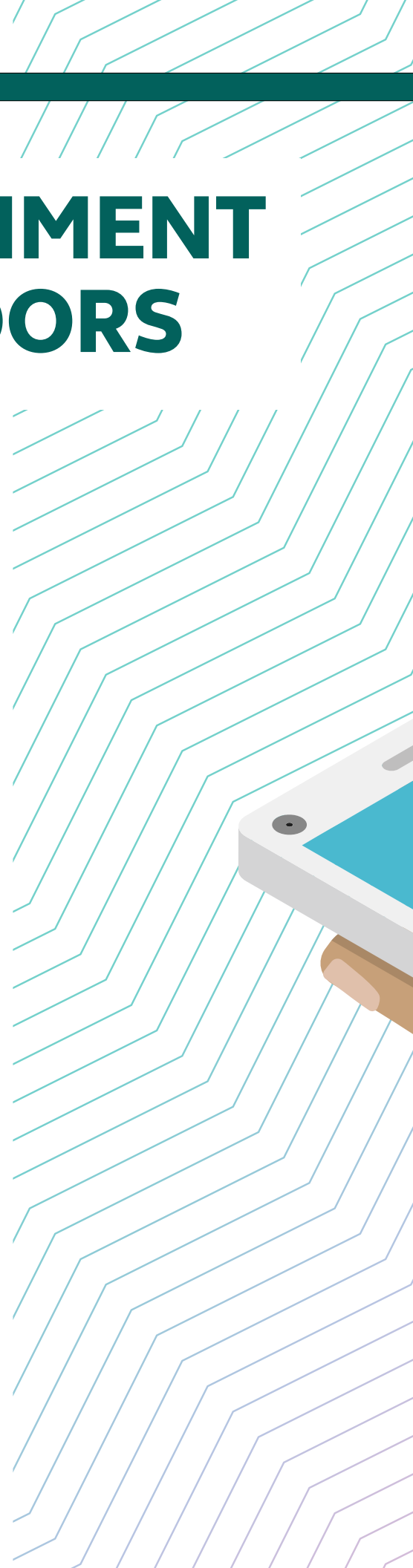
Is there more corruption now? Perhaps. But the spreading of news of scandals also has to do with the fact that citizens now have more possibilities for controlling their rulers, new game rules have been established and, in the end, there is more visibility.

In other words, Colombian society has changed from having a hermetic public administration to one whose doors are more wide open, which must render accounts, so that the idea that the institutions and officials of the State are superior to the rest of society has tended to weaken. And, by the same token, the technologies of information and communications and their use as a tool which enables citizens to participate in the affairs of the State have grown.

That is how the current situation is seen by Diana Carolina Valencia Tello, professor of Administrative Law at the Universidad del Rosario, who, since she was an undergraduate, has studied public administration. Her analyses are found in the study, *Electronic government as a tool for inclusion and participation in the Colombian State*, which discusses the evolution of this field from 2000 to 2014.

Valencia believes that since the publication in 1995 of a report by the National Council of Economic and Social Policy (CONPES), entitled *Public administration oriented towards results*, Colombia has been developing a structured policy to transform the State and its institutions in order to provide better services and guarantee transparency.

And although there is still a long way to go before this ideal world fully becomes a reality, "it has been a successful policy, because it has had continuity from one administration to the next." She singles out both the improvements which have been made and the willingness of new administrations to conserve and take advantage of what their predecessors have achieved in this field. "In terms of the standards we have in the country, that may be regarded as a success," she insists.







## ADVANTAGES OF ELECTRONIC GOVERNMENT

- Reduces corruption
- Increases transparency
- Reduces the costs of administrative procedures
- Brings the institutions closer to citizens
- Citizens' participation

So exactly what has happened? When the new Colombian Constitution came in force into 1991, the way of exerting control over the public administration in Colombia changed. First, the country began to oversee the use of public spending, since it was thought that to do it before the money was spent, as had happened in the past, would lead to illegal alliances between those who authorized the disbursement of the resources and those who controlled them. In addition, the obligation to exercise a strict internal control of public agencies on all levels was included.

"It is a strategy based on self-control and self-management and it is also a way of organizing teamwork and grouping the information together so it can be audited and there is a rendering of accounts," explains professor Valencia Tello, whose undergraduate thesis was precisely about preventing corruption through the use of systems of internal control.

But the culture of the country cannot be changed just like that, and while the Constitution is our maximum norm, to do what it says should be done is not easy and much less when the changes have an impact on the more than 3,000 public agencies which now make up the State.

Thus it was not until we were well into the 21st century, with the creation of the Agenda on Connectivity, that the changes based on the need to universalize access to information and aim at the construction of a more modern and efficient State began to take place.

In 2002, with the passing of the Law for the Renewal of the Public Administration, the country fully entered into the era of electron-

ic government, an enterprise which was strengthened by the creation of the Program for the Renewal of the Public Administration, whose purpose was to bring the State closer to ordinary citizens.

### From within to without

According to the definition of the World Bank, "electronic government is the use which public entities make of the Technologies of Information and Communications, such as computers, networks, the Internet and mobile technology, which are able to transform their relations with citizens, companies and other government agencies." In the opinion of Diana Valencia, electronic government is a basic tool to construct sustainable strategies of development, inclusion and participation.

That is why systems of internal control turn out to be so important for the implementation of a sound electronic government, since for organized, coherent, truthful and opportune information to be available to citizens, the institutions must be very well organized on an internal level.

To regulate its use, the first norms on internal control and the guarantee of high quality were issued in 2004 (Decree 4110) and 2005 (Decree 1599). "They helped to structure the public administration and were based on processes aimed at the delivery of high quality products and services to citizens," Diana Valencia notes.

But she has not been the only analyst of these reforms, since she was part of a team at the Administrative Department of Public Service (*Departamento Administrativo de la Función Pública*) which drafted those norms and was responsible for training State officials, so that they would understand and apply them.

In addition, as the administrative director of the Ministry of Agriculture, she was personally responsible for ensuring that the entity fully complied with the requirements which online government entailed, and now, as a professor of Administrative Law, she endeavors to ensure that her students acquire a

"The State has the obligation to transform itself, along with society, and it must have the capacity to relate to a new citizen, who is more demanding, better informed, more individualistic and more self-sufficient."





critical vision as citizens and understand their social role of oversight.

Because that is precisely one of the requisites for the functioning of the mechanism: If the State lays out its cards, citizens must know how to read and play with them. “Training is required so that people understand that this information is within their reach and they have to sit down and analyze it, and have a critical and purposeful thought based on what they may find there.”

The communications media have played an important role in that regard, while the citizenry in general has benefitted from it all, especially, by using online technologies to comply with bureaucratic requisites. At the end of the period which was analyzed, 64% of such requisites and applications for services with a social impact were able to be processed on the Internet, even though only 34% of all citizens undertook such transactions online.



“Just as the technologies of information and communications can help to strengthen social cohesion, they may also create new forms of inequality between those who are connected to the network and those who are not, or between those who are familiar with the use of the new technologies and those who are not,” remarks the researcher Carolina Valencia

“The effective implementation of an electronic government implies reassessing the old administrative structures and trying to create new mechanisms whose central axis is the satisfaction of the needs of the citizen.”

### What still has to be done

The digital gap is one of the biggest barriers to attaining a full effectiveness for online government, according to Valencia’s study, since “just as the technologies of information and communications can help to strengthen social cohesion, they may also create new forms of inequality between those who are connected to the network and those who are not, or between those who are familiar with the use of the new technologies and those who are not,” she points out.

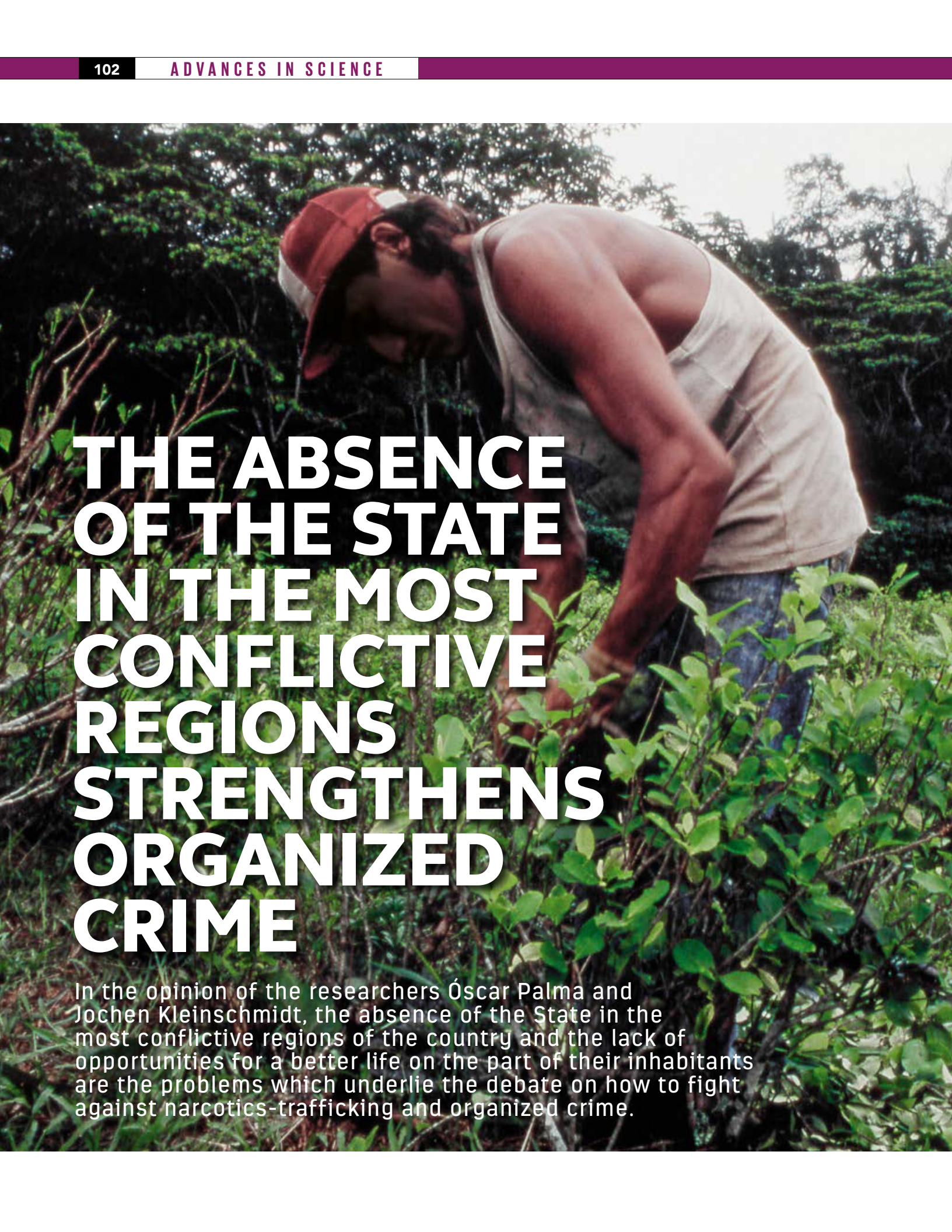
Another barrier has to do with the institutions, where factors like mistrust, the high turnover of public officials and the proliferation of contractors make it difficult to successfully apply internal controls. People tend to see these requirements as too bureaucratic, because not even the same State officials understand their importance for the sound functioning of online government. There is thus a need for a leadership which is committed and able to instill values which improve the organizational climate and teamwork. These factors are crucial for achieving the decentralization of information and decision-making.

Valencia Tello’s study acknowledges the effort which the Colombian government has made to promote the mass use of these technologies in the country, from different angles: The transformation of public institutions, the training of officials and citizens, the building of a public infrastructure and the promotion of access to new technologies, among others, but she warns that “the results will only be seen in the long term, depending on whether the country and its citizens can massively use the technologies of information and communications in diverse activities and in a continuous and productive way.” That’s what we are trying to do. ■

## OBJECTIVES OF ELECTRONIC GOVERNMENT

- Provide better services to citizens
- Strengthen the capacities of citizens through access to information
- Make government administration more efficient
- Improve relations with companies and industries



A photograph of a man wearing a red baseball cap and a white tank top, bent over and working in a field of green bushes. The background is filled with dense green foliage. The title text is overlaid on the left side of the image.

# THE ABSENCE OF THE STATE IN THE MOST CONFLICTIVE REGIONS STRENGTHENS ORGANIZED CRIME

In the opinion of the researchers Óscar Palma and Jochen Kleinschmidt, the absence of the State in the most conflictive regions of the country and the lack of opportunities for a better life on the part of their inhabitants are the problems which underlie the debate on how to fight against narcotics-trafficking and organized crime.





By: Amira Abultaif Kadamani

Photos: Leonardo Parra, Alberto Sierra, Ximena Serrano

**N**arcotics-trafficking, illegal mining and the trafficking of migrants are the top three crimes which present the biggest challenges to the authorities in Colombia nowadays. They are tentacles of organized crime which intercross not only because the collusion of different criminal organizations makes organized crime stronger, but also because organized crime links legal with illegal activities in a network of actions which make it very difficult to define its structures, *modus operandis* and actors.

Its ways of evading or fending off the actions of the State – whether due to its defensive capacity, use of bribery or skill at blending into society – have grown, and that, of course, poses more challenges to the authorities, aggravated by a global, hyper-interconnected scenario, which lays out the red carpet for illegal transnational activities.

Working from different angles, the Colombian specialist in international relations, Óscar Palma, and the German political scientist, Jochen Kleinschmidt, have studied the phenomena of organized crime in Colombia and the world, local insurgencies, irregular wars, intelligence and terrorism. One of their recent joint studies is a comparison between the former Colombian guerrilla, the FARC (Revolutionary Armed Forces of Colombia) and the Cartel of Sinaloa in Mexico, where they tested the hypothesis of convergence, which posits that the structures of organized crime, terrorism and insurgency automatically resemble each other in the contemporary world. Despite the similarity of some of these arrangements, there is always some change in the position of States which also leads the criminal organizations to change their tactics and, according to Kleinschmidt, that means that the “State and organized crime are like the sun and the shade.”

Along with this study, there is one about the achievements and failures of the Colombian government’s fight against the FARC between 2002 and 2012, and another, still unfinished, about the innovative nature of the maritime traffic used by narcotics-trafficking. While these studies are being polished and submitted for publication in indexed journals, the two researchers, who work at the Center for Political and International Studies (CEPI) at the Faculty of Political Science, Government and International Relations of the Universidad del Rosario, tell us about some of their views on organized crime.

**Advances in Science (AS):** We are at a critical point in the discussion about whether the agro-chemical glyphosate should be used to eradicate coca plants, but you go further and call for the decriminalization of drugs. How would that be managed?

**Óscar Palma (OP):** Colombia has had a historical problem and it is the failure of the State to exert its presence in many regions of the country and this has enabled a number of parallel and illegal actors to emerge. Why is there coca in Guaviare, the Putumayo and many other regions? Because, in practical terms, there is no other way for people to survive. Let’s say that the use of glyphosate is authorized. If the State does not build infrastructure or develop productive projects, however, we are never going to escape from



← Jochen Kleinschmidt says that "decriminalization would lead to a significant improvement in terms of violence and the harm done by micro-trafficking, which would disappear."

that. As was shown in the recent debate at the Constitutional Court, the number of hectares where coca is replanted after it has been fumigated is higher when there are negotiations with the community. Thus, with or without glyphosate or with or without peace talks, the State has a pending task which it has not assumed since it was founded in 1810.

If the coca plants are eradicated, people turn to other illegal sources of income, as we have seen in the case of mining. I say 'State' because it is the responsible party, but this construction is also done by the communities; that is, it is not a matter of designing models in Bogotá and reproducing them in the regions because the social, economic and political realities of those places are often ignored and that is why the model winds up clashing with their inhabitants.

**Jochen Kleinschmidt (JK):** Decriminalization would lead to a significant improvement in terms of violence and the harm done by the micro-trafficking of narcotics would disappear. We have seen that, in countries like Spain or the Czech Republic, where a policy of decriminalization was implemented, the consumption of drugs did not automatically rise: That is a myth; it would also allow the State to have more control of such substances. What is the country where more people die from the abuse of alcohol? Saudi Arabia, because it is illegal there and they sell them adulterated liquor. We are not going to solve the problems

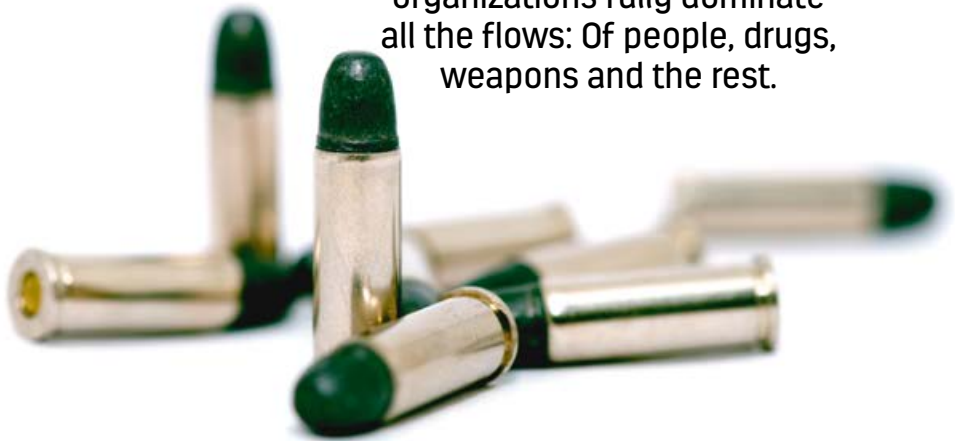
of these regions in Colombia, the north of Burma or parts of the golden triangle in Mexico if there aren't other options, because they have always been uncontrolled places where, in the absence of the State, other ways of benefitting themselves will be found.

**AS: And that decision to decriminalize should be made in collaboration with other countries or can a country do it on its own?**

**OP:** Some States have decriminalized some products, but not entirely. In Colombia, despite what is happening with marijuana (the industry of medical cannabis), the problem of narcotics-trafficking has to do with cocaine. The debate about its decriminalization in the world is still very heated and I don't think it is going to happen, because countries like China and the Philippines won't even consider it. Colombia won't get anywhere if it legalizes the production of cocaine, because it would still be sold illegally abroad, that is, there wouldn't be anyone it could legally sell it to and thus it would remain a lucrative business for criminals. Yes, there is a need for global agreements to achieve the desired result. The foreign policy of the administration of former president Santos took the lead in international discussions of the problem, but it is difficult now, due to the change of government.

**JK:** Perhaps a regional agreement, in America, would be enough. I think that is feasible and I am going to see it in my life time, perhaps when I am an old man. But I think it is going to happen, because there is a significant generation gap, even in the United States, where a majority of the young people who vote for the Republicans are in favor of decriminalization. Even president Donald Trump said during his campaign that this subject should be left to each State and no one in the Republican Party can come out against 'States rights'. The opposing trend is found in the Asian countries, like China, for example, where they not only penalize marijuana but even give people a life sentence for distributing pornography. Thus the

Colombia is a kind of entrepot for large flows of persons and there are regions, like the Darién, where the criminal organizations fully dominate all the flows: Of people, drugs, weapons and the rest.





problem is not only to do with narcotics policies, but also with the idea of the role of the State.

**AS: What can be done to halt illegal mining and the illegal trafficking of migrants?**

**OP:** My studies have focused more on narcotics-trafficking. We know that gold mining has been a source of funding for organized crime and at the same time, it nourishes itself on a long chain of organized crime which supplies it with inputs and services. Therefore, it is immersed in an illegal economy in which more persons than you might imagine participate. We also know that the environmental harms caused by illegal mining are much bigger than those caused by coca, and that, due to the behavior of the global market, mining may be more attractive to some criminal organizations: When the price of gold rises, we see that some people immediately shift from drugs-trafficking to mining, and when it falls, the acreage of illegal crops grows. The manpower used in both economies is interrelated.

I have not studied the trafficking of migrants, but it goes beyond what is happening in Venezuela. Rather, it refers to the traditional trafficking of migrants from all over the world to the United States. Colombia is a kind of entrepot for large flows of persons and there are regions, like the Darién, where the criminal organizations fully dominate all the flows: Of people, drugs, weapons and the rest.

In his book *El fin del Poder* (The End of Power), Moisés Naim argues that power is becoming more and more difficult to brandish and hold onto and that it easily weakens. Can you extrapolate that to the world of organized crime?

**OP:** The dynamics found in the legal sectors, public and private, are found in organized crime. The academic studies of such problems even say that organized crime should be regarded as a corporate enterprise, that is, with the logic of administering a business venture which competes with others in order to dominate a market.

**AS: And that has made it more difficult to fight against crime?**

**OP:** Yes. If there were a single organization in Colombia in charge of all of the crimes, it would be easier to find a political response. But there are many which compete with one another, and the civilian population always winds up in the middle, as is happening in the Catatumbo or Tumaco, where a number of illegal companies are trying to monopolize the inputs for a global market.

Nowadays, we speak of a system of organized crime consisting of different groups of different sizes: Organized Armed Groups, capable of controlling a territory and defying the State; Organized Criminal Groups, who are linked to the above ones and help them do certain jobs, but which cannot fight the State head on; and after that, there are a number of small enterprises, called “offices”, and individuals, who, with less power, undertake specific actions and are integrated into the system.



“Colombia has had a historical problem and it is the failure of the State to exert its presence in many regions of the country and this has enabled a number of parallel and illegal actors to emerge.” Óscar Palma.



**Colombia won't get anywhere if it legalizes the production of cocaine, because it would still be sold illegally abroad, that is, there wouldn't be anyone it could legally sell it to and thus it would remain a lucrative business for criminals.**

**JK:** You almost no longer see those monolithic criminal structures of the recent past, like Los Zetas in Mexico, or Pablo Escobar and the Castaño brothers in Colombia. That form of private armies has tended to move to the periphery of crime, while in the center we do have that entrepreneurial logic of people who are well dressed, educated and very formal and manage an illegal empire in a quasi-legal manner.

**AS: Have the hyper-connectivity of the Internet and the special possibilities of the “deep web” strengthened organized crime?**

**OP:** The Internet and the “deep web” have turned into large venues in which many illegal transactions take place. But organized crime also needs more open venues and the legal system, as happens with money-laundering, which passes through the major banks of the world. Of course, there are lot of illegal activities which take place in the shadows, in the underworld, but there are also many which occur in the world we live in, but without anyone realizing it.

**AS: Is there a “mother” of all crimes in the world of organized crime?**

**JK:** Any form of prohibition is the initial cause. The daddy of modern organized crime was Al Capone and you only have to look at the mafia which arose when alcohol was prohibited in the United States. ■



# 4

**Joining  
disciplines  
together to  
improve the  
quality of life**







# IT IS THE ZERO HOUR FOR ASBESTOS IN COLOMBIA

Six bills to prohibit the use of asbestos in Colombia have been placed before the country's Congress since 2007. The conflict between activism and industry was won by the business sector five times; however, the collective effort which has led the fight against this mineral finally convinced congressmen to pass a law to that effect on the grounds that it was crucial for the health of all Colombians, following the example of 64 countries which had already prohibited the use of that deadly mineral fiber.

By: Magda Páez Torres

Photos: Alberto Sierra, Ximena Serrano

**P**aradoxically, I began to write this article beneath some sheets of asbestos in my parents' house. They had just found out that they had been living with a silent enemy for decades. The fact is that asbestos has formed part of the daily life of many families in Colombia, who, unaware of its negative impacts on health, have kept it near to them in the form of pipes, tanks, roof tiles and brake pads, among more than 3,000 products.

It was in the 1930's that the first warnings about the danger of asbestos were heard. That happened in the United Kingdom, where a health inspector was making a survey of

workers in a factory which produced this mineral and found that there was a link between exposure to that material and the onset of pulmonary cancer. That warning led to investigations in the United States and France. Those, in turn, set off a whole chain of studies which began to alert people to the illnesses caused by asbestos (also known as "*amianto*" in Spanish), such as mesothelioma, throat cancer, asbestosis and lung cancer, among others.

Colombia took a long time to prohibit the use of asbestos, even though the World Health Organization and the International Labour Organization had issued warnings and statements about it, like Convention C162 (1986) by the latter and 64 countries had already banned the use of that deadly fiber. Juan Carlos Guerrero and Ana María Torres, researchers at the Faculty of Political Science, Government and International Relations of the Universidad del Rosario, have followed the trail of the effort to prohibit this mineral in Colombia.

According to their findings, in 2007, the first of the six bills to prohibit the use of asbestos was placed before the Colombian Congress. The first five initiatives failed. However, at the time this article is being written, the whole of the sixth bill





was passed by the Congress (the first time that happened) and it only awaits the signature of the president of the country, after which asbestos will finally be banned in Colombia from January 1, 2021 onwards.

"I believe that what has happened in Colombia is the same as in all the other countries: the people who run the asbestos industry have organized a pretty strong lobby to prevent any legislation that would halt its use," says Professor Guerrero, who adds that there is no longer any excuse for further delays, since the same companies have acknowledged that they have already made plans to replace the fiber.

Guerrero relates that the asbestos lobby used all sorts of ridiculous arguments to block the abovementioned bills, like that of a congressman on the Seventh Commission of the Senate, who claimed that it would not be possible to replace the asbestos used in brake pads, because the mountainous topography of the country would rule out the use of another material: it was a way of misleading public opinion.

Other legislators argued that there were no conclusive studies to prove that asbestos is dangerous in Colombia, a claim that was obviously mistaken as well. "The call for a specific study of its use in the country was meant to delay the prohibition of asbestos. It had no validity, because it is not true, as some of the lobbyists said, that Colombians have a special gene which makes us immune to the diseases caused by asbestos. We are like human beings in the rest of the world, and what has been proven about the danger of using this fiber on a world level, wholly applies to us. In addition, we do have a study of the case of Colombia by the National Cancer Institute and several academic groups," Guerrero points out.

Ironically, a Liberal Party congressman, Pedro Muvdi Arangüena, placed two bills before the Congress (in 2007 and 2009) to promote the use of this mineral in the construction of subsidized housing, but they did not prosper. Nevertheless, it showed that there were times when some sectors zealously defended the continued use of the mineral.

### **The victims of asbestos**

According to the data of the environmental NGO, Greenpeace, which were cited in the study by Guerrero and Torres, Colombia produces nearly 700 tons of asbestos each month, which are extracted from Las Brisas mine, in the municipality of Campamento, Antioquia.



The same NGO reports that 256 Colombian companies have used asbestos in their products: the best known are the Eternit, Incolbest and Toptec companies. It is also estimated that asbestos has claimed more than 500 victims in Colombia, a figure based on the data compiled by the lady senator Nadia Blel, who was responsible for the bill which now awaits endorsement by the president of Colombia. However, the number of those affected by asbestos may be larger, since such cases are underreported.

The first person who sounded a public alert to the dangers of asbestos and called for its prohibition was Ana Cecilia Niño, a journalist who suffered from mesothelioma, due to the fact that she spent her childhood near an asbestos factory in Sibaté, Cundinamarca. She led the fight with a strong activism until her death in January, 2017. After she died, her husband, Daniel Pineda, carried on with the campaign, and founded the Ana Cecilia Niño Foundation, which played a leading role in promoting the bill which prohibits asbestos.

Despite the many cases of asbestos-caused diseases which are known, the asbestos industry, on a world level, has financed studies to refute the scientists who have warned of the health dangers of asbestos, as happened in Canada, one of the main exporters of the mineral, which finally prohibited it in 2018. "This has sparked a very long debate, where the different arguments have clashed. In our opinion, what has led many countries to take a serious view of the scientific studies which hold that the use of asbestos is hazardous have been the declarations of international agencies like the World Health Organization and the International Labour Organization, which have led to strong waves of prohibition and regulation," remarks Professor Juan Carlos Guerrero.

Other Latin American countries, like Argentina, Chile and Brazil (a major producer of asbestos) have also said "no" to the continued use of this mineral in their industries and they took the lead which Colombia followed in finishing off this long-pending task.

### A decisive ruling

Although the Colombian Congress has committed itself to replacing or prohibiting asbestos, collective actions by the civil society had already won several round of this fight. Four municipalities in the country (El Colegio, Cundinamarca, and Chivatá, Samacá and Tibasosa, in Boyacá) set an important precedent: they banned the use of the mineral; in some cases, in public works projects, and in others, completely. A bill to that effect was even lodged in



"The people who run the asbestos industry have organized a pretty strong lobby to prevent any legislation that would halt its use," says Professor Guerrero.



"The power of the media has meant that the general population is aware of the risks to which we are exposed with this mineral fiber, which does not only affect the workers in asbestos mines and factories, but all of us," notes the researcher Ana María Torres.



the capital of the country. What is more, the Governor's Office of Boyacá joined the campaign, prohibiting the use of asbestos in public contracts in the whole of the region.

Another glimmer of hope for Colombia was a ruling by a judge in February 2019, which ordered the future replacement of asbestos in the country within a term of five years, in response to a collective law suit lodged at the Administrative Disputes Court (*Tribunal Contencioso Administrativo*) of Cundinamarca in 2006. In the opinion of the researcher Ana María Torres, that ruling had a great symbolic importance, even though it was made in a lower court, that is, it might be overturned on appeal. "It was essentially a way to pressure the Ministry of Work and the Ministry of Health and Social Protection to undertake measures to promote the replacement of the use of asbestos. The ruling did not detail how the process of replacement should be undertaken. It did not mention a plan for adapting the workforce in factories where it as an input for production, whereas the bill the Congress passed does speak of that. That is why the ruling may be regarded as a gesture which, in some way, helped to get the bill passed in the Congress," she explains.

Among other stipulations, the ruling orders that the general population should be taught about the hazards related to



exposure to asbestos; a survey should be made to find out how many companies use asbestos in their production processes and the number of workers who are exposed to the mineral, along with the towns located near those companies; and a program should be organized to adapt the workforce in Las Brisas mine and monitor the concentrations of asbestos in the area where it is exploited.

One of the “buts” set forth by the congressmen who opposed the prohibition of asbestos was precisely that the workers in those factories would lose their jobs. In the opinion of Professor Guerrero, on the other hand, that was an excuse on the part of those who were interested in keeping their businesses going, since the same companies recently admitted that since 2015 at least, they have had a plan of industrial reconversion that will replace asbestos in their factories.

What the judge who ruled on the “popular action” law suit did not take into account was the sensitive subject of how to replace the asbestos which is already installed in buildings or found in different products. Fortunately, that was covered by the bill which the Congress passed on June 17, 2019, which orders the State to draft a public policy to replace the asbestos in such cases in a maximum term of five years.

As the researcher Juan Carlos Guerrero notes, this has been one of the most complex issues for the different countries which have prohibited asbestos. “If there is something really dangerous for human health, it is the removal of asbestos, due to the risks it implies. There are even countries which have decided not to remove it if the products made with asbestos fiber do not show clear fractures, because otherwise it would require highly trained teams and a whole set of complex devices to remove that material. This is a controversy which will clearly be seen in Colombia soon, following the prohibition of the production, exploitation, use and commercialization of that mineral,” he points out.

### The triumph of activism

Collective initiatives have been crucial in the different steps which led to the prohibition of asbestos in Colombia. Even though the road to it has been long and rocky, the stumbling blocks have not stopped the leaders of this fight from persisting in their aims. “The ruling and the passing of the bill resulted from activism on the part of the victims and several organizations of the civil society, like Greenpeace, all with the support of lawyers and academics. There have even been judges who, for example, have lodged such appeals at the Inter-American Court of Human Rights, employing interesting legal arguments.

There has been a great effort to exert pressure,” Guerrero explains.

The achievements of some towns in Boyacá and its departmental government, which have taken the lead in prohibiting asbestos, is also an evidence of the persistent work of these activists, who focused on informing and warning the public about the hazards of this material.

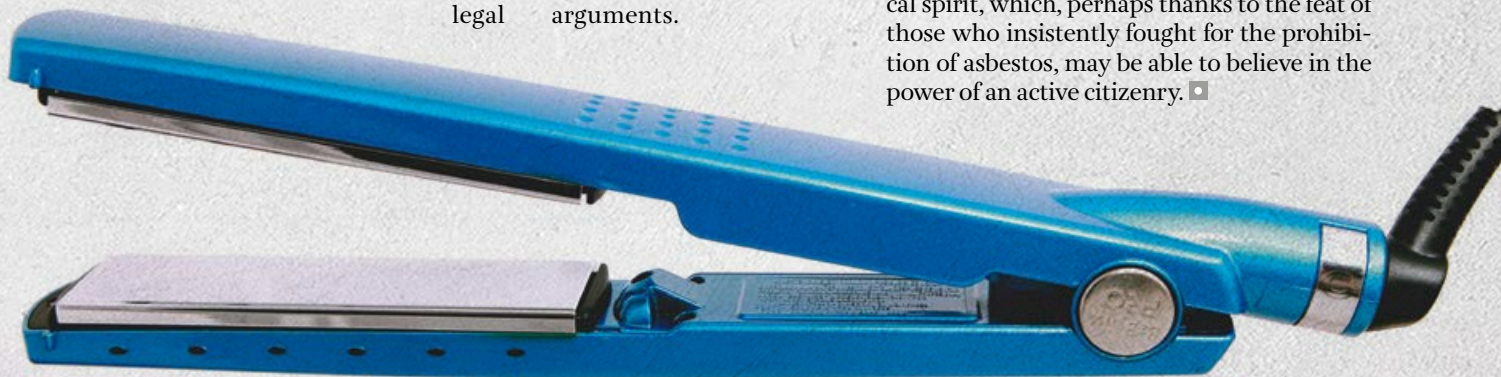
“At the present time in Colombia, we are seeing how there is a very big spread of collective actions on very diverse and different issues. It’s logical that that should happen now that the country is advancing towards its post-conflict stage. The fact that Colombia has been able to put the armed conflict behind it is going to represent a big challenge, which is opening the Pandora’s Box on all the problems it faces: fracking, asbestos, education, mining and so forth,” Guerrero says.

There is no doubt that the communications media have been a key tool in enabling the messages of the activists to reach the power structure and the citizenry. “The power of the media has meant that the general population is aware of the risks to which we are exposed with this mineral fiber, which does not only affect the workers in asbestos mines and factories, but all of us. The coverage of this issue by the media has helped the movement to grow and exert a stronger pressure,” Torres adds.

That being so, the prohibition of asbestos is a double triumph for the country: an achievement for the whole of Colombia, due to the ban on the use of this fiber, and a clear blow by the emerging force of collective action. “There may be politicians who are afraid of all this, because an active citizenry, which is alert to the work of our legislators, may be uncomfortable for some actors, but it may also be an opportunity for politicians to try to get on the same wavelength of those activist citizens. It is an interesting time in terms of the evolution of a representative and participatory democracy,” Guerrero concludes.

The path has been blazed. Nowadays, there is a public which is informed and has a critical spirit, which, perhaps thanks to the feat of those who insistently fought for the prohibition of asbestos, may be able to believe in the power of an active citizenry. ▣

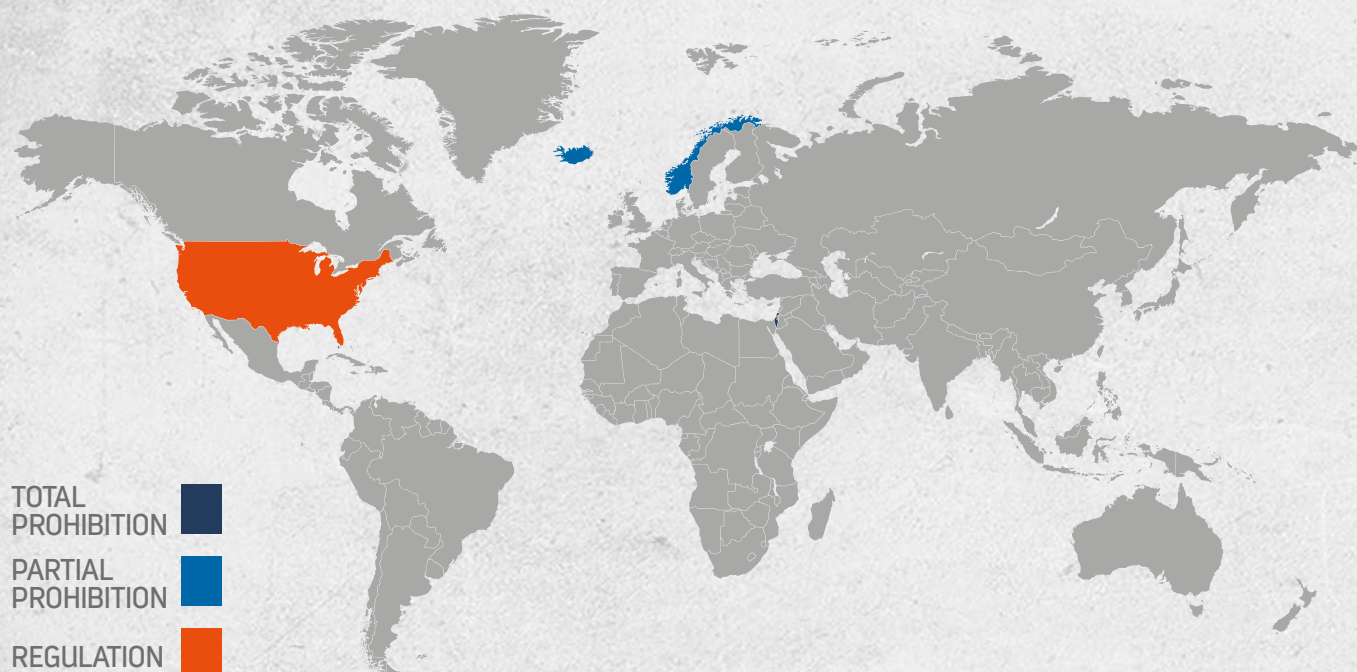
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Asbestos has formed part of the daily life of many families in Colombia, who, unaware of its negative impacts on health, have kept it near to them in the form of pipes, tanks, roof tiles, brake pads and hair straighteners, among more than 3,000 products.





## PROHIBITION AND REGULATION OF ASBESTOS IN THE WORLD BEFORE 1986

Before the International Labour Organization's Convention C162 (1986)

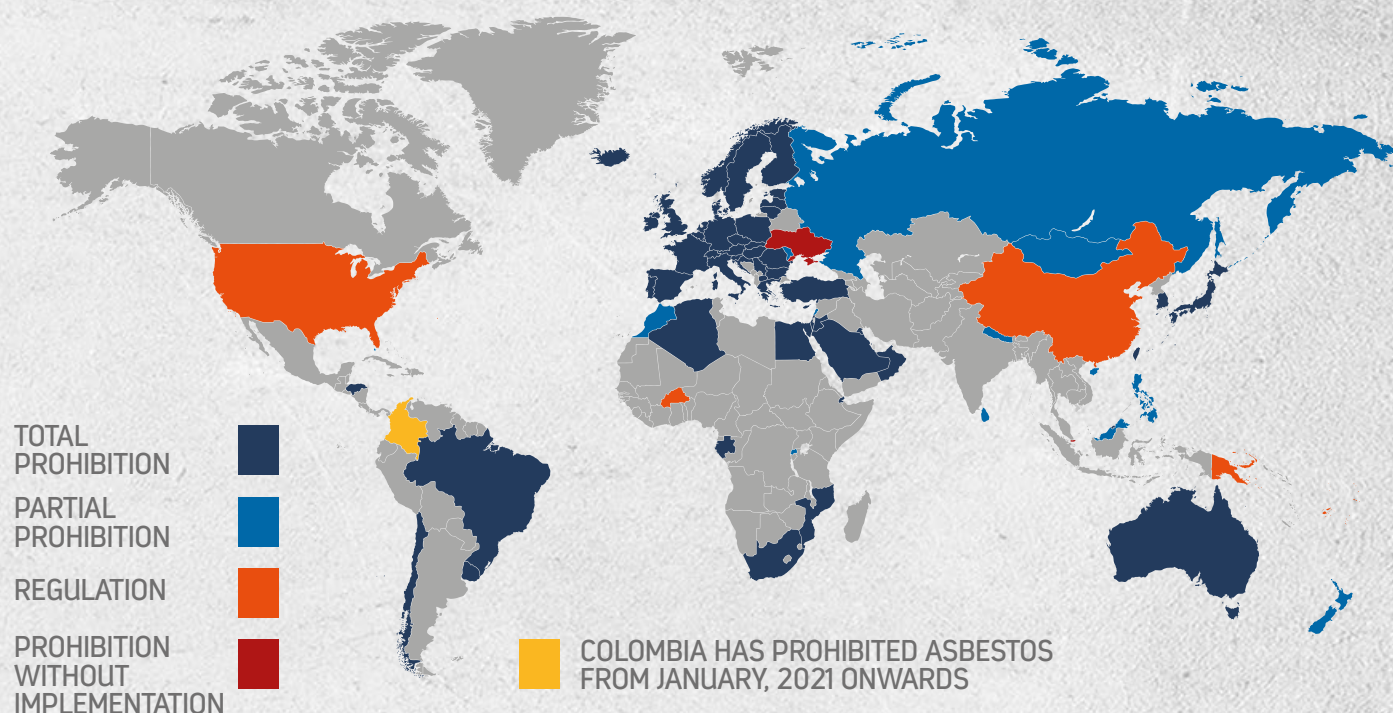


## COLOMBIAN NORMS

Number of the legislative bill Date of being lodged in the Congress	Legislative bill no. 199/07 House of Representatives January 31, 2007	Legislative bill no. 35/07 Senate July 24, 2007	Legislative bill no. 45/07 Senate July 31, 2007	Legislative bill no. 177/07 Senate November 30, 2007
HOUSE OF THE CONGRESS WHERE IT WAS FIRST LODGED	HOUSE OF REPRESENTATIVES	SENATE	SENATE	SENATE
RESULTS OF THE BILL	WITHDRAWN BY THE PROPONENT	ARCHIVED AT THE FIRST DEBATE	WITHDRAWN BY THE PROPONENT	ARCHIVED AT THE FIRST DEBATE
	<p>NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES</p> <p>1 congressman from the Partido Liberal Colombiano</p>	<p>NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES</p> <p>1 senator from the Partido Polo Democrático Alternativo</p>	<p>NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES</p> <p>3 senators from the Partido Político MIRA</p>	<p>NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES</p> <p>1 senator from the Partido de la U</p>



## PROHIBITION AND REGULATION OF ASBESTOS IN THE WORLD BETWEEN 1984 AND 2018



Legislative bill no. 341/09 House of Representatives May 6, 2009	Legislative bill 97/15 Senate September 22, 2015	Legislative bill 34-85/16 House of Representatives July 27, 2016	Legislative bill 61/17 Senate - 302/18 House of Representatives August 2, 2017
HOUSE OF REPRESENTATIVES	SENATE	HOUSE OF REPRESENTATIVES	SENATE
WITHDRAWN BY THE PROONENT	ARCHIVED AT THE FIRST DEBATE	ARCHIVED FOR EXCEEDING THE LIMIT OF TWO PERIODS OF THE SESSIONS	PASSED AT THE FOURTH DEBATE
NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES	NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES	NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES	NUMBER OF SPONSORS OF THE BILL, WITH THEIR RESPECTIVE POLITICAL PARTIES
1 congressman from the Partido Liberal Colombiano	1 senator from the Partido Alianza Verde 1 senator from the Partido Liberal Colombiano 1 senator from the Partido Opción Ciudadana 2 senators from the Partido Centro Democrático 2 senators from the Partido Conservador Colombiano	1 congressman from the Partido de la U 4 congressmen from the Partido Alianza Verde 4 congressmen from the Partido Conservador Colombiano	1 senator from the Partido Cambio Radical 2 senators from the Partido de la U 2 senators from the Partido Liberal Colombiano 2 senators from the Partido Polo Democrático Alternativo 6 senators from the Partido Conservador Colombiano 6 senators from the Partido Alianza Verde





# THE TRAVELER'S SYNDROME: When beauty makes you ill



Cupolas, frescoes, sculpture, façades, churches and being saturated with artistic beauty may trigger the disturbing neurological condition known as Stendhal's Syndrome or the Traveler's Syndrome.

By: Ximena Serrano Gil

Photos: Juan Ramírez, Leonardo Parra

If, when you are in front of a work of art, a marvel of nature or an architectural monument, or are listening to a piece of music, you feel disoriented or your heart races and you feel dizzy or faint or tremble or are seized by depression, excitement or hallucinations, you may be suffering from a very rare and overwhelming neuropsychiatric condition known as Stendhal's Syndrome or the Aesthetic or Traveler's Syndrome, which may cause problems for your health.

This is a novel subject in the history of medicine, since the term was only coined in 1989, when the Italian psychiatrist Graziella Magherini reported the syndrome, based on 106 cases of foreign patients with the same clinical symptoms in a hospital in Florence, Italy. Dr. Magherini named it in honor of the 19th century romantic writer, Henry-Marie Beyle, known by his pen name, Stendhal, the first to describe this experience, which he felt himself when he visited the Basilica di Santa Croce in the same city.

In Colombia it is such a novel subject that there are no records of these curious cases: The syndrome is not codified by public health agencies and much less is there a study of the frequency of this disease on a global level. Thus, the *Neuroscience (NEUROS) Research Group* at the School of Medicine and Health Sciences of the Universidad del Rosario has been the first in Colombia to publish a study of it and make it more widely known.

"Our aim is to show and analyze the link between beauty, art and history, and the effects on the brain revolving around it," explains the neurologist Leonardo Palacios Sánchez, one of the founders of the NEUROS group, leader of the line of research called *Humanities and Neuroscience* and co-author of the article, *The Stendhal Syndrome: A clinical and historical review*.

### The brain as a tool of communication

"Although you may not believe it, since this illness is not very frequent and it is unknown to many doctors, its diagnosis and, of course, its treatment, may be mistaken," Palacios notes. Due to its peculiar nature, we ourselves may think we have had this syndrome at some time without realizing it, but the co-author of the article, Juan Sebastián Botero Meneses, who is a doctor and researcher, explains that it is one thing to be moved, positively or negatively, by a great work of art, but

## Historical antecedents related to the Traveler's Syndrome

On January 22nd 1817, Stendhal visited the Basilica di Santa Croce, which is covered with marvelous frescoes by Giotto di Bondone and magnificent paintings by Baldassare Franceschini, who was known as "Il Volterrano," from his birthplace in Volterra. In a church which also houses the tombs of Niccolò Machiavelli, Galileo Galilei and Michelangelo Buonarroti, Stendhal had an experience which changed his life. When a monk opened the doors, the French poet knelt in prayer and bowed down his head. Of that moment, he wrote: "I had reached that point of emotion where the heavenly sensations of the fine arts meet passionate feeling. As I emerged from Santa Croce, I had palpitations (what they call an attack of the nerves in Berlin); the life went out of me, and I walked in fear of falling." A similar phenomenon occurred when people visited other cities, which gave rise to the term, "the Paris Syndrome," coined in 1986 by the Japanese psychiatrist Hiroaki Ota, who noted that a number of persons, after visiting Paris, suffered from dizziness, tachycardia, heart palpitations, breathing difficulties and psychiatric symptoms, including both visual and aural hallucinations. In 1989, after 20 year of observing the syndrome, Dr. Magherini published the findings of her study of the 106 persons mentioned above. After several visits to the museums and galleries of Florence, most of the patients suffered from dizziness, palpitations, hallucinations and felt disoriented, depersonalized and profoundly exhausted. Dr. Bar-El and his work team have described the condition known as the "Jerusalem Syndrome," whose characteristics are very similar to those of the Stendhal Syndrome and affect the ever larger number of tourists who visit the Holy Land.



Dr. Juan Sebastián Botero Meneses, the lead researcher of the group, remarks that a study of the Stendhal or Aesthetic Syndrome highlights the importance of the liberal arts in the teaching of medicine and is in line with the philosophy of the university, which seeks to train doctors with a broad knowledge which is not limited to analyzing signs and symptoms.



In the opinion of Leonardo Palacios, any person has the cognitive capacity to admire and be moved by art, since beauty is relative to each individual. One may have cognitive, emotional or physical sensations, like laughing, crying or shouting, which are part of the context of a clinical condition.



**In Colombia it is such a novel subject that there are no records of these curious cases: The syndrome is not codified by public health agencies and much less is there a study of the frequency of this disease on a global level.**

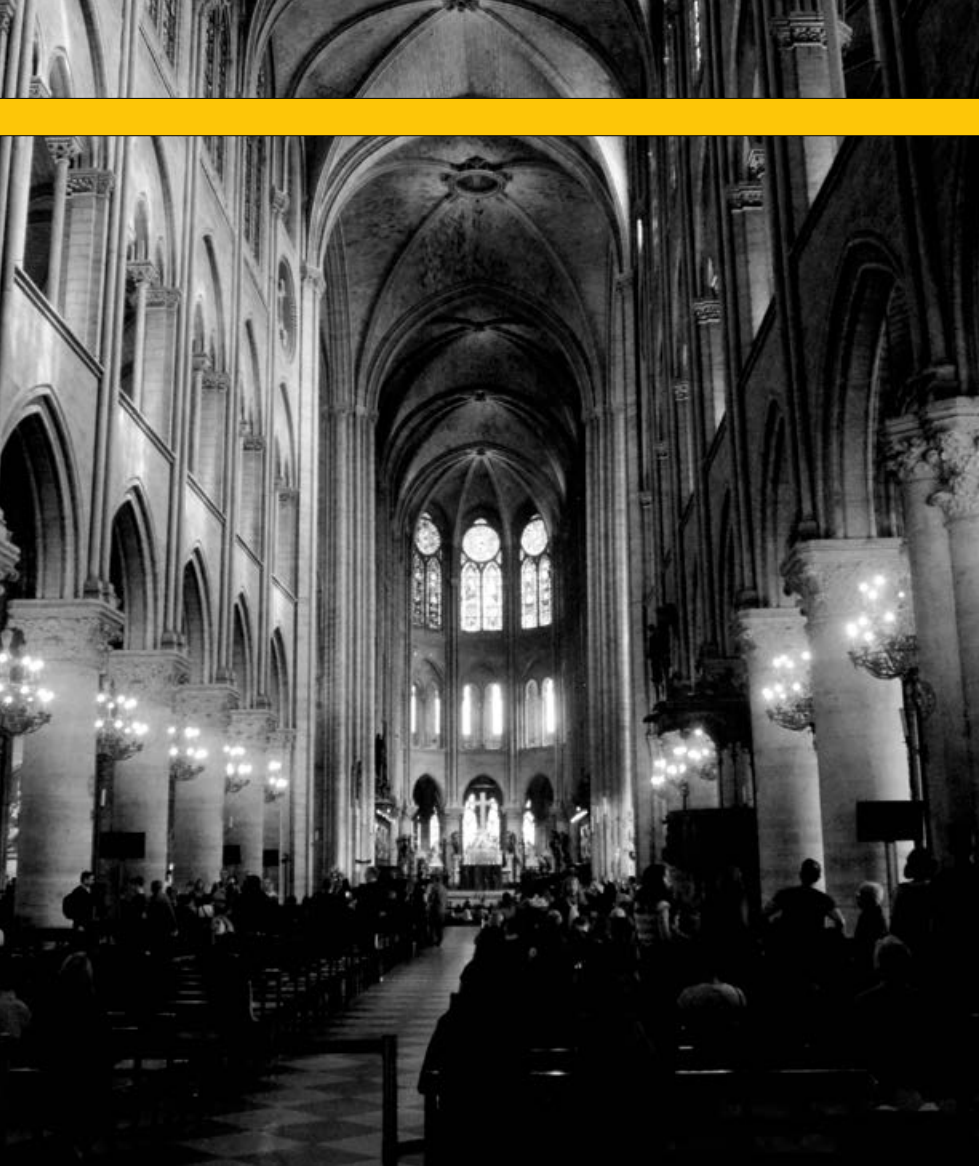
quite another to go beyond the limit of emotions and show physiological responses to an aesthetic stimulus.

The Stendhal syndrome is a complaint characterized by different symptoms, both physical and mental, in the presence of a work of art. To understand it, Professor Botero points out that those physical symptoms are owed to an involuntary alteration of part of the autonomous nervous system, which regulates the basic functions of the body, like arterial pressure, breathing or a person's heart rate or pulse. This alteration is known as dysautonomia and it may cause fainting fits, heart attacks, asphyxia, convulsions, cardiac arrhythmia, strokes or depression,

among other kinds of distress.

"The autonomous nervous system has two divisions: The sympathetic nervous system and the parasympathetic nervous system. The balance between the two is what gives us the evolutionary responses of fleeing from danger and reestablishing bodily energy. In a situation of risk, the sympathetic system increases a person's heart rate with the aim of pumping more blood into the muscles so that the person can run and it also dilates the pupils, but when this happens due to a stimulus like a work of art, a monument or a piece of music,





the person feels a pain in the chest which spreads to the jaw and from there to the arms, and the person falls down, which is known as the Stendhal or Aesthetic Syndrome,” he explains.

Also, Botero stresses, while a neurological syndrome is also a neuropsychiatric one, with a very important component of behavior, it thus has to be assessed in terms of its context, as you clinically diagnose any condition of mental health, like, for example, depression or affective bipolar disorder, since being depressed is not the same as suffering from a clinical depression.

### **A person's level of education is a factor of risk**

“A person of any cultural level, who is sensitive to art and aesthetics, may have the syndrome. Nevertheless, there are some risk factors which indicate a predisposition to its development and they have to do with the person’s educational level, marital status, age, the end of a journey and religious training,” notes Palacios Sánchez, who is also the founder of the “Chair of Happiness” (*Cátedra de la Felicidad*) at the Universidad del Rosario.

To illustrate some of these ideas, Professor Palacios explains that the person’s educational level draws him close to art and awakens a stronger sensitivity. If the person has grown up in a very religious home, their experience will be more intense than that of someone who is not religious, because the history of religion, whatever the religion is, is closely linked to art and most of the great masterpieces of the Middle Ages or

the Renaissance have a religious origin: They were made to cover the walls of cathedrals, mosques and synagogues.

Another factor of predisposition is when the person’s visit is coming to an end and he or she feels sad and melancholy, which triggers very anguishing symptoms, with responses which are not so physiological but pathological.

### **The treatment for a surfeit of beauty**

Speaking of the management and treatment of the Stendhal Syndrome, Botero Meneses stresses that it is a polymorphic disorder from the clinical point of view, that is, it expresses itself in different ways, therefore, it must be approached in an individual manner so that it is not mistaken for other pathologies, like ecstatic epilepsy, a condition characterized by the emergence of a crisis which changes the patients’ mood, with sudden switches between pleasure and discomfort.

As for the question of whether remembering the experience causes a new appearance of symptoms, the head of the research team, Leonardo Palacios, says that it may eventually activate the syndrome again and there are two options of treatment to deal with that: A therapy of desensitization, which consists of returning to the same site but in the company of other persons, which may be expensive if the moment of exaltation occurred during the patient’s visit to Italy and he or she happens to live in Colombia. The other is a pharmacological treatment or psychotherapy.

Thus, the difficulty for the people who suffer from this syndrome is that they will experience these symptoms many times in their lives while they look at works of art in other places. Doctors should learn about this disorder and its reactions, so that they can appropriately treat and report on these cases: They should likewise take into account that there is a relation between visits to tourist attractions and the cities which are full of splendid works of art – like Florence, Paris, Athens, Tokyo, Rome or Jerusalem – which boast of famous museums, galleries, heritage buildings and churches.

Finally, and continuing with the study of neuroscience and culture, Doctor Palacios explains that “We, in the *Neuroscience (NEUROS) Research Group*, would like to form a study group of students and non-academics who look at works of art, and, placing electrodes on their heads and monitoring their heart rates, record what is happening in the brain.” That way, they could study the link between emotion and knowledge which is found in the deepest recesses of the mind. ■





**HOW  
MUCH  
DOES IT COST  
TO BUY PRODUCTS  
IN ONE OR SEVERAL  
SUPERMARKETS?**





Jorge Flórez, professor at the Faculty of Economics of the Universidad del Rosario, has proposed a model which allows one to quantify how much the decision to acquire products in one or another supermarket chain costs consumers. This proposal may also serve to determine the effects of eliminating a product in some store and if it facilitates the resale of articles below cost.

By: Alejandro Ramírez Peña  
 Photos: 123 RF, Alberto Sierra

**H**ave you ever thought about what it means for you to decide to go to one or another store to make the monthly purchases for your home? Or if, instead of doing that, you ask for home delivery or prefer to acquire products in several supermarkets when you have the time?

The economists Jorge Flórez Acosta and Daniel Herrera not only did that but they also spent several years studying such conducts of the clients, which is a great challenge since there was no previous academic article which made this kind of quantification.

“What we are doing is to develop a model of demand which describes the conduct of consumers when they buy one or more products in supermarket chains which compete against each other with similar product lines and brand names. In our model, the consumer must pay a cost in each place they visit, in addition to that of transport and the articles they buy. These costs capture non-monetary factors which reflect the willingness of a consumer to devote time and effort to what he or she buys,” says Jorge Flórez, professor at the Faculty of Economics of the Universidad del Rosario.

He adds that they also implemented a model of supply to describe the process of setting prices and the way in which supermarkets compete for the demand, but they focused more on the latter, because the aim is to quantify the additional costs which purchasers pay.

With that mind, the objective of these researchers is to have a model that will explain how consumers choose when they have to buy a shopping basket of goods, and also characterize their conduct when they acquire those products and face many choices, that is, different stores, different prices and different qualities of the same products, until they finally decide what to buy.

“For example, if a person today needs to buy some groceries and knows that near his or her house (at a given distance) there are three options of supermarket chains (*Éxito*, *Olímpica* and *Jumbo*) where he or she can go and that he or she will certainly find the same products which are needed, with the exception of some own brands which each may have, you can ask yourself how that consumer chose the one where he or she bought the goods,” explains the professor.

This is something which economists study in terms of the prices which that client paid (which is found in a data base) and the kinds of goods the person acquired, and they assume that the decision was associated with a rule, which is known in economics as the utility maximization rule.

This analysis enabled these economists to create that model, which took into account all of the abovementioned factors in order to describe the conduct of consumers when they face the choice of buying a given number of products at a given number of places where they are sold, but it also had to assume a number of transaction costs which may cause the buying patterns of one consumer, when compared to those of another, to be heterogeneous.

“If I compare myself with my brother, for example, we are very alike, we come from the same family with the same customs, but when I see that I buy things more frequently than he does, the explanation we give, with the use of this model, is that my brother is a less frequent consumer, because he has some higher transactions costs than those I may have when I go to a supermarket to purchase the goods. Then we manage to find a monetary result for those cases,” he adds.

According to the authors of the study, this has to do with a set of personal characteristics, like people's level of education, whether or not they have children or live far from a supermarket, since traveling to those establishments will cost the person more in time and effort (mobility or a real liking for those kinds of activities), which is reflected in those costs.



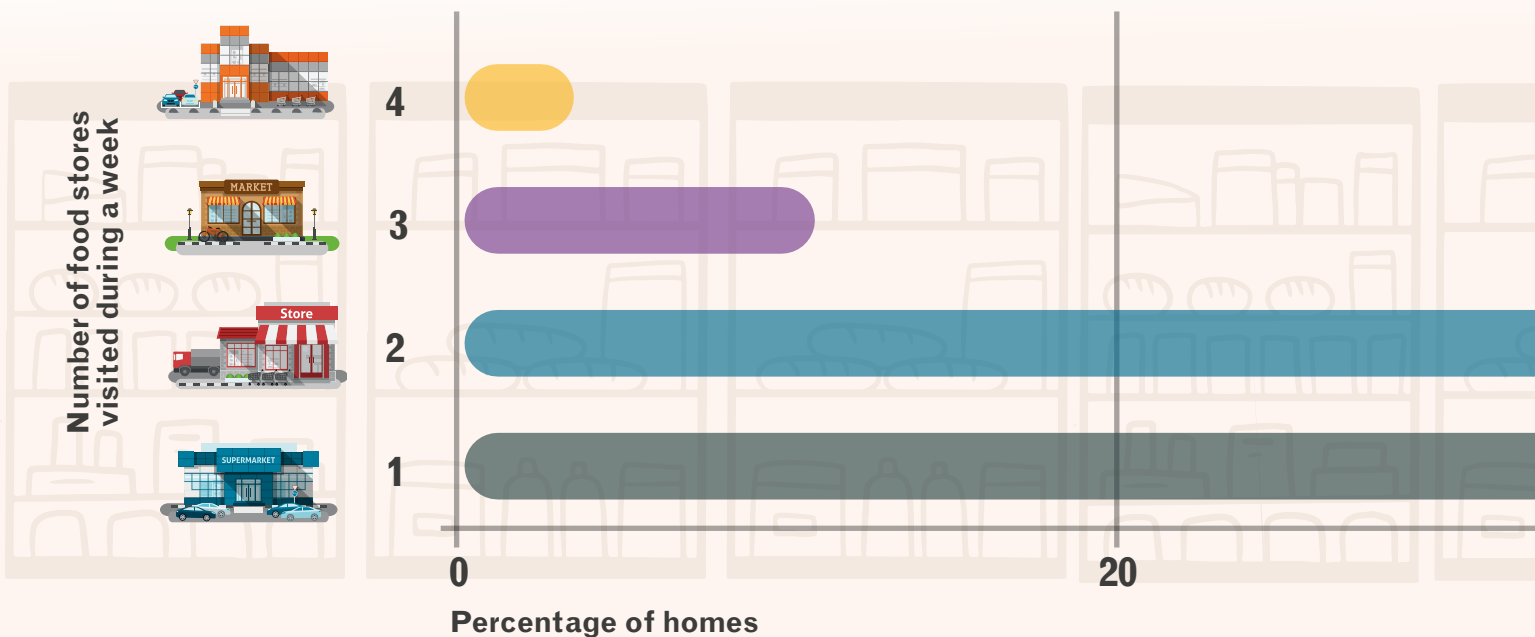
When they see that the product they want is not available, many consumers prefer to buy everything they intended to purchase at their favorite supermarket somewhere else, due to the difficulty of visiting two different stores, notes Jorge Flórez, professor at the Faculty of Economics.



### Other applications

Another interesting aspect of this methodological approach is that it allows for many applications. Among them (this is a project the professors are currently working on), is one which seeks to answer a question of political economy: What are the effects of removing a product from the menu of goods which a supermarket offers for sale? This situation may arise, among other reasons, because of disputes in the negotiations between the suppliers and the large chains.

If that happens a client must face two options: Replace the product with another of a different brand or look for it in another store. “In a model which does not have this concept of purchase costs, the replacements of the supermarkets are automatic because there is no idea that it costs the consumer





time and effort to go from one place to another. Thus, if the client already left his or her home, but does not find the article he or she meant to buy, he or she already paid a transaction cost. Then, the client must decide to replace it with another in the same store (which might entail a sacrifice of quality or going against the client's liking for that article), or, if the client remains loyal to that brand, he or she must assume the double cost of going somewhere else to get the product which he or she wants," Flórez explains.

In those kinds of situations, the purchase costs play a very important role in the consumer's decisions and that is the novel feature of the study of these economists, since otherwise the predictions about the conduct of the clients facing these kinds of decisions will overestimate, for example, the consumers' sensitivity to bargains and discounts, since if the prediction does not take the transaction costs into account, it will assume that the clients will certainly go to as many stores as possible to buy the article the clients want at the lowest possible price.

Undertaking this analysis enabled the authors to conclude that when a supermarket makes that decision, it "shoots itself in the foot", because when they see that the product they want is not available, many consumers (above all, those who have very high purchase costs, who are the majority nowadays) prefer to buy everything they intended to purchase at their favorite supermarket somewhere else, due to the difficulty of visiting two different stores.

In addition, one of the responses this may set off is that the producers also look for new marketing strategies with their other partners, so that the consumers go to those stores, with the aim of not losing them.

However, Flórez explains that the effects of this situation have not been quantified, so it is still not known if some authority should intervene to prevent those things from happening or find a way to deal with such problems.

And there is another scenario: That to do with the below cost resale of products, which is a strategy which supermarkets

have always employed, but the consumers are not aware of it, because they don't know how much it costs a store to have a product on its shelves.

"The supermarkets identify some articles which are very important for the consumers and make sure that those articles have a variety of qualities, including some goods which are sold at low prices they do not expect to make a profit on, but the 'hook' which they create is to attract consumers who are not very willing to pay for those basic goods, but knowing that they are already in the store, they are surely going to buy other things which they may not need and so people fall for the strategies of those stores," he explains.

From the point of view of policies, the problem here is that these kinds of strategies may amount to anti-competitive practices, because not everyone is able to sell goods at a loss, which has a strong impact on the small producers, sellers and neighborhood stores, to the point where they may go bankrupt.

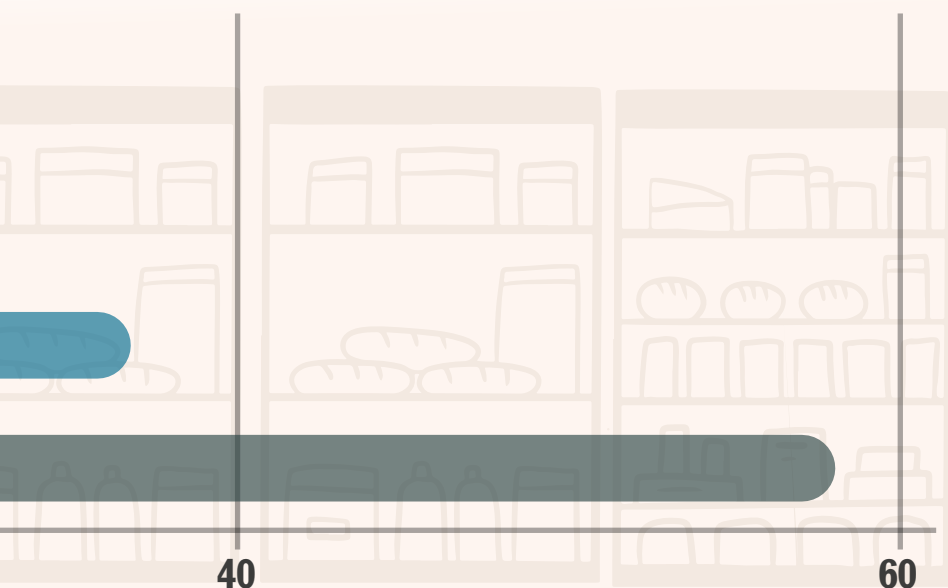
To prevent that, countries like the United States and those of the European Union prohibit strategies with that approach. The offenders pay large fines and the managers of the supermarkets who employ such practices may even go to jail.

Nevertheless, according to Jorge Flórez, it is rumored that such practices still go on and that was the reason why he has sought to measure whether controlling the transaction costs of the consumer may make it easier to implement those kinds of strategies. In those cases, it would therefore be the task of economics to inform the State whether it should intervene and to what point, because the purpose of such intervention is to ensure that private markets work well.

## Antecedents of the study

The idea of writing this article arose when Flórez Acosta was doing his doctorate at the School of Economics of Toulouse (France). After a lecture by one of his professors who was working on those subjects, it occurred to him to focus on this concept of the purchasing conduct of consumers, which struck his attention. There thus arose his wish to quantify the costs and deduce a monetary amount from what was observed, but he knew it wouldn't be possible to make a survey of people at a supermarket because they simply wouldn't know how to answer his questions.

So, he started to work on the project in 2011, along with one of his fellow doctoral students, Daniel Herrera, and they have become the first professional Colombian economists to make these models. ■



# IN CULTURAL CONTEXTS, some prefer to work with a tough boss

In Colombia, Law 1010 of 2006 provided workers with the tools to defend themselves from harassment in the workplace. Sometimes, however, what they call harassment is really not. This prompted Adriana Camacho and David H. Barbosa, researchers at the Universidad del Rosario, to undertake a study of cases of harassment in the culture and leadership of organizations which seem to be inappropriate.

By: Alejandro Ramírez Peña

Photos: Alberto Sierra, Ximena Serrano

**A**part from depending on logical factors like their salary, working hours and the benefits which they are provided with, the well-being of the collaborators in any company is more and more linked to the atmosphere and working climate which surrounds them in their daily tasks.

In that regard, harassment is an aspect which has a fundamental influence on the good performance of workers and the way in which they handle their obligations in an organization. It is a fact that in cases where an employee feels harassed, his or her performance is directly affected and, in the end, so too are the results of the job he or she does.

However, just as these phenomena may occur in companies and should be denounced, it is equally important to avoid making the mistake of thinking that any expression of authority or demands made by the employee's superiors is a kind of harassment.

That is why Law 1010 of 2006 specifies the cases where such acts occur: The same norm defines it as "any persistent and demonstrable conduct towards







an employee on the part of a boss or the employee's immediate superior or someone of higher rank in the company's hierarchy, a workmate or subordinate, meant to instill fear, intimidation, terror and anguish, harm his or her work, discourage the employee or lead him to resign."

Nevertheless, due to different variables of a cultural nature, in some organizations the styles of behavior among those who enjoy some kind of higher rank associated with a power of authority may cause that culture to have certain features which lead to actions which would clearly amount to harassment, but go unnoticed and are regarded as natural.

This complex panorama led two researchers at the Universidad del Rosario – Adriana Camacho, professor at the Faculty of Jurisprudence, and David H. Barbosa, professor at the School of Management and Business Administration – to analyze these problems where there is evidence of an institutionalization of harassment in some companies and certain kinds of leadership which, while they may seem negative to anyone, may turn out to be favorable.

Speaking of that aspect, Camacho says that it is obvious that a company must always have a leadership but what happens is that nowadays some people think that if the leader calls their attention to some fault or tells them that they haven't done their job well, that amounts to harassment. But to demand that an employee fulfills his duties is not harassment.

"In terms of the study of a leadership that is poor and may cause a case of harassment, that is what has been called institutional or organizational harassment at the workplace, which happens when the company has created a culture of poor leadership and there are no clear rules. We are all against that because there is no person in particular who is being harassed. That is because an ambit of harassment at the workplace has been created and the company allows it due to its poor practices, whether in a conscious or unconscious manner," she points out.

In many companies, there is evidence of this problem in the high turnover of personnel or persistent absenteeism, even though they may be classified as good employers because of the acknowledged benefits they provide to their collaborators. These situations may go beyond the control of the employee relations committees or human resources departments, so that the owners or members of the board of directors are not really aware of what is happening in the company.

The above does not fit into the "normal" definition of workplace harassment, which is that it is done by a person and is also the one



← David H. Barbosa, professor at the School of Management and Business, and Adriana Camacho, professor at the Faculty of Jurisprudence, have analyzed harassment at the workplace in order to spot its institutionalization in some companies and certain kinds of leadership which, even though anyone would think they are negative, may turn out to be favorable.

laid down in the abovementioned Law 1010 when it speaks of the subjects involved in harassment.

For his part, Barbosa explains that the basis they chose for the study is the interactional framework of leadership, in which the leadership includes the leader as a subject and leadership as a process. Here, three dimensions interact in this framework: The leader, the subordinates and the situation (where all that is cultural lies).

"What happens is that the concept of harassment is usually associated with the dimension of the leader in terms of his or her style of directing things and even though it is not frequent, one may have a leader who is abusive or who harasses but nevertheless has a very friendly style. That is why the style of the leadership is a concern from the standpoint of administration and in the end what interests the owners or senior executives is the style which leads to the highest productivity," Barbosa explains.

In that respect, Carlos Eduardo Méndez, who has been a professor at the School of Management and Business of the Universidad del Rosario for more than 40 years, proposes a model where there are four cultural dimensions: The mental model of the boss, the organizational design (as the structure which does or does not facilitate harassment), the values and beliefs of the company and the working climate.

"What struck our attention here is that, even though the literature on the subject pointed to certain aspects which allowed scholars to say that the desirable style (of the leader who treats employees as equals, is friendly, who says hello, who consults them, etc.) had a positive and noticeable impact on the quality of life in a company, compared to that of the undesirable leader (who is rude, uses foul language, who does not say hello, who is nasty), which, we assumed, was done in a negative manner, by contrast, our study, entitled the *Effects of leadership and the organizational climate on psycho-social risk, as a criterion of social responsibility in Colombian companies in the health sector*, found that there were people (employees of a health provider company) who preferred to work with an undesirable boss," notes Professor Méndez.

That led the researchers to review other studies done in the region with similar findings. And the explanation for this phenomenon which they obtained is that individuals who do not have the educational level or cultural values which are re-



## THE CHARACTERISTICS OF DESIRABLE AND UNDESIRABLE BOSSES

### WEIGHT OF THE ADJECTIVES IN THE RESULTS OF A QUESTIONNAIRE ON LEADERSHIP\*

Adjectives	Leader 1 (Desirable)		Leader 2 (Undesirable)
Funny	173		034
Oriented towards people	352		000
Thoughtful	322		001
Honest	365		032
Distant	002		263
Frank	365		004
Brilliant	283		018
Hardworking	232		015
Rational	341		005
Responsible	239		027

**The desirable leader is:**  
Cooperative  
Human  
Balanced  
Imaginative  
Intuitive

**The undesirable leader is:**  
Unpredictable  
Volatile  
Controlling  
Conventional  
Difficult



\*For the effects of this print-out, each result has been multiplied by one hundred

quired for empowerment may feel that they are experiencing an undesirable situation, which tends to turn into a source of stress. In addition, even though they are not usual, results like these ones allow one to think that, in our country, organizational cultures which are too horizontal (where there is not much distance between those who give the orders and those who follow them) are not necessarily always the ones where their workers are going to feel better.

To that is added another factor which complicates things even more, and it is that since people live longer now than in the past, a single company may have workers who belong to what is known as the “baby boomer” generation interacting with others who belong to “generation X” or the “millennials”, which implies a strong challenge, due to the cultural differences between one generation and the next, a situation which is characteristic of the leadership of people in the 21st century.

### The progress made by companies

Professor Adriana Camacho believes that, thanks to Law 1010 of 2006, one began to see signs of a greater awareness of the problem in organizations and a stricter control of their leaders, who, before the norm was issued, seemed to have a certain license to act any way they liked, while their employees did not feel they had a sufficient support to challenge their conducts, unless it was a very extreme situation which would justify a lawsuit.

But with this law, she thinks, workers now talk about this subject. They know what workplace harassment is, they

have committees of employee relations (not only for cases of harassment but psychosocial risks) and count on training on how to deal with possible harassers, all of which has improved the conditions many persons work in.

“There is more interest now in improving the treatment of these kinds of psychosocial risk, as well as the leadership and the workplace climate, because there are many studies which show that the perception of a good workplace climate results in higher productivity, since the workers become more committed. When they like the workplace, their performance improves,” Camacho notes.

However, the two professors have called upon judges, academics, legislators and researchers to take a stronger interest in these subjects, learn about the dynamics of such psychosocial factors (like stress, overwork and mental fatigue, dissatisfaction with the job, problems of relating to others and discouragement at the workplace) and employ the same concepts in order to speak about it in a suitable way, from a standpoint which integrates both the juridical and administrative aspects. ■





# COLOMBIA WILL ATTAIN A PRECISE KNOWLEDGE OF THE COSTS OF DIABETES

Financial planning and the effective projection of costs will allow for a sounder management of the resources of hospitals and an optimum service for patients with chronic diseases like diabetes. Javier Leonardo González Rodríguez and Olga Lucía Pinzón, researchers at the Universidad del Rosario, focused on assessing the expenses related to this disease in the country and how to improve the quality of life of patients.

By: Marisol Ortega Guerrero  
Photos: Alberto Sierra

**T**he projections of the World Health Organization (WHO) indicated that, by the year 2030, diabetes would be the seventh biggest cause of mortality in the world, since it will affect more than 430 million people. Today, 11 years before that date, it already is. One of its most worrying aspects is that it does not occur on its own but with several associated comorbidities: It causes blindness, renal insufficiency, myocardial infarction and strokes and may necessitate the amputation of the lower limbs, among other after-effects.

To that is added the economic impact not only on the patients, but also their families and the health systems and the economies of countries, due to direct medical expenses and indirect costs, like lost work days, ambulatory care and hospitalizations. According to the WHO, the latter two account for most of the costs.

This harsh situation has led researchers at the Universidad del Rosario to study the problem in depth, not only from the point of view of health but of economics as well. The idea is to make people aware of the costs of the disease and the very need to keep it controlled, says Javier Leonardo González Rodríguez, professor at the School of Management and Business of the Universidad del Rosario and director of the Health Administration line of research.

That is why González and the nutritionist, Olga Lucía Pinzón, director of the Nutrition Department at the Hospital Universitario Mayor - Méderi (Méderi University Hospital), set out to investigate the problem. They have now done a study

# AN ALARMING REALITY

# 422

Million adults have diabetes

That means one in 11 persons

Nowadays, diabetes is the seventh highest cause of death in the world, after ischemic heart disease, heart attacks, chronic obstructive pulmonary disease, respiratory infections and Alzheimer disease, among others.

entitled *Stratification and analysis: The pharmaceutical cost of diabetes patients. A problem for Colombia*, which focused on finding out the costs related to diabetes in the country and how they may be reduced in order to improve the quality of life of patients.

Catalina Latorre, researcher of the School of Medicine and Health Sciences, and Carlos Franco, of the School of Management and Business of the Universidad del Rosario, also participated in the study. Their contacts and cooperative alliances with colleagues in other centers have also been important. They include the Center of Investigation of the Economy and Management of Health (CIEGS) of the Universidad Politécnica de Valencia, Spain; the *Research Group on Public Health, Chronic Diseases and the Quality of Life* of the University of Maastricht (The Netherlands); and the *Group of Applied Engineering for the Management of Health Services*, at the Institut Mines, Saint Étienne (Saint-Étienne School of Mines) France, all of whom have undertaken interesting studies of the subject of diabetes.

“Our aim has been none other than to show how many costs are associated with diabetes; first, to learn how to determine them, so that the institutions are clear about it, and second, to create models which predict the costs that will enable us to improve the models of care and in the end, the health of the patients,” González remarks.

He adds that the costs of pharmaceuticals account for more or less 70% of the total spend-

## MAIN TYPES OF DIABETES



### Type 1 Diabetes

The body does not produce enough insulin.



### Type 2 Diabetes

The body produces insulin but not use it adequately.



### Gestational Diabetes

It is a temporary condition during pregnancy.

## CONSEQUENCES

Diabetes may lead to complications in many parts of the body and heighten the risk of premature death.

STROKES

BLINDNESS

HEART ATTACKS

KIDNEY FAILUTRE

AMPUTATION

If a person's blood sugar is not controlled, with the passage of time it gravely harms many organs and systems, especially the nerves and blood vessels.

ing. Thus, their proposal is that financial planning should be done, along with the creation of predictive models which would reduce costs and make the systems more bearable. It has been found that the total average spending on patients with diabetes in a high complexity hospital amounts to nearly two and a half million dollars per year and that it can be reduced.

With such predictive models, it is possible to make a categorization of the risks of someone who enters a hospital and an optimum strategic planning, with packages of precise services with health provider companies, so that “you do not begin to delay the services or the care which is needed, because a patient with diabetes who stays in a hospital longer than is necessary represents higher costs for the system and increased risks to his or her health, given the patient's vulnerability to associated diseases, like infections,” Professor Javier González points out.

## Step by step

To undertake the study, the researchers engaged in a prior phase with the aim of obtaining authorizations from the Research Committees at the Méderi Hospital and the Rosario, along with the University's Ethics Committee, among other aspects related to the protocols of their research.

Then, with the data bases of the Hospital, they began a detailed analysis of the subject. Professor González presented the results to the Universidad Politécnica de Valencia, Spain as “a sabbatical research project”, taking advantage of the fact that the University has modern technologies of analysis like “machine



According to the World Health Organization, diabetes "is a chronic illness which emerges when the pancreas does not produce enough insulin or when the body does not efficiently use the insulin which it produces. Insulin is a hormone which regulates blood sugar."

According to the Pan American Health Association/ World Health Organization's report, Health Situation in the Americas: Core Indicators, 33 out of each 100,000 inhabitants have diabetes (36.4 men and 30.9 women). In Latin America, the figure is 45.4 out of each 100,000 inhabitants (48.1 men and 43.1 women) and in Colombia, it is 21.8 out of each 100,000 inhabitants (22.3 men and 20.9 women).



"Our aim has been none other than to show how many costs are associated with diabetes; first, to learn how to determine them, so that the institutions are clear about it, and second, to create models which predict the costs that will enable us to improve the models of care and in the end, the health of the patients," Javier González remarks.

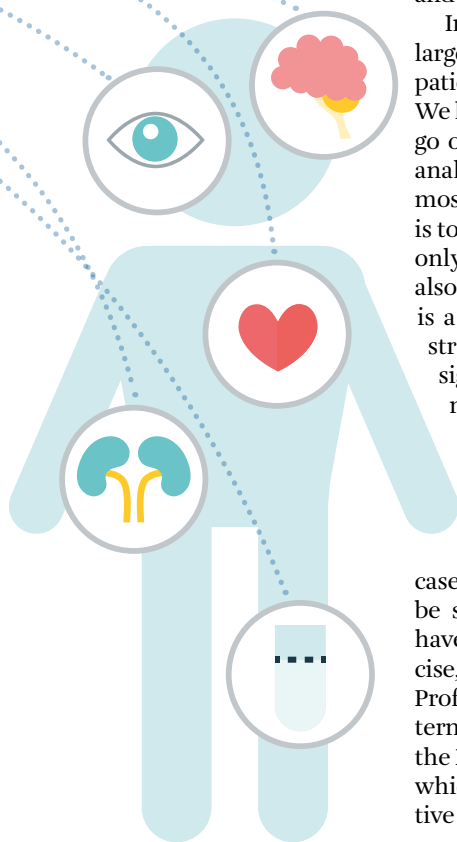
learning" and advanced techniques of artificial intelligence, both of which allow for a wider and better analysis of the data he was using.

In his own words, "we started with very large, very important data bases on 15,000 patients with diabetes, but it was still raw. We had to begin by refining the data and then go on to a multivariate statistics correlation analysis. We are now working on one of the most important aspects of the study, which is to build a risk index, because a person who only has diabetes is not the same as one who also has a cardiovascular disease, or one who is a smoker and suffers from a chronic obstructive pulmonary disease or one whose sight has also been affected or whose kidney is already affected and may be prone to chronic renal failure or who has arthritis. There are several categories of risk and we have to analyze all of them."

In the same comorbidity, you may even come across, for example, the case of a cardiovascular disease which may be slight, moderate or severe, so that you have to do a multivariate and factorial exercise, which is purely mathematical. This year, Professor González will be doing another internship at the Universities of Maastricht in the Netherlands and Saint-Étienne in France, which will facilitate the building of predictive models, the final stage of the study. ■

## A warning to all

- With its research project entitled *Stratification and analysis: The pharmaceutical cost of diabetes patients, a problem for Colombia*, the Business and Management Research Group of the School of Management and Business of the Universidad del Rosario, which links the medical aspects with the administrative and economic ones, not only hopes to create a leading-edge predictive model for Colombia, but also make the country more aware of the impact of diabetes and the commitment to dealing with it which those who suffer from the disease, their families, companies which provide health care and health insurance and government agencies should have.
- The study shows the importance of the active participation of the patients and it makes them aware that while diabetes is a grave illness, it can be kept under control and that that is not only the responsibility of the doctor: "The patient is an active subject of his or her therapeutic process. The patient can collaborate by improving his or her diet, exercising, taking care of himself or herself, undergoing periodical health checks, following the instructions of the doctor about medication and undergoing examinations to detect and deal with the complications on a regular basis. These precautions, in turn, reduce the economic burden of the disease," explains the researcher Javier González.
- The researchers recommend that health providers "make very well structured modellings of costs, so that they do not remain underfinanced or without liquidity, and, as a result, begin to delay their services for the patients, delays which turn into an endless problem, due to the adverse consequences which arise. By contrast, with predictive models and a sound financial management, everything works for the benefit of the quality of life of the patient. The same message applies to health insurers and not only for cases of diabetes, but all chronic diseases."
- Those who are already implementing predictive models are seeing the changes and what financial planning in health really signifies, as in the case of the *Coomewa* and *Sanitas* health provider companies, but it still has not been expanded in a massive way.



# URosario, scientific divulgation and visibility



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## PRINCIPLES OF MARKETING

**Fernando Juárez**  
[Academic Editor]

This book analyzes the fundamental principles of marketing, that is, the strategy, the marketing plan, the technology, the consumer and the market. Its direct, clear and rigorous way of dealing with those subjects means that the book can be easily read and understood, without jeopardizing the complexity of the field. Aimed at students of different aspects of marketing, this book will provide readers with an up to date and innovative discussion of the foundations of the subject. It will also enable academics and professionals to quickly establish links with the themes which are analyzed.

Finally, for the general public, reading this short, clear and profound explanation of marketing will open the way to understanding a field with many possibilities. The methodology is based on a concise, applicable and rigorous presentation of the material and includes a strategic panorama of marketing in terms of its administration, the consolidation of that strategy in the plan, the application of digital technology, the human-communitarian experience of the consumer, with applied models, and the concept of the market as a community which the company must immerse itself in with its marketing models in order to create, communicate and deliver value.



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## JOURNALISTIC USE OF TWITTER BY THE ACCOUNTS OF *EL MUNDO* AND *EL PAÍS* NEWSPAPERS

**Juliana Colussi Ribeiro and Fátima Martínez Gutiérrez**

This is an investigation of the use of Twitter by two of the most influential newspapers in Spain, *El Mundo* and *El País*. Its aim is to explain the kinds of accounts which both newspapers maintain on the micro-blogging platform. The results of its analysis show that *El País* publishes a larger number of daily tweets with the use of an automatic updating system, while *El Mundo* focuses on providing a smaller number of messages to give more of a priority to its interaction with the users.

## GUILLAIN-BARRÉ SYNDROME, TRANSVERSE MYELITIS AND INFECTIOUS DISEASES

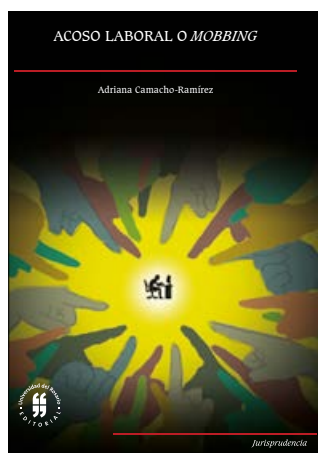
**Yhojan Rodríguez, Manuel Rojas, Yovana Pacheco, Yeny Yasbleidy Acosta Ampudia, Heily Carolina Ramírez Santana, Diana Marcela Monsalve Carmona, M. Eric Gershwin and Juan-Manuel Anaya.**

The Guillain-Barré Syndrome is an acute, inflammatory polyradiculoneuropathy mediated by the immunological system and characterized by itchiness, progressive weakness, autonomic dysfunction and pain. The immunity lesion is specifically produced in the myelin sheath and the components of Schwann cells related to the polyneuropathy of acute inflammatory myelitis, while in acute motor axonal neuropathy the membranes of the nerve axon (the axolemma) are the main target of the lesion related to the immune system.



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## HARASSMENT AT THE WORKPLACE ("MOBBING")

**Adriana Camacho-Ramírez**

This study describes the advances and shortcomings of the development of norms, laws and practices to deal with harassment or bullying at the workplace, all accompanied by the most enlightened doctrine found at the moment. The doctrine in question comes, in large part, from disciplines different from jurisprudence, like psychology, psychiatry and sociology. This investigation is divided into five chapters, which range from general and basic ideas about the topic to the problems it causes and proposals for solving them. The book is aimed at workers who feel that they are victims of bullying and also at lawyers, judges and human resources personnel, among others.



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## REDUCING MAXIMUM LATENCIES: AN ANALYSIS AND VALIDATION OF STRATEGIES OF REPLICATION WITHOUT CANCELLATION

**Zhan Qiu, Juan F. Pérez, Robert Birke, Lydia Chen and Peter G. Harrison**

The variability of response time in software applications may gravely degrade the quality of the user's experience. To reduce this variability, the replication of requests arises as an effective solution since it generates multiple copies of each request and uses the result of the first to complete the process. Most of the previous studies have mainly focused on the medium latency of the systems which implement the cancellation of replications, that is, all of the replications of a request are cancelled once the first is finalized. In its place, we have developed models to obtain the distribution of the response time for the systems in which the cancellation of the replication may be too costly or impossible to implement, as in "rapid" systems like web services or inheritance systems.



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## MEASURING THE EFFECTIVENESS OF VOLATILITY CALL AUCTIONS

**Carlos Castro, Diego Agudelo and Sergio Preciado**

The method proposed by the investigators assesses the effectiveness of a volatility auction by using data from the Colombian Stock Exchange. With the counterfactual price and the observed price after the auction, one can analyze whether the auction improved the quality of the market. The results indicate that the method provides a precise focus to construct a credible counterfactual which approaches the behavior of the asset if the auction had not taken place.



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## STENDHAL SYNDROME: A CLINICAL AND HISTORICAL OVERVIEW

**Leonardo Palacios-Sánchez, Juan Sebastián Botero-Meneses, Rocío Plazas Pachón, Laura Bibiana Pineros Hernández, Juanita del Pilar Triana-Melo and Santiago Ramírez-Rodríguez**

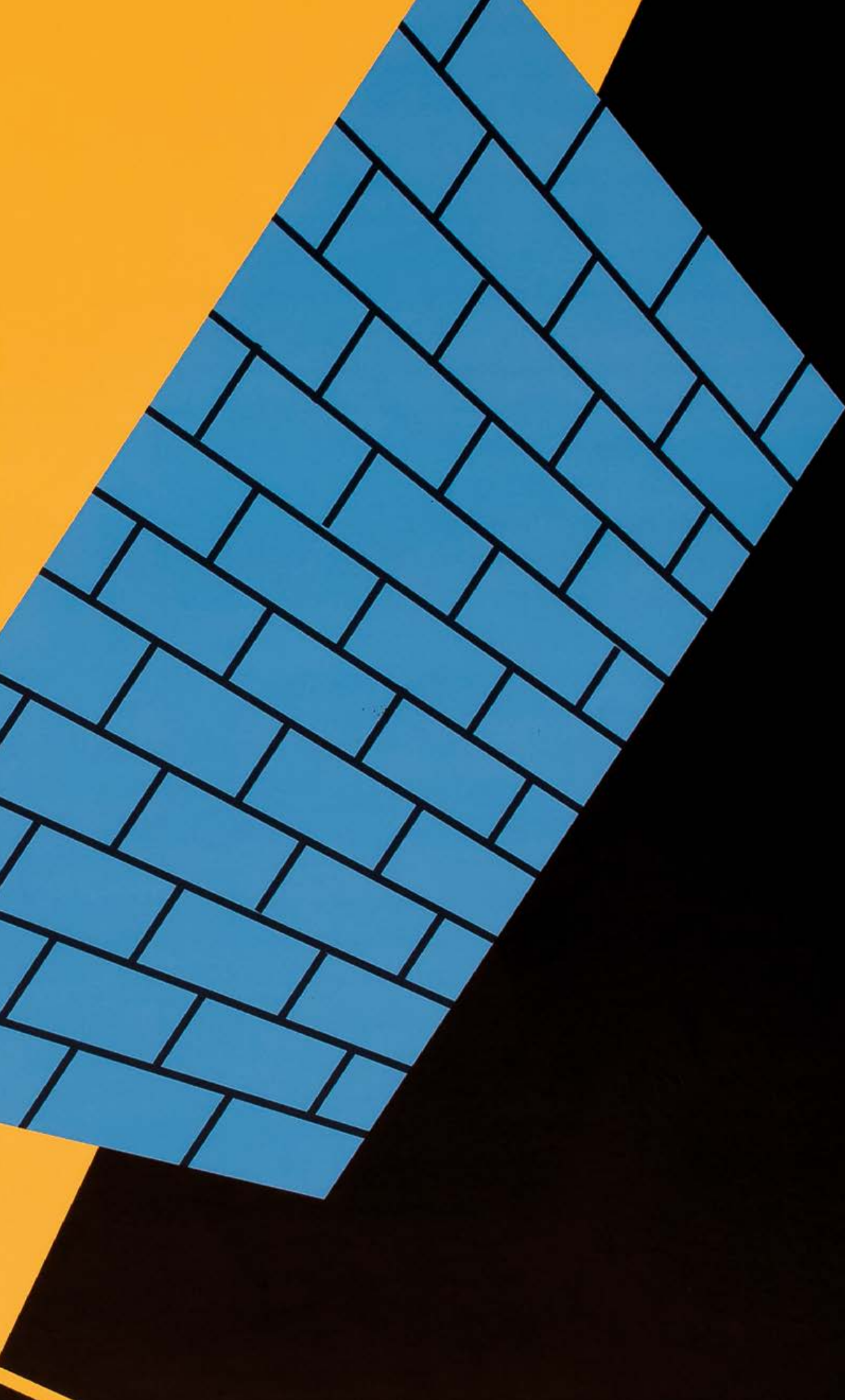
It might be said that one of the few qualities shared by all human beings is the capacity to appreciate beauty. While it is true that the object which is regarded as beautiful changes from one person to the next, the admiration and profound feelings the entranced spectator experiences is the same for everyone. There are times when this experience may lead a person to the very edge of existence. It is a very rare condition, known as the Aesthetic or, in some cases, the Stendhal Syndrome. It consists of a clinical picture in which the presence of a magnificent and beautiful work of art or architecture causes dysautonomic symptoms like a rapid heartbeat, diaphoresis, thoracic pain and fainting. This study presents a clinical and historical review of this condition.



# 5

**Digital  
innovation**









# GAMES WITHOUT SECRETS:

The App which teaches youngsters with intellectual disabilities about sexuality



A study of this sector of the population by Ángela María Ruiz, Lilia Virginia García and Inés Elvira Restrepo, researchers at the Universidad de Rosario, enabled them to attain an in-depth understanding of their reality and create a novel tool to prevent these children and youngsters from becoming the victims of abuse and ensure that their rights are respected.

By: Marisol Ortega Guerrero  
Photos: Leonardo Parra, Alberto Sierra

To fill the existing gap in the education, training and possession of safe and reliable information on the sexual and reproductive health of persons with intellectual disabilities, researchers at the School of Medicine and Health Sciences of the Universidad del Rosario created an App called *Games without secrets*, which is regarded as a risk-free educational tool which trains, orients and provides information about the dangers of abusing these youngsters.

After more than six years of work on this subject, based on two projects which led them to find imaginaries closely linked to stereotypes and taboos about youngsters with this disability, the tendency to treat them as children and the lack of a specialized counseling for them and their families, the researchers attained an in-depth knowledge of such problems and have proposed solutions to deal with them.

Now, as the result of the second project, they have come up with this prototype of a video-game, which, in addition to warnings (Careful!), includes information which helps such youngsters to learn how to act towards the threats. "This will probably allow them to discover such dangerous situations, drive them away and find the right path," the professors say.

"The idea is to present them with the situations, so that they can assess and ponder them and make decisions, and the game will show them different contingencies and the possibilities for responding to them," explains Lilia Virginia García, a physiotherapist and member of the *Rehabilitation Sciences Group*.

### An inspiring project

In technical terms, the video-game is very well designed, with excellent avatars, due to the fact that it was constructed with the

help of the same youngsters and their families, who provided feedback for the tools, characters and even the same scripts and language, so that it would be accessible and easy to play in the end.

It is so innovative that it has already won an international award, after it was submitted to the 8<sup>th</sup> Latin American Encounter of Academics of Physiotherapy and Kinesiology (*VIII Encuentro Latinoamericano de Académicos en Fisioterapia y Kinesiólogía*), in Puebla, Mexico, in October, 2018. "We won the second prize in the category of 'Formal Research', which has been a very important encouragement and a motive to follow this path which we started on in 2013. In addition, we have approached some funding agencies to see if we can obtain resources in order to further develop the project," explains Lilia Virginia García.

The App has been submitted to the "Grand Challenges Canada", an organization, sponsored by the government of Canada, which finances initiatives which deal with challenges in the field of health and sexual and reproductive rights, and to the Promobilia Foundation of Sweden, which supports projects in those and other social fields.

### Strategic alliances

The work of this research group and the development of the video-game have also been a novel and innovative form of tackling these subjects, since, as Ángela María Ruiz, a gynecologist and director of the Clinical Research Group explains, "it arose as an interdisciplinary project between the Rehabilitation Sciences team; the *Clinical Research Group*, which is specifically devoted to sexual and reproductive health, and the *Transiciones Crecer* [Transitions in Growth] Corporation, with the idea of looking at the project from different angles."

They were joined by some key alliances. The Vivelab network of laboratories provided crucial technological support, since it has the modern equipment and human talent required for the development of Apps such as this one.

"We definitely have to start listening to the voices of the persons who are the subjects of the study, who become subjects with rights," explains Inés Elvira Restrepo, a pediatric intensivist, professor of pediatrics and disabilities, and leader of the *Opciones y Apoyos para la Transición a la Vida Adulta* group, [Options and Support for the Transition to Adult Life], which works with youngsters with intellectual disabilities.

"All of this has enabled us to honor the basic principle of 'Nothing about Us, without Us', which has also been a landmark in the transformation of programs for persons with disabilities, which now work with them, the people who most know about their rights and needs and therefore, make big contributions," Restrepo adds.



←  
“We were surprised to see how many mothers conceal and hide the abuse of their own daughters by the man they are living with, because they are afraid to lose the person who supports them,” Ángela María Ruiz remarks.



←  
“The game will show them different contingencies and several possibilities for responding to them,” explains Lilia Virginia García.



←  
In the opinion of Inés Elvira Restrepo, “we definitely have to start listening to the voices of the persons who are the subject of the study, who become subjects with rights.”

## An in-depth look at the problems

In 2013, the gynecologist and epidemiologist Dr. Ángela María Ruiz; the pediatric intensivist Dr. Inés Elvira Restrepo; and the physiotherapist Lilia Virginia García began to investigate the subject of the sexual and reproductive health of persons with intellectual disabilities. They also participated in different encounters with collectives which involved that sector of the population and those who are concerned with them, like judges, presidents of ethics committees and tribunals and medical doctors with different specializations, like pediatricians and gynecologists, among others.

They also organized 20 focus groups and found that there were not only imaginaries closely linked to stereotypes but there was also a complete absence of education which went beyond the teaching of anatomy, physiology and the nature of the male and female reproductive organs.

As Restrepo explains, an interesting part of this effort was an analysis of three key articles in the UN Convention on the Rights of Persons with Disabilities (2006), which Colombia ratified (May, 2011), along with 99 other States: Article 10, on the right to life; article 12, on the right of such persons to be equal before the Law; and article 23, on Sexual and Reproductive Rights, related to the right to form a family.

In general, they found serious gaps, myths, imaginaries and fears to do with subjects like the relationship of couples and pregnancy in this collective, their right as subjects of law compared with their capacity to responsibly exercise them and the possibility of transferring that decision to a third party, through the legal resource known as interdiction. The analysis of all these subjects led to the conclusions the first project reached.

Ruiz highlights the support of another ally, Professor Carlos Maldonado, a philosopher, with a doctorate in the sciences of complexity. “On the basis of these sciences of complexity, which acknowledge diversity and difference, we set out to understand the phenomenon of reproduction and the sexual and reproductive rights of persons with disabilities, which in fact is difficult to explain and has some highly varied logics. And that was the second project we did.”

The result was to organize another project, entitled *A strategy for training persons with intellectual disabilities in sexuality and reproductive rights: An educational proposal for self-determination*, which ended with the “Games without secrets” App, a prototype of the video-game which is currently being devel-

What happened in the ten years following the approbation of the UN convention on the rights of persons with disabilities

December 13, 2006



The General Assembly of the United Nations approves, by consensus, the Convention on the Rights of Persons with Disabilities and its Optional Protocol.

March 30, 2007



The Convention and its Optional Protocol are presented for the signing of the member States at the headquarters of the United Nations in New York. Colombia signs it that day.





The researchers honor the basic principle of 'Nothing about us, without us', which has been a landmark in the transformation of programs for persons with disabilities, which used to work for them and now work with them.

oped and whose intellectual property rights are being secured with the support of the university.

In this second project, “the voice of the youngsters and their families seemed very powerful to us: It enabled us to discover this void which existed in sexual education, and deal with a central point of the first one, and that was how to destroy these myths and stereotypes about the sexuality of the youngsters. Thus, we oriented the second project towards the formulation of a number of strategies for education in sexuality and sexual reproductive rights,” García explains.

### A lack of communication

There is a marked lack of knowledge about subjects like the sexual and reproductive health of certain segments of the population, which is aggravated by sexual abuse, a problem which is regarded as a public health matter. That is why the researchers of the Universidad del Rosario have not only analyzed the subject in depth, but now have a digital App, *Games without secrets*, as a proposal for a new way of educating people, in an approachable and likeable language.

In the opinion of the pediatric intensivist Inés Elvira Restrepo, “a key point in the prevention of abuse is to avoid being unaware of the information about it, because it is precisely that which makes us much more vulnerable.” The idea is to pro-

vide clear and precise information about each situation and facilitate access to education.

The professors also believe that it is important to strengthen the State’s policies in this field, because cases of abuse are characterized by some very complex intra-family dynamics.

“In fact, as a result of this latest project, we were surprised to see how many mothers conceal and hide the abuse of their own daughters by the man they are living with, because they are afraid to lose the person who supports them. These cultural and economic tangles are very complex, and are not necessarily resolved by resorting to the law,” says the gynecologist and epidemiologist Ángela María Ruiz.

The video-game is meant to provide answers to these concerns, because it is accompanied by “guides, sets of instructions which also seek to educate the family, as a fundamental part of the situation, because it is not only the game which is going to educate us, it has to be the family as well, by providing them with suitable alternatives and strategies of communication,” adds Ruiz. ■

April 3, 2008

May 3, 2008

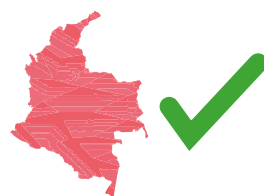
May 10, 2011

August 31, 2016

The Convention receives its 20th ratification.



The Convention on the Rights of Persons with Disabilities enters into force.



Colombia ratifies the Convention on the Rights of Persons with Disabilities: It is the 100th State to do so.

Colombia receives comments on the report about the implementation of the Convention in areas like judicial training, the recognition of sexual and reproductive rights, accessibility and mobility, and changes of the paradigms about disabilities.

# ARTIFICIAL INTELLIGENCE, an inevitable trend which is a challenge to humanity

Today, as never before, the evolution of technology implies a very big challenge for companies and governments. Being prepared for and trained to adopt and develop it will clearly make a difference and determine the fate of most of them.

By: Alejandro Ramírez Peña

Photos: Alberto Sierra, Leonardo Parra, 123RF

If anything has shown the advance of technology in recent years, it is the development of artificial intelligence (AI), which has not only arrived to stay but will revolutionize the life and customs of mankind.

That reality can be seen in different industries, trades and even the daily activities of individuals. Nowadays, autonomous vehicles and drones do home deliveries and robots work in the financial system.

The range of options offered by artificial intelligence is broad and the abovementioned examples are usually the most striking. Another application of equal importance is the development of intelligent computational systems, capable of adapting themselves to the medium in which they operate. In this field, it is usual to find web platforms designed to publish the grades of students at a university, the results of a census of a population or even to collect taxes. These platforms have to deal with critical situations of a very high demand during very short periods.

This is precisely one of the fields being investigated by Juan Fernando Pérez, a professor at the Department of Applied Mathematics and Computer Sciences and director of the INNOvation and Transference of Knowledge Hub of the Universidad del Rosario, and Dora Suárez, coordinator of the Hub's projects for digital

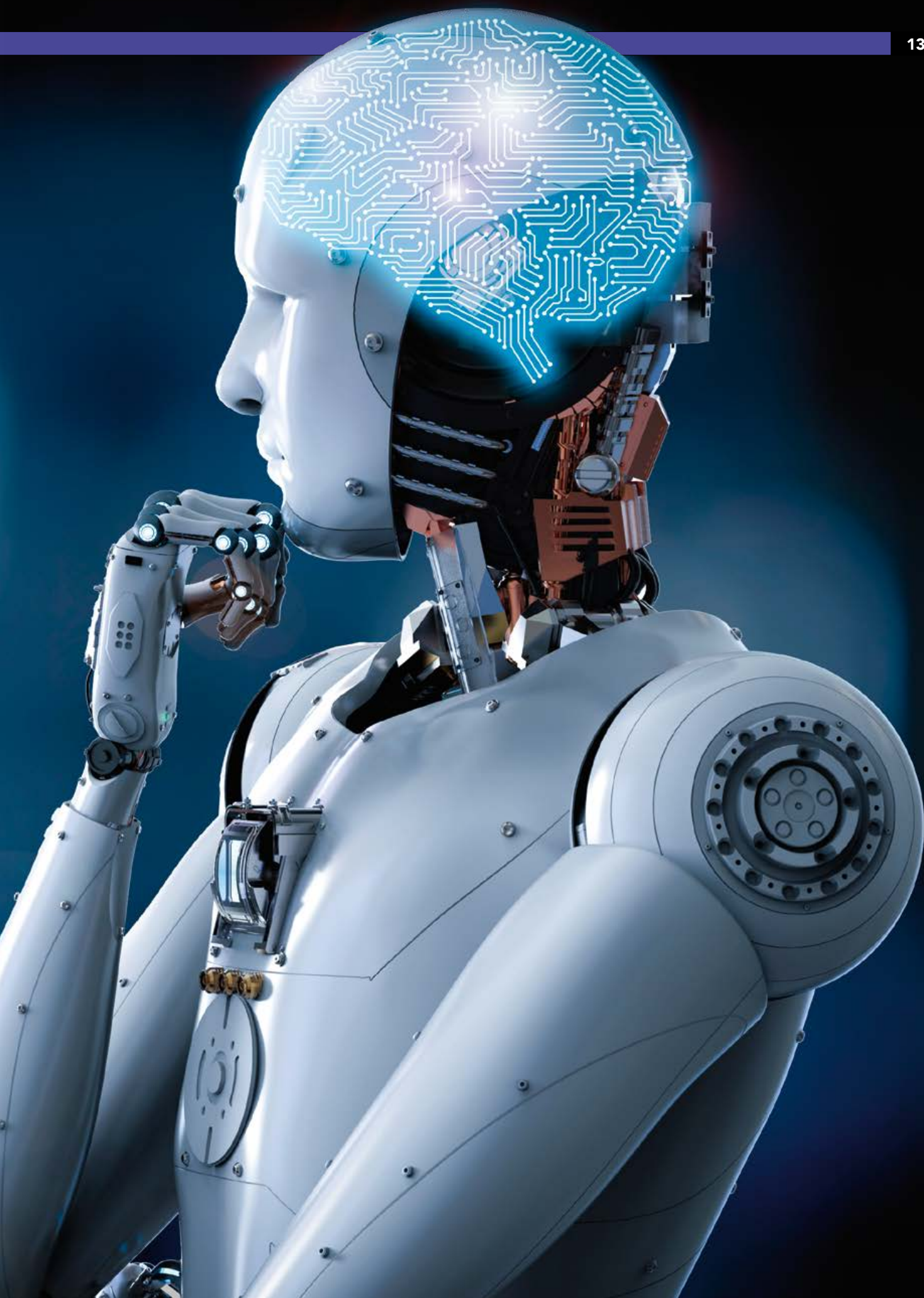
transformation. Their findings may potentially simplify the operations of the technological platforms used by State agencies and private sector companies in order to provide services or manage their internal processes.

In the three abovementioned cases, the average use of such platforms is relatively low. However, when certain deadlines approach, the massive entrance of users leads to some very high and unexpected peaks which cause them to collapse.

As Pérez explains, a number of precautions may be taken when such peaks occur so that the systems are alert to the times when a greater capacity is needed and instead of running the application with four or five computational resources, they can do it with 10, 15 or 20, depending on what is needed.

"But there are cases when not even that is possible. If a new game is launched on Facebook, for example, two situations may arise: That people access it, play it for a while and do not like it much, or that it goes viral and in any moment the demand increases in an uncontrollable way, which would require a very quick reaction. And that





is where those intelligent systems come in, because their first function must be to adapt themselves to those kinds of changes,” he adds.

That is why the two professors believe that the idea of this kind of technology should be to provide a very good level of services, at the lowest possible cost, within a business context, which is what upholds this application. The intelligent system will thus be responsible for controlling the application and act as a kind of security guard which is observing the behavior of the demand in order to react in a timely and suitable way with the relevant component which has to be replicated.

In the course of this study, these experts from the Universidad del Rosario began to note the ever more frequent use of applications which gather together and process big amounts of data, since those are the ones which are gaining the most ground in different fields, parts of the economy and other sectors. In their opinion, such applications too need to adapt themselves to their surroundings, which in this case are more advanced applications which require training in models of machine learning, for example. This is another layer of intelligence, which is highly oriented towards computational systems.

The uses of these kinds of tools are closely associated with cloud computing, without which they could not exist, since they guarantee the obtaining of resources in a dynamic form to the extent that they are needed. If not, companies would have to limit themselves to their own equipment alone, instead of being able to build a hybrid configuration like the one provided by the cloud, in order to both to increase or reduce the capacity of the configuration, depending on what is required.

### The start of the project

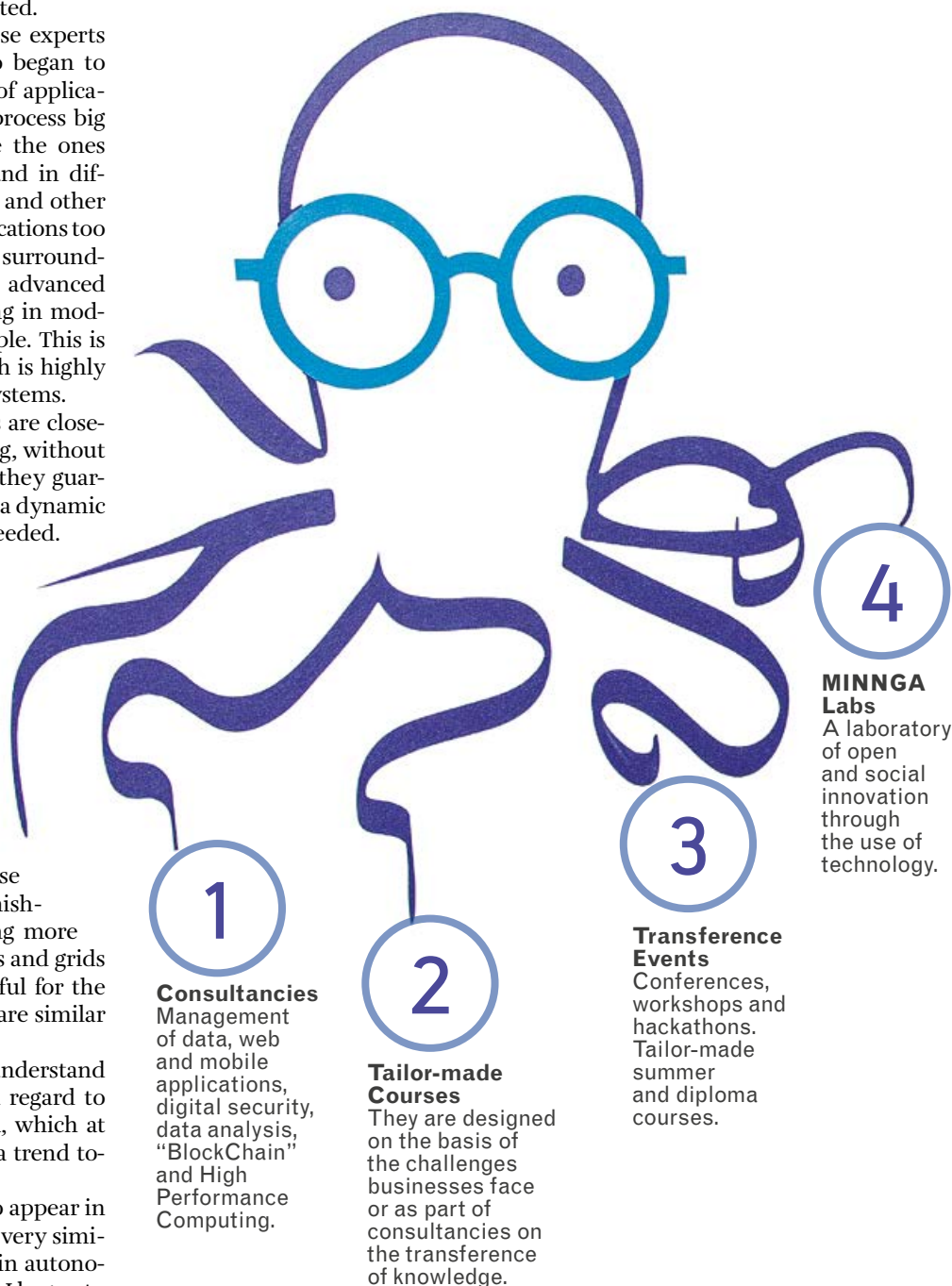
Pérez first started delving into these questions in 2008, when he was finishing his doctorate and was working more on the design of systems, networks and grids (which later turned out to be useful for the problems of the cloud, since they are similar concepts).

That experience helped him to understand their full potential, not only with regard to their design but operation as well, which at that time was already marked by a trend towards autonomous systems.

“Thus, research groups began to appear in many places which were studying very similar questions, but had an interest in autonomous computation in common. So I began to

## THE INNOVATION AND TRANSFERENCE HUB

The Department of Applied Mathematics and Computer Sciences of the Universidad del Rosario has an Innovation and Transference Hub, which proposes and develops projects of digital change.





get more involved in all this and then, in 2013, I worked in the computer department of the Imperial College London, where I participated in a project, financed by the European Union, which focused on business applications, above all on how to design them and then the best way to implement them, taking all the uncertainties of use and crowding into account,” he recalls.

After that, his passion for these subjects took him to Melbourne, Australia, where he remained until 2016, and in January 2017 he joined the faculty of the Universidad del Rosario, where he began to work on several projects to do with the creation of an undergraduate program at the Department of Applied Mathematics and Computer Sciences, novel in the country, which dealt with artificial intelligence, among other lines of study.

With the work team which has been formed there, the Department has won approval for the start of an internal project (financed by the University) which will study clusters of “Intelligent Big Data” (which process large amounts of information).

### Artificial intelligence is not optional

For these experts at the Universidad del Rosario, both the public and private sectors, and the academic sphere as well, are in a stage of transition towards the new technologies, which has driven research and the implementation of its results in companies.

The adoption of these kinds of solutions is a commonplace on a global level, along with all that is related to artificial intelligence, where there is a strong demand for talent, with an infinite number of possibilities, but substantial flaws in training students to meet the expectations which so much potential raises.

“I don’t think Colombia is doing so badly in this field. We are not leading it, but we are not in last place either. I believe that it is a good time for many people to join in this initiative and link themselves to all of these questions, in different roles, especially in development, analysis and investigation, and with a stronger emphasis on the appropriation and incorporation of these trends in companies and public institutions,” Pérez remarks.

The Universidad del Rosario likewise counts on the Innovation and Transference Hub of the Department of Applied Mathematics and Computer Sciences, which, according to Dora Suárez, the leader of the projects for digital transformation, is the arm of the university which reaches out to other spheres of the country, insofar as it offers services of consultancy in data analysis, digital security and similar fields to public and private sector entities.

Nevertheless, the most active part of the Hub nowadays has to do with the transference of knowledge, in the form of summer courses on subjects like big data, machine learning, the transference of technology and cryptography, among others.

“Another project we have is called the ‘MINNGA Labs’, which are basically laboratories of open innovation. Here, the idea to take all of this technological innovation to different sectors and regions of the country in order to develop joint solutions through digital transformation. In addition, our consultancies provide companies with the chance to contract us in order to help them solve problems, and we also train them to go ahead with their projects,” Suárez explains.



According to Dora Suárez, the “MINNGA Labs” are basically laboratories of open innovation which take all of this technological innovation to different sectors and regions of the country in order to develop solutions through digital transformation.



“I don’t think Colombia is doing so badly in this field. We are not leading it, but we are not in last place either. It is a good time for many people to join in this initiative and link themselves to all of these questions, in different roles, especially in development, analysis and investigation, and with a stronger emphasis on the appropriation and incorporation of these trends in companies and public institutions,” Juan Fernando Pérez remarks.



And real life has shown that such organizations can no longer leave these questions in the hands of external agents. If they want to survive in the long term, one of their biggest challenges is to form internal teams capable of appropriating such innovations and leading and continuing with projects, a process where training is fundamental and decisive.

The positive side of it is that business leaders and public officials are becoming more and more aware of this need to keep up with the latest technology, since they already understood that artificial intelligence with all of its fields of development, is, like other advances, no longer optional. And the better prepared they are for the whole of this change, the better their chances of not only holding onto their markets but expanding them as well and turning their companies into prosperous and lasting business ventures. ■



# #REINVENT

## the new hashtag of journalism

The social networks have been responsible for a change in the role of the journalist. New genres, languages and channels have emerged hand in hand with the boom in technology. Nowadays, when it comes to informing the public, what is important is not the “what” but the “how”.

By: Magda Páez Torres

Photos: Leonardo Parra, Carlos Roberto Reyes

**N**ovember, 1985: The Colombian Justice Palace was literally burning down during the armed assault on it by the M-19 guerrilla. In the midst of that chaotic scene, dozens of journalists crowded together at pay phones, the only available device to report the event live and direct. Eloquence flourished, since, due to the lack of technology, photos did not reach the press room as fast as oral accounts. “I was outside the building when the disaster took place. In that period there was no way to send videos or information in a direct way, so I hurried to find a pay phone, and I reported what happened the whole of that day from a store which sells candles,” relates Julia Navarrete, a journalist who fought a battle of her own that day.





Nowadays, the set-up is different. Intelligent phones are new protagonists in the coverage of tragedies, incidents and background material. Pictures, testimonies and evidences flow like water and they uncontrollably spread once they reach the virtual world, that is, the social networks. The once indispensable notebook has been replaced by tablets and cell phones!

What, then, is the current role of the journalist? Are the social networks reinventing journalism? What kind of impact has technology had on the work of the communicator? Fátima Martínez, from Spain, and Juliana Colussi, from Brazil, both professors and researchers at the Journalism and Public Opinion Program of the School of Human Sciences of the Universidad del Rosario, have devoted years to doing a number of studies which seek to answer those questions and many other concerns related to the subject.

Those experts start with a premise: Today, what is important is not the “what” but the “how”. In that context, where information abounds, being the first with the story is no longer enough. Therefore, another variable

enters into the game: The way in which it is told. And it is not only a question of style, but also of creativity, they clarify. “The journalist who knows how to investigate is no longer sufficient, because he or she also needs to know how to produce, be innovative and create new narratives. The market is looking for a person who is able to do a 360 degrees story, one which captures the public,” Colussi notes.

Even though the current panorama is complex for some novice journalists, due to the surplus of journalists and the economic crisis many communications media are suffering from, Martínez believes that the key is to exploit the new narratives and open a space in another niche. In her opinion, the major media should not be a straitjacket or the only objective of the professional journalist. “The Internet gives you the chance to be your own spokesperson. I tell my students: This is your time, if you want to create something new or have your own YouTube channel. I think that journalism is more necessary today than ever,” she believes.

Although such efforts are still timid, there are already virtual initiatives which stand as landmarks. In Spain, Ignacio Escolar, a journalist, blogger and analyst, is the mainstay of a digital communication medium which he founded in 2012 – *eldiario.es* – a space which has become consolidated and significantly risen in importance. It is presented with a striking slogan: “Journalism, despite everything”. And despite all of the difficulties and the steep path towards consolidating a project



of such dimensions, the portal now boasts of six years “on the air”.

In the case of Colombia, a good example would be the *Silla Vacía* [the Empty Chair], which managed to take off and gained a broad readership. While still tiny, other projects have followed it which are engaging in the battle to present news. “I prefer the small digital medium which is creative rather than the big, very hierarchical one. We see the need for a serious self-criticism in the major media, since the zeal not to go against the editorial line inhibits creativity. It is clear that when you wager on a digital medium, what you win is freedom,” Martínez says.

The concept of freedom also extends to the genres of journalism, which broadened with the revolution in technology. In her study entitled *From the column to short mobile information: An analysis of the genres of journalism in the political J-blogs of Brazil and Spain*, Colussi found that while the news item continues to be the queen of journalism par excellence, there is now a combination of many languages and the way has been opened to what are known as cyber-genres. To attract the cyber-public, the media now rely on the online interview, the multimedia news report, comic strips, interactive infographs, surveys, chat rooms and forums. The range of genres is now up to date.

### Twitter: The niche of the Journalist

The leading role which the social media play is so clear that now, in almost all cell phones –the one of your friend, neighbor or relative – there are three indispensable applications: Twitter, Facebook and Instagram. From the

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time they wake up to the time they go to sleep, people are connected to the world through these platforms. But there is no doubt that everyone has his or her favorite space.

Professor Fátima Martínez explains that due to its particular features, Twitter is the favorite outlet for journalists and politicians. In the end, it is a network associated with the elite, focused on information and debate. The places where people really get together are Facebook and Instagram, she points out. To that, Colussi adds a very important fact. During the past two years, Instagram has soared in a dizzying manner, especially due to its young public. There, they find what they wish to consume in a quick and visual way. Journalists are also beginning to break into that network, wagering on the conquest of the younger generations.

But what does a communicator look for in a social network? In 2013, Martínez and Colussi did a study entitled *The journalistic use of Twitter by the accounts of the newspapers El Mundo and El País*. Among their conclusions, they found that the main factors which lead a journalist or a communications media to accede to this platform are the opportunity to make their own contents go viral, the possibility of sharing the latest news items, the search for sources, an interaction with the public and the positioning of one’s personal trademark.

The growth of the participation of journalists in Twitter is confirmed by another study by Professor Fátima Martínez, entitled *The new media and the journalism of the social media*, a survey of 50 heads of Spanish communications media which found that 100% of those media publish their news items on the social networks, 98% have a corporate account on Twitter and 80% have a personal account.

But – a warning – journalism still owes a debt to its public in the area of interaction. The abovementioned analysis of the Spanish newspapers *El País* and *El Mundo* showed that those news media are more concerned with disseminating information than establishing a virtual “contact” with their readers. The researchers believe that, so far, the media in general have







not made much progress in that respect. The ones in Colombia are even more backward because, among other reasons, journalists do not have enough time, they believe.

### The “marketing” of fake news

Just as the social networks have had a positive impact on the spreading of journalistic information, they have also been responsible for some headaches, since the “democratization” of information has provided opportunists with the possibility of circulating “fake news”, which sometimes becomes viral and causes harm.

The concern which this has caused among the communications media in Colombia is such that some have implemented systems of verification, in conjunction with the public, that is, they are calling on their followers to share their doubts about certain news items so that they can apply filters and determine whether they are true.

In 2018, Professor Juliana Colussi did a study during the electoral campaign in Brazil and concluded that a number of politicians took advantage of the virtual world to spread fake news which favored their interests. Their favorite networks were Facebook and WhatsApp. “Our analysis found that nearly 60% of the information which circulated was false or partly false. When a candidate publishes fake news, he not only misinforms the public, but he lessens the authority of the traditional media,” she notes.

And that does not only happen in Brazil. It goes on in many countries, especially in the scenario of Latin America. That being so, journalism also faces the challenge of restoring the credi-

bility which has been undermined by the disinformation spread by some groups of power.

According to Martínez, the key is for the journalist to defend his or her mission on a path where there are many temptations. “If you encourage investigation, work in the field, go to the place where things are happening and do interviews, you are doing what is right,” she adds.

### Is reporting dying?

The concept of reporting has also changed for the new generations who practice the profession of journalism.

In addition to being a springboard for spreading news, the social networks have become a source of news for most communicators.

According to the researcher Fátima Martínez, 86% of the journalists she interviewed for her doctoral thesis admitted that they use the social networks to gather information, contrast facts or contact other sources.

While it is true that there are times when it is indispensable to obtain information from platforms like Twitter, since there are even politicians, like U.S. President Donald Trump, who make major announcements on that channel, the social networks have become the easy way out for some professional journalists who, just because they like to, prefer “virtual reporting” to work in the field.

In the opinion of Martínez, many journalists now enclose themselves in their newsrooms and do not go out to report the story. That attitude thus represents a big challenge for journalism faculties: They have to ensure that their future professionals get closer to the real world and connect them with reporting. “As a teacher, I make them go out to the street, I tell them to turn off their cell phones and computers so that they learn to share things with people. We need to recover that direct contact with the sources and the scenarios,” Colussi says.

It is clear that the social networks have changed the concept of journalism. Today, the communications media rely on followers who send them pictures from remote places where the news is happening: It is known as participatory journalism. Technology has enabled ordinary citizens to make videos of their surroundings and participate in new sections of the media which allow the public to denounce wrongs.

In this context, the challenge of journalism is to reinvent itself, without jeopardizing its traditional focus on analysis, depth and criticism. Instead of demonizing technology, we should understand that history is still being written from the newsrooms, but with another ink, other actors and other eyes. ■

**The concept of reporting has changed for the new generations who practice the profession of journalism. In addition to being a springboard for spreading news, the social networks have become a source of news for most communicators.**



# THE UROSARIO HAS DEVELOPED AN APP for students to self-regulate the way they learn

Designed by Jeniffer Lopera and Rafael Méndez, researchers at the Universidad del Rosario, *AutoObserver UR* is the first web/mobile tool to create autonomous learning skills in students so that they may better deal with the academic and professional challenges they will face in their careers.



By: Ximena Serrano Gil  
Photos: Leonardo Parra



**T**he poor learning skills which students who enter university have, the high drop-out rates and the impacts on the health of students were what led the Program for Academic Strengthening in the Social Sciences and the Department of Applied Mathematics and Computer Sciences of the Universidad del Rosario to develop pedagogical and technological innovations based on self-regulated learning, in order to ensure that students finish their higher education.

With questions like how he or she slept, how long he or she took to do an assignment or whether he or she has a healthy diet or how much material he or she contributed to a group task, among many others, the student who uses the *AutObserver UR* App learns to observe and assess himself or herself; in addition, the student receives guidance on the development of skills to make academic learning more easy.

The project arose from a question which bothered the researchers Jenniffer Lopera Moreno, director of the Program for Academic Strengthening in the Social Sciences, and Rafael Méndez Romero, coordinator of undergraduate studies at the Department of Applied Mathematics and Computer Sciences and the Mathematics Service of the Universidad del Rosario: How could they measure whether what they were doing in the Program for Academic Strengthening had a positive effect on the learning skills of their students, taking into account that they make use of methodologies different to the traditional ones?

Those methodologies form part of special pedagogical assignments, where the courses do not wholly follow a single discipline but are oriented towards the skills which enable the student to continue with his or her undergraduate studies, since the program is focused on those who have performed poorly and have failed their courses.

That led them to an in-depth study of self-regulation in the learning processes of students and the initial objectives evolved. "We were interested in 'learning how to learn' but understood that the university was not teaching 'learning how to learn' and that was not only the fault of the students but of the

professors as well: That is why they are symbiotic protagonists," explains Méndez Romero.

Speaking of that, the philologist and social anthropologist Lopera Moreno argues that "in education we have focused on the development of the sciences and of critical, formal and mathematical thought; however, what we discovered is that you require one set of elements and another set of skills, as well as spaces for learning those skills." Their study led to a profound reflection on the practice of teaching itself and discovered important opportunities for improvement.

### The deficit rule

As a result of those studies, it was found that while it may seem obvious to all that students know how to organize their timetable, work in a group and have criteria for assessing their performance as individuals and members of a team, it is not necessarily so: "When we look at the path of these youngsters, we realize that they come from an education which is completely regulated from without, one where they are given school uniforms and the hours of their classes and they are told what they are going to learn and do in each class; thus, when they arrive at the university, they have to fight on their own, trying to do what they think they must do because that is what they taught them," Jenniffer Lopera notes.

Furthermore, she adds, the student is evaluated in terms of what he or she did poorly or did not do or the student is told is that he or she is going to fail or their grades are not satisfactory, but these aspects are only a part of the evaluation of the student's learning process. With those results, they found that the student is only evaluated when they tell him or her what he or she has to do or when the student receives poor marks, but the real purpose of the evaluation should be to tell the student where he or she went wrong or did something poorly and what the student should do to improve and what he or she is doing well.

### Breaking paradigms

At the Universidad del Rosario, learning is thought of as a meaningful process that is focused on the student and where the professor changes from being a transmitter of knowledge to a facilitator of knowledge, with disruptive methodologies which break paradigms. This pedagogical innovation involves the design and implementation of a model based on the educational experiences of professors and students, methods which promote self-regulated learning by means of a mobile application.

According to Lopera, the aim is to foster autonomous learning skills, so that the students may better deal with the academic and professional challenges they will face when they do the same courses over again and successfully finish them.

## The App has received an international recognition

In April of this year, Professor Rafael Méndez presented the *AutOObserver* application at the "World Future Forum" in Chicago. This pedagogical application was very well received by the academic community; in fact, the text he submitted to the Congress won the award for the "best paper" at that academic event.

## Learning how to learn and self-regulated learning

The set of skills which the students develop when they engage in the process and organize their learning methods through the effective use of their time and information, whether in an individual or group effort.

On the basis of the concepts, actions and motivations the App displays, the student has more tools for self-evaluation which enable him or her to undertake actions to improve the learning process and gain a higher level of autonomy.



## The App as a tool for follow-up

"*AutOObserver UR* is an App which captivates the students, since it was developed with them in mind, it speaks the same language; so they feel they are being listened to and the answers are sincere," says Méndez. "This application is the embodiment of all of these pedagogical initiatives," Lopera adds.

The success of an innovative method like this one lies in the fact that the student reflects on his own learning process; hence, this mobile tool allows the students to review three particular characteristics in order to understand what self-regulation is: Learning to observe themselves, doing a self-evaluation of their acts and making decisions about all that.

It is very simple to use. The student chooses some items which are to do with his learning process, motivations and actions. For example, the student may choose an aspect like the way he or she organizes his individual or group work. At the end of the day the application asks the student: "What was the preparation of material for your group work like today?" The student then has to grade his or her activities from 1 to 5 and complement the mark with a qualitative analysis.

Finally, the application gives the student advice, based on the results which were obtained and then tells the student: "You should look for more support for a certain subject or find more material; read this article, etc."

According to the director of the Program for Academic Strengthening, aspects like personal care and sound hygienic practices (sleeping enough, eating well, exercising) are very important for the good academic performance of students. You sometimes hear them boast of how they didn't sleep for five days before their mid-course exams, as though it were a great feat they were proud of and they mean to say "I am a hero." The advice of the App is "if you don't sleep, you are not going to learn better. Organize your work in the day better."

The student can always review his history of self-observations and the application gives the student some timelines about the development of those grades, so that he visualize his process

## The most frequent problems of students

The students are only evaluated when they are summoned to and it takes place in terms of what they did wrong. Their grading is very harsh.





that way. The aim is not to give the student a simple option to record his or her progress, but a possibility of evaluating himself or herself and taking corrective actions, with some friendlier criteria and in a simple language which gives the student pertinent advice.

It is a very useful tool, since, in the words of the researcher Lopera, “we are seeing kids in the university who are very young, between the ages of 18 and 20, with problems of tachycardia, pre-heart attacks, acute gastritis, irritable bowels, insomnia, stress and depression, all linked with the demands of university life. With sound practices, there is no reason for them to endanger their health.”

### Let the data speak for themselves

In the opinion of Méndez, the data which are compiled are fundamental for an assessment of how the students are learning how to learn, since the way in which they measure themselves is important for the creation of new tools which will enable professors and students to design better practices for “learning how to learn.”

The information which the professors and students supply to the App is confidential and anonymous and is only used for the purposes of research, in accordance with the legal norms for handling such data.

According to the two professors, this is a new field of research in Latin America. There is no technological proposal about studying in the world and no educational institution which is encouraging conversations between their professors and students. For that reason, some institutions have already requested the use of the

App, so that they can implement it in their own universities. At the present time, the inventors of the application are applying for a protected trademark and patent.

Speaking of the contributions of the study, the mathematician Rafael Méndez remarks that with the results of two years of researching these problems, they want to change the dynamics in students with the use of self-observation and opportunities for them to improve their methods of learning. For her part, Jenniffer Lopera reminds us that recording their observations is not sufficient but the feedback which the application provides the student with will encourage the student to reflect on his or problems, become more autonomous and improve the learning process. ■

The students find it difficult to carry out individual assignments: They are easily distracted. That also happens when they study in groups: first, because they talk too much and are absorbed in their personal interests and only later do they begin to study.



Organizing their time is a big effort for them: Some do not know how to follow a timetable or agenda of work.



In the words of the researcher Jenniffer Lopera, “we are seeing kids in the university who are very young, between the ages of 18 and 20, with problems of tachycardia, pre-heart attacks, acute gastritis, irritable bowels, insomnia, stress and depression, all linked with the demands of university life. With sound practices, there is no reason for them to endanger their health.”



“AutObserver UR is an App which captivates the students, since it was developed with them in mind, it speaks the same language; so they feel they are being listened to and the answers are sincere,” says Méndez. “This application is the embodiment of all of these pedagogical initiatives,” the mathematician Rafael Méndez explains.



They spend too much time studying in the week of their partial examinations. At most, they should study for 45 minutes and rest for ten in each session of work, but do it in a fully concentrated way.

The students endanger their health because they do not have sound methods of studying.

The background features abstract geometric shapes. A large red triangle is in the top left. A yellow rectangle is in the top center. A large yellow 'V' shape is on the right. A green parallelogram with a black grid pattern is in the bottom right.

# 6

**Leadership  
and social  
innovation**





# THE UROSARIO, WITH ITS FIRST COMPANY FOR SERVICES OF PREVENTIVE AND PREDICTIVE MEDICINE

Ergonovus is the first spin-off in incubation of the Universidad del Rosario. It is an initiative of research and technological development which changed into a business model with a strong potential in the Colombian and Latin American market. Juan Alberto Castillo, leader of the *Health, Cognition and Work Research Group* (GiSCYT, in its Spanish initials) of the Universidad del Rosario, explains that it offers technological and consulting services in preventive and predictive medicine to companies in industrial sectors like construction and manufacturing.

By: Juliana Vergara Agámez  
Photos: Alberto Sierra, Leonardo Parra

Last year, the Universidad del Rosario, and particularly, the Laboratory of Ergonomics and Movement Analysis (the Ergo Motion-Lab) of the Universidad del Rosario's School of Medicine and Health Sciences, received some important news: Ergonovus had become the institution's first spin-off as it advanced from a scientific initiative to a business model at the service of others: In this case, at the service of workers and those who want to prevent the illnesses which people may have because of the work they do.

A spin-off is the name given to a company which is created through the knowledge and results of research: It usually enjoys in-





tellectual property rights like trademarks and patents and it is formed in the ambit of universities and developed with their support. In addition, it is a potential source of new jobs and economic development.

That is what Ergonovus is. It is the result of the work which has been done by the Ergo-Motion Lab, the Laboratory of Ergonomics and Movement Analysis of the Rosario's School of Medicine, which, since 2010, has developed technologies for understanding and improving the working conditions of Colombians. This ergonomics laboratory, one of the most advanced in Colombia and the only one in Latin America which is part of a School of Medicine, is engaged in two lines of work: Research and consulting.

Both have yielded outstanding results and that is why the members of the laboratory, who are professionals in different disciplines (doctors, engineers, physiotherapists, designers and statisticians) decided to enter a competition for universities which develop ideas that have the possibility of turning into companies.

Due to its potential and innovative nature, Ergonovus was a winning candidate and then entered into a process of accel-

erating its research projects, which finished in 2018. It is now dealing with the challenge of forming the company and progressing from prototypes to portable devices which will be able to predict and prevent illnesses by examining the risk profile of the workers of a company.

The foundation of the company are portable, external (adhesive) devices which are fixed on the body of a worker in order to assess the worker's risk curves and predict the possible onset of illnesses in the skeletal muscular system of an individual and the health risks of the organization as a whole.

Juan Alberto Castillo, the coordinator of Ergo Motion-Lab, explains that the system works in a very simple way: During a working day, micro-devices (similar to the sensors of electrocardiograms) are installed under the clothing of the person, with the aim of recording, measuring and analyzing the move-



ment of segments of the person's body (like the neck, rotator cuff and lower back) while the person carries out his or her daily tasks.

The information registered by the sensors is transmitted to a cell phone or storage unit where it is processed by a software which analyzes the data. Finally, a trained doctor reviews it and presents his analysis. "Knowing what may happen to the workers and how to anticipate it is predictive, not corrective medicine," says Professor Castillo, who is also the leader of the *Health, Cognition and Work Research Group* (GiSCYT) of Ergo-Motion Lab.

### A significant progress

The previous studies undertaken by the research team of Ergo Motion-Lab were the basis of the development of the devices and other services which Ergonovus now proudly offers to companies. For example, it was part of a project, which took place between 2007 and 2010 and was sponsored by the European Union, called *Training in Motion Analysis* (or "Trama") in which 12 institutions from Sweden, Italy, Belgium, Mexico, Chile and Colombia did studies of non-invasive motion analysis in order to provide doctors with crucial information about their patients. It also worked with the Karolinska Institute of Sweden, a research-led medical university, to develop a technology of its own.

The same happened with the consulting services of the laboratory, which began in 2010 with the Positiva labor risk insurance company. Their joint work has yielded information that has been important for the activities of the spin-off. For example, they found that such labor risk insurance companies focus their interventions on observations of the workers: They do not compile quantitative data, and, as Castillo points out, doctors often find it difficult to understand the complexity of the context in which people work, which heightens the chances of faulty diagnoses and treatments. Finally, two other circumstances burden the general health system. The first is that it does not adequately distinguish between ordinary and work-related health problems. One fact alone evidences this: A disorder as common as the carpal tunnel syndrome may lead to 20% of unnecessary surgeries.

In consulting, it was likewise found that most companies limit themselves to formulating plans and doing follow-ups that are only based on observation. A comparative study, done in 2012, of the 110 biggest Colombian companies which aim for a healthy workplace, discovered that 80% of them do not count on a structured system of secure health: In many cases, they do not keep accu-



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"Knowing what may happen to the workers and how to anticipate it is predictive, not corrective medicine," says Professor Castillo.

rate records or compile enough data or have executives who are specifically responsible for that area. That is, they focus on the plans but not their implementation. The strange thing is that while Colombia lagged behind other countries in implementing its system of labor security and does not have sufficient information about that field, it has better indicators than many industrialized countries which have been recording such data for a longer time.

Professor Castillo believes that one explanation may be that accidents and labor-related disorders are sub-reported. Added to that is the fact that Colombian workers tend to self-medicate or they fail to report accidents at work because they are afraid of losing their jobs or do not know how to claim their rights from the employer and the health system. What we do know is that this kind of knowledge has enabled the professionals at Ergonovus to obtain support for the conversion of their ideas into a company and they are now able to move from the prototypes to the manufacture of portable devices which are able to predict and prevent labor-related illnesses on the basis of risk profiles. ■



## INTERESTING FINDINGS OF THE RESEARCHERS OF THE SPIN-OFF

The work team on the line of research of Ergo Motion-Lab, which contributed the ideas for creating the Ergonovus spin-off, have undertaken several studies which show interesting aspects of occupational health in Colombia:

A widely implemented strategy, breaks in the working day, does not fulfill its objective, since the employee assumes that he must speed up his jobs to make up for the time "lost" in the work break, a situation which, in the end, causes the stress that results from tiredness. The laboratory discovered this in a joint study with the Université de Lorraine (Nancy, France), whose aim was to create a device which measures the stress caused by certain tasks assigned to employees: This stress is linked to anxiety and depression.

While Colombia shows a 20% annual increase in workplace accidents and disabilities, the cost of around 7 billion pesos a year is only a rough estimate. After suffering such accidents or illnesses, Colombian workers face a very long process of rehabilitation, which, in many cases, leaves them with permanent disabilities.

The productive sectors with the most workplace health problems are construction, public administration, hydrocarbons and mining (from a study done with the Faculty of Economics).

The spinal column is the weak point of Colombian workers and there is an urgent need to pay more attention to this problem because the population of the country is aging. 60% of its workers are now older than 45 and a variety of factors like their low stature and problems of overweight, along with an inadequate protection from occupational risks, may lead to higher costs in the health system and society in general. As Professor Juan Castillo always tells his students: "Your health is a blank check which is signed when you are 25 and cashed when you are 50."



# WHERE DID YOU BUY IT? I WANT ONE OF THOSE MYSELF

To watch how the world moves, adapt yourself and create value: That is the key to marketing. *Advances in Science* spoke to Lina María Echeverri, of the Universidad del Rosario, and Óscar Espinel, of the Banco Popular, both experts in the field, in order to understand what lies behind a marketing strategy and what myths surround it.

By: Carolina Lancheros Ruiz

Photos: Alberto Sierra, Leonardo Parra

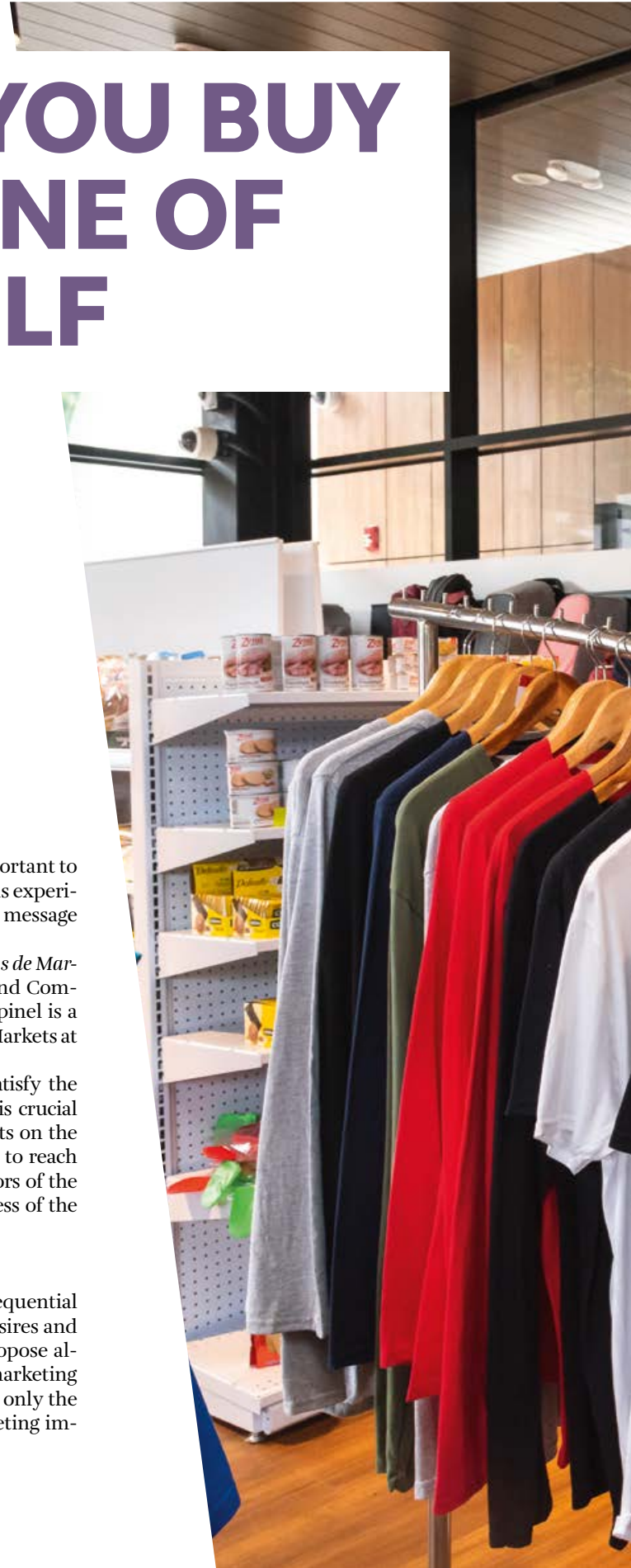
**T**he trends in the world are the dominant force, hence it is important to learn how to “read” them. At the current time, marketing sells experiences in which the client is unique. In a few words, that is the message for those interested in the subject.

Lina María Echeverri is the co-author of the book *Principios de Marketing* [Principles of Marketing] and director of Marketing and Communications at the Universidad del Rosario, while Óscar Espinel is a professor of Marketing Plans and manager of Segments and Markets at the Colombian bank *Banco Popular*.

Echeverri and Espinel agree on certain basics: Marketing must satisfy the needs of the client, people buy what others buy, a recommendation is crucial when it comes to making a decision and companies must have experts on the market who are able to create the strategic thinking which is needed to reach people: The core of it all, in the end, a point stressed by these professors of the Graduate School of Business at the School of Management and Business of the Universidad del Rosario.

***Advances in Science* (AS): What is marketing and what does it do?**

**Óscar Espinel (OE):** Marketing is best understood as a process, as a sequential matter where you must have an in-depth knowledge of the needs, desires and fears of consumers and on the basis of that profound knowledge, propose alternatives for the exchange of value. People sometimes think that marketing is the final stage of the process but that is a mistake. Marketing is not only the communication you do to persuade others to make a decision. Marketing implies adding value.









In the opinion of Óscar Espinel, "marketing is best understood as a process, as a sequential matter where you must have an in-depth knowledge of the needs, desires and fears of consumers."

**Lina María Echeverri (LME):** Marketing is used to go beyond the expectations of the client. It was traditionally said that it was meant to satisfy their needs and desires, but that is obsolete. And, also, we are not going to achieve it because in the face of so many options, the clients are not absolutely clear about what they want. Therefore, what you have to do is understand those needs to go beyond what they are looking for.

**AS: How do you make that possible?**

**LME:** The history of humanity and societies shows you the changes which are occurring and the relevant guidelines. Before, companies were the ones which determined the demand, now the demand is what determines the supply. You have to be aligned with the trends. The impact of technology forms trends, along with the organizational models, the way in which you relate to people and how brands relate to clients. There are international referents which show us the direction in which the world is going. And what does marketing do with that? It exploits it. For example, the empowerment of women is a trend. Marketing did not create it, societies showed that women were seeking gender equality, so marketing joins in the trend and your campaigns talk to women, you connect with them.

**OE:** The trends shape the world and today we have mega-trends, like the revolution of the client, who is much better informed, thanks to another mega-trend, which is the digital revolution. As a consequence, if you are a company, you have to show you are different. But that also entails threats: One is that other companies imitate you. But that is not a bad thing. The other is that what you created

## WHAT SHOULD A MARKETING PLAN HAVE?

### The diagnostic phase

- Analysis of the situation: The context in which the company is immersed is evaluated.
- Market research: To determine the needs and expectations of the clients.
- The marketing and financial objectives, taking into account the expected results in terms of sales, positioning and profitability.



### The strategic phase

- Segmentation strategy, focusing and positioning: Make a plan about who you want to reach and how you will do it in order to make yourself visible to those publics.
- Offer of value: It includes the portfolio of products and services. It should also mention the functional and emotional benefits offered to the buyer.
- Marketing strategies: They correspond to the strategies for price, distribution and communication.



### Budget phase

- Sales budget: Prediction of expected sales.
- Marketing budget: Calculated on a month by month basis during one year. It includes a plan for a follow-up of the implementation of the project.







"The empowerment of women is a trend. Marketing did not create it, societies showed that women were seeking gender equality, so marketing joined in the trend and their campaigns speak to women and connect with them," explains Lina Echeverri, director of Marketing and Communications.

**The person in charge of marketing has a double responsibility: He or she must be a good strategist and a good executor, because understanding the environment is no good if you don't act on it. You have to understand the wave, not because it might knock you down but to get to the bottom of it, go out the other side and move forward.**

quickly goes out of date. For that reason, the person in charge of marketing has a double responsibility: He or she must be a good strategist and a good executor, because understanding the environment is no good if you don't act on it. You have to understand the wave, not because it might knock you down but to get to the bottom of it, go out the other side and move forward.

**AS: One of those mega-trends is entrepreneurship. In terms of marketing, what can entrepreneurs do to become successful?**

**OE:** Three critical factors are responsible for failure. The first is informality. 74% of Colombian companies are family ones and that is not bad. There are very striking examples of family-owned companies like *Corona* or the *Grupo Aval*. The problem is believing that the business can be carried out without rigor or discipline. You need to have a structure and a method. Not having them leads to the second mistake, which occurs with financing. In marketing you have to be an ethnographer and a psychologist to understand your clients, but you also have to know about numbers, at least insofar as it has to do with a business: How much does it cost me?, at what price do I sell it?, how much is left to me?, what is my profit margin? And the third mistake is not knowing how to sell and failing to measure the whole of that process. The sales process has to be disciplined: You must sound out the possibilities, decide on a market volume, understand what conversion is.

**LME:** I would add another phenomenon to all that and it is expecting an immediate success. In entrepreneurship you cannot expect to have profits during the first four years, but people imagine that you will have them in three months and that is a big distraction for a marketing strategy. A big mistake of entrepreneurs is thinking that their product will sell itself and forgetting that you need a marketing expert to provide you with the tools for strategic thinking, a person who helps you to read and interpret the environment, and knows how to act in a sea of competitors.

**AS: People are now talking about intensity of rivalry. What is it?**

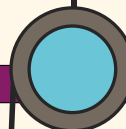
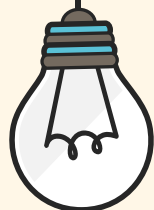
**LME:** Michael Porter, director of the Harvard Business School's Institute for Strategy and Competitiveness, says that

we are short-sighted when it comes to understanding the competition because we only think about a direct competition. But nowadays competition is everything. In higher education, my competition is no longer universities or institutes: Coursera (online courses) and YouTube are also the competition. Intensity of competition entails looking at the spectrum of options which might replace me and creating value to distinguish myself from others. My product is education, but the value which I offer is to positively change people's lives.

**AS: Now that the clients are well informed and have a lot of alternatives, what strategy do you recommend for captivating them?**

**OE:** Nowadays people buy what other people buy and consume what other people consume. In addition, a large part of the decisions we make are of an emotional nature. However, we are also motivated by functionality and the need for self-expression, the vindication of a message. So, once again, the important thing is to know how to read what motivates each person.

**LME:** The publics are no longer influenced by traditional advertising: They do not believe in the sellers or the products. Today, they believe in recommendations, so you should direct your efforts to making sure that other clients speak well of your brand. But the core of it all is no longer in the brand, but the person. That is why marketing today does not sell goods and services so much as experiences. And now a mass appeal is irrelevant, people want to feel special. Today, every client is unique. ■



**COLOMBIANS  
ARE NOT AS  
INDIVIDUALISTIC  
AS MANY PEOPLE  
THINK**



An experiment by the researcher César Mantilla, professor at the Faculty of Economics of the Universidad del Rosario, shows that you can cooperate and compete at the same time, and Colombians are not as individualistic as many people think. From this study there has emerged a model based on small rewards and group competitions which may help to improve the productivity of businesses and lead to better social conducts.

By: Magda Páez Torres  
Photos 123RF, Leonardo Parra

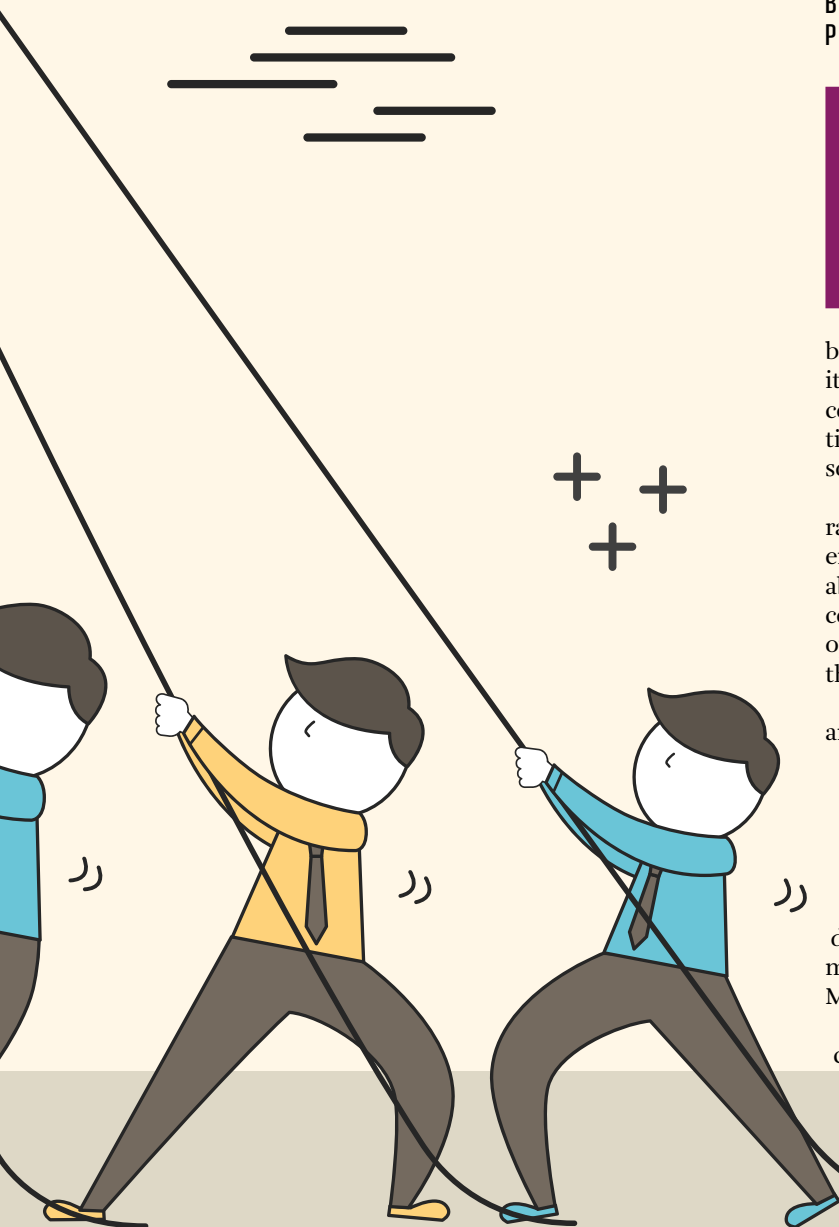
Many societies have a poor view of competition. It is often thought that it heightens selfishness and creates questionable habits which have a negative effect on people's surroundings. However, a study undertaken by Professor César Mantilla, of the Faculty of Economics of the Universidad del Rosario, in conjunction with researchers from the Universidad de los Andes (Bogotá, Colombia) and Heidelberg University in Germany, belies this idea, since it shows that it is possible to cooperate and compete at the same time and, contrary to the deep-rooted myths about the subject, competition can improve results in an organizational ambit and other social scenarios.

The study was based on a test given to 276 students in a laboratory of experimental economics. Seated in front of a computer in separate cubicles, they were asked to deal with a problem about cooperation on the exploitation of a natural resource of common use, like fish. The participants could decide not to cooperate, but many wound up doing so and those who obtained the highest marks received rewards as an incentive.

"The dilemma which each group faced was: If I do not get anything out of the resource, there is more of it for the community, but, individually, it would make more sense for me to exploit the resource, because the rate of the benefits, if I sell the fish, is much higher than the rate of conserving the resource. The big difference is that the rate of conserving the resource benefits everyone, whereas if I sell some fish, it only benefits myself. This is the classic tension between making decisions which are individually rational and beneficial versus making decisions which are collectively beneficial," Professor Mantilla explains.

He makes it clear that these dilemmas are frequent in the case of resources of common use, which range from the classic examples (pastures, fish, forests) to modern ones, like the broadband Internet connection in airports, where the system may collapse if everyone indiscriminately connects to the same network.

This study showed that when the students knew that their group was not competing with oth-



er groups, the rates of cooperation were relatively low, that is, they exploited a lot of the common resource. When, on the other hand, they knew they were competing with other groups, the rates of cooperation rose.

Professor Mantilla notes that even though the bonuses which the participants in the test received for belonging to the best group were very low – around 5% – they were motivated to cooperate, due to the feeling that the group they belonged to was doing well.

In his opinion, this shows that institutions which promote cooperation through the competition between groups, even when the economic incentives are small, may obtain better results. Nevertheless, he points out that bonuses or rewards are not necessary in every case, since altruism plays a key role in some cases. One clear example is donating blood, since, even though the donors do not receive anything in exchange, they feel motivated to do it, because they regard it as a contribution to the society in which they live. If they were paid for it, perhaps it would discourage those who donate their blood for the personal satisfaction they receive.

## THE PREMISES OF COOPERATION

According to a Harvard University study, which is cited by Professor Mantilla, there are five premises of cooperation.

The first is based on direct reciprocity: A person cooperates because he expects another person to cooperate with him.

The second is indirect reciprocity: The individual cooperates because he hopes that a second person will see that he is cooperating with the latter and the second person, the beneficiary, in turn, may cooperate with someone else.

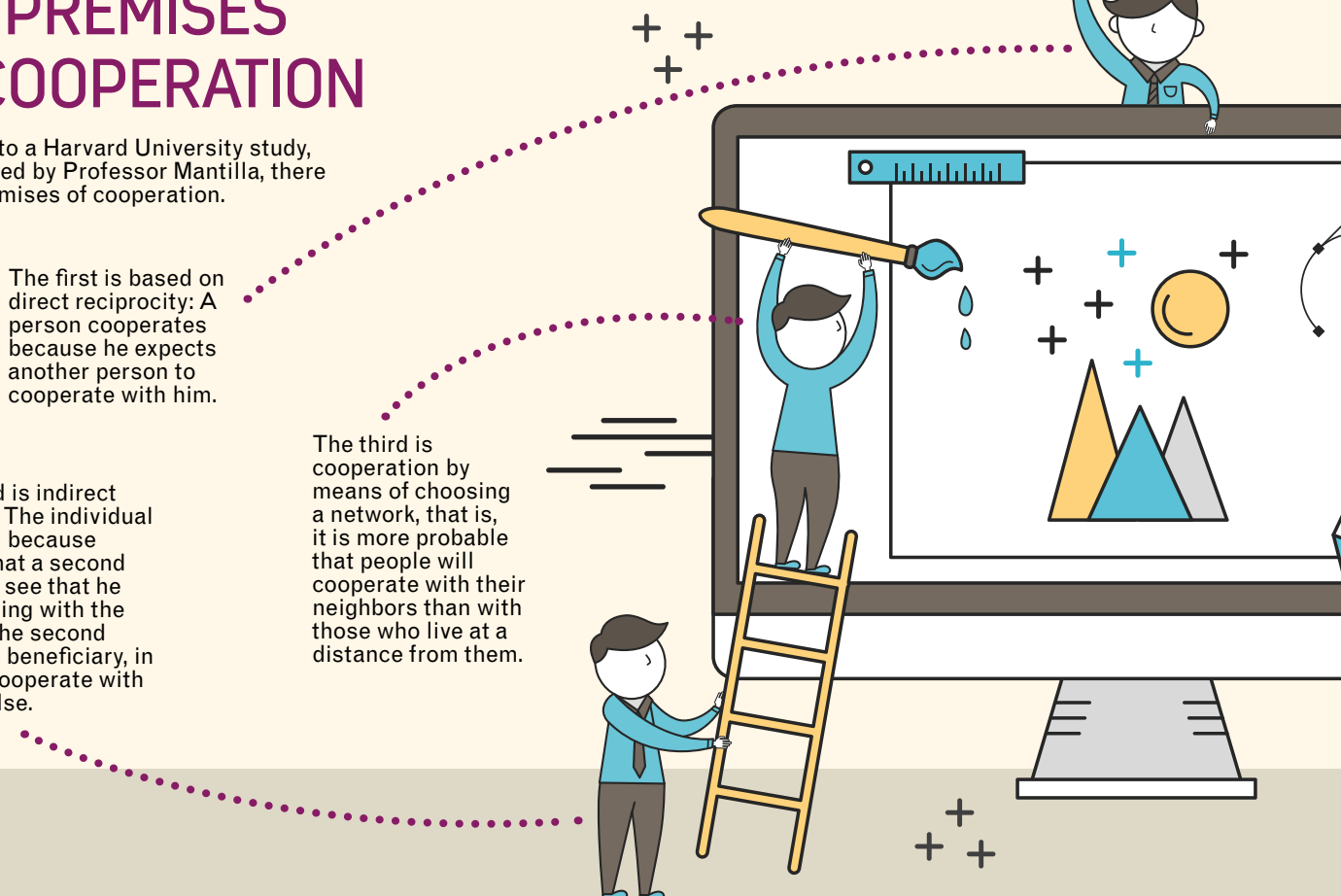
The third is cooperation by means of choosing a network, that is, it is more probable that people will cooperate with their neighbors than with those who live at a distance from them.

### Cooperation in society

This experiment also allowed for an analysis of social behavior in scenarios like the TransMilenio, the mass transport system of Bogotá, the capital of Colombia. In those cases, he explains, what quickly shapes people's behavior are not so much personal benefits as social norms.

“Usually, when one thinks about long-term cooperation, one has two mechanisms in mind: One is negative reciprocity and the other is positive reciprocity. A person who does not stand on line because no one else is doing it acts from a negative reciprocity. The more people I see who are not cooperating, the more I feel that it is less costly for me not to cooperate either. There are two reasons for that. First, the individual assumes that since the norm has already been violated, he can enjoy the luxury of failing to cooperate, and the other reason is that he thinks the fewer people who are cooperating, the lower the rewards of cooperating”, Mantilla explains.

Another clear example of these principles is paying taxes. In this case, in contrast with what happens on TransMilenio, which is governed by negative reciprocity, people go beyond wondering if most people pay taxes and decide to pay their own because the priority is the search for the common good, that is, if everyone pays their taxes, there will be more resources for the city and that means better public works for its inhabitants. “In the end, many decisions in life entail cooperating or not cooperating, from deciding whether to pay or not pay the fare on the Transmilenio to whether, once I am on the bus, I should move further along so that more people can fit into it. Most of these acts are not deliberate





or conscious ones. I don't spend all my time thinking about the benefits or costs of cooperating or not cooperating. It is a matter of social norms or acquired behaviors, since we are individuals who live in societies," Professor Mantilla remarks.

One of the mechanisms used to promote cooperation in these kinds of contexts are fines. However, they do not work in all scenarios. Professor Mantilla gives the example of a school in Israel, where an experiment was made in which parents who were late in picking up their children after school were fined. After the sanction was announced, most parents began to pick up their children late, because they thought that it was better to pay the fine and take advantage of that lapse of time to work longer, that is, they regarded the fine as a price paid to the school to look after their children for a longer time. "This is one of those cases where the incentives were poorly designed or the monetary incentives backfired. That is why people say that the road to Hell is paved with good intentions," Mantilla says.

### Possible scenarios

The experiment he made enabled him to extrapolate from these situations and apply them, initially, to organizational



César Mantilla remarks that "one of the most important achievements of this first experiment is to cast doubts on the widely-held belief that Colombians are no good at working in groups: Rather, it shows that one can encourage the kind of competition which has a positive aim and does not cause any harm to others."



ambits. In his view, it is possible to create incentives and thus improve the work in business groups, so long as you make sure that the competition is not very intense and thus the potential harms will be relatively low.

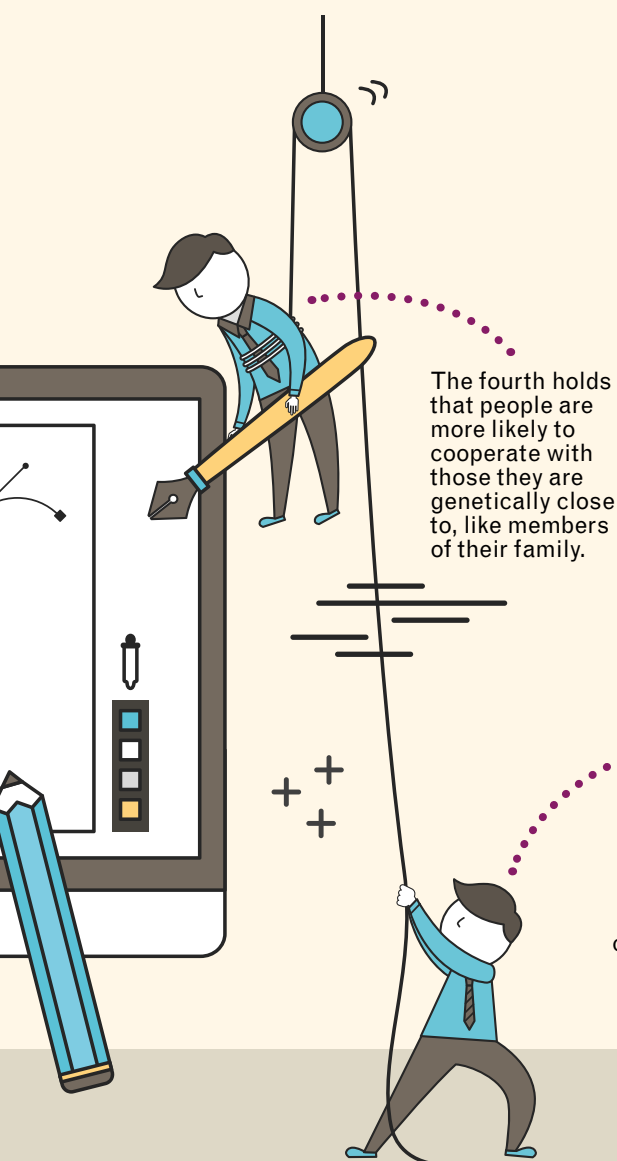
In countries like Germany, where super-markets divide their employees into different working groups, it was shown that the offer of bonuses increased sales, but it was obvious that some groups worked harder than others.

Along that line of thought, Mantilla warns that too much competition may damage the unity of the organization and explains that there are several aspects to determining whether competition is good, for example, measuring the profits of one collective against the losses of another. The idea is that the benefit of some is not too costly for the rest, since it would undermine the essence of the policies of competition between different divisions of the same company.

The exercise can also be applied to daily life. In other countries there have been competitions between schools to make children more aware of different situations, like protecting the environment. Mantilla believes that this model could be used in Colombia to encourage conducts to do with saving water and the sound disposal of wastes. For example, competitions of recycling will lead children to behave in a more socially responsible way.

While Professor César Mantilla acknowledges that further tests and studies are needed to make his research more authoritative, he feels that one of the most important achievements of this first experiment is to cast doubts on the widely-held belief that Colombians are no good at working in groups: Rather, it shows that one can encourage the kind of competition which has a positive aim and does not cause any harm to others. ■

**Mantilla believes that this model could be used in Colombia to encourage conducts to do with saving water and the sound disposal of wastes.**



The fourth holds that people are more likely to cooperate with those they are genetically close to, like members of their family.

Finally, choosing a group which is likely to cooperate with the people who make up the same collective. It was precisely this idea of group selection which motivated this investigation, on the hypothesis that the groups which have many cooperators will do better than those who have few.





# COMPETITIVENESS IS THE DRIVING FORCE OF THE WELL-BEING OF LATIN AMERICANS



Chile heads the list of the countries with the highest levels of competitiveness and thus, of human development. Colombia is at the midway point, but is in a position to rise. A study by Giovanni Reyes and Alejandro Useche, professors at the School of Management and Business of the Universidad del Rosario, is a referent for global discussions of this subject.

By: Ángela Constanza Jerez

Photos: Alberto Sierra, Leonardo Parra

**A**fter reviewing the correlation between competitiveness, economic growth and human development in twenty Latin American and Caribbean countries, with a special emphasis on the latter indicator and during the period from 2006 and 2015, Professors Giovanni Reyes Ortiz and Alejandro Useche Arévalo, of the School of Management and Business of the Universidad del Rosario, found that the countries which offer the best standards of living to their inhabitants are those which are the best in competition. They have also achieved a higher economic growth.

After a year of work, their study shows this in a clear and substantiated way. “In most countries there is a direct relation between competitiveness and human development. The more competitiveness we foment, the stronger we become in international markets and the better able to position ourselves with our products. That is going to lead to more international positioning but at the same time, it also drives growth and creates better conditions of life for the population. That means that the theory of the renowned economist Michael Eugene Porter, director of the Institute of Strategy and Competitiveness at the Harvard Business School, applies to our region,” Useche says.

According to the study of Reyes and Useche, Chile, Argentina, Uruguay, Trinidad and Tobago, and Panama are the countries in Latin America and the Caribbean with the highest rates on the Index of Human Development, which, according to the eminent economist from India, Amartya Sen (winner of the Nobel Prize in 1998), means that their citizens are free to choose what they most esteem in their lives since they have the required capacities and options. The way to measure it is with three variables: Life expectancy, incomes and educational levels.

The countries which do not show good results for those variables and are therefore the weakest in human development are Venezuela and those of Central America, with the exception of Costa Rica, that is, Nicaragua, Honduras, Guatemala and El Salvador.

“What are the factors which make some countries function well for their populations in the social field and others, not? There are twelve factors which I would resume in six: 1. Political



stability, 2. Macroeconomic stability, 3. The Rule of Law and inclusive institutions, 4. The physical infrastructure, 5. Education, and 6. Culture, understood as a set of values, beliefs and respect for norms,” Reyes explains.

Useche notes that the factor of institutions is directly related to the Rule of Law, with effective and exemplary sanctions and justice. In terms of competitiveness, infrastructure has to do with production centers located near sea coasts, so that the inputs which are needed easily arrive at the country at a low cost and the products can likewise be exported without cost overruns or complications.

Macroeconomic stability, in turn, has to do with the Gross Domestic Product, the payment of foreign debt, the levels of inflation and hyper-inflation, a stable currency and a developed financial system, especially one that is technologically advanced.

“As for education, in addition to improving the levels in general, it requires people who are trained in the management and development of technology. Costa Rica has had a policy of wagering more on technological development. In the past it was an exporter of pineapples and coffee, but since the 1980’s, it has created conditions for an economy based on technology and thus, it made important investments in education. That is why it comes out so well in the analysis,” Useche adds.

### And how is Colombia?

Colombia pertains to the sub-region of countries with a middling economy, in terms of the ranking Professors Reyes and Useche used in their study. In order of development, they are: Argentina, Chile, Colombia and Peru. Up to a few years ago, Venezuela was the last on that list, but its current situation now excludes it.

The analysis of the ten years chosen by the study showed a slight improvement in Colombia’s index of competitiveness – understood as the advantages or disadvantages a country has in placing products on international markets. The same applied to Peru and Panama.

In the case of Colombia, the poor performance of this indicator is directly related to its infrastructure. In contrast with what happens in countries with high indices of competitiveness, Colombia does not have production centers near its ports. It also affected by what some economists call the natural resource curse, which is simply that a country bases its economic development on its natural wealth. “The worst that can happen to Colombia is that it continues to find more petroleum,” Porter said eight years ago at a forum, entitled “Prosperity for All”, attended by Colombian government officials and business leaders.

## ECONOMIC GROWTH

The economies of Latin America and the Caribbean have shown a slow rate of economic growth, especially since 2009, due to the financial crisis which began in September, 2008.

Panama, Peru, the Dominican Republic and Bolivia continue to show significant rates of growth, despite the overall fall in the growth of production.

Venezuela, Trinidad and Tobago, Brazil, Ecuador and Jamaica were the countries with the lowest rate of economic growth between 2006-2015, especially in the final years of that period.

## COMPETITIVENESS

Chile is the most competitive country in the region.

Mexico, Panama, Uruguay and Costa Rica also have outstanding rates of competitiveness.

Venezuela, Bolivia and Paraguay are weak in competitiveness.



## HUMAN DEVELOPMENT INDEX

All of the Latin American and Caribbean countries which were analyzed seem to have progressed in terms of human, social and economic development.

Chile, Argentina, Uruguay, Trinidad and Tobago, and Panama are the countries with the highest indices of human development.

Nicaragua, Honduras, Guatemala, El Salvador and Venezuela are the nations with the weakest conditions of human development.

In the groups which were studied (subgroups of countries and regions, in accordance with their economies), only two statistically significant relations were found: 1. the large economies of the region, Brazil and Mexico, improved their competitiveness during the past decade; 2. The conditions of competitiveness and human development showed a statistically significant relation in the small economies of South America.

Despite the slow growth of its competitiveness, the two professors showed that there is a positive relation between competitiveness and human development in Colombia, which also applies to Bolivia, Panama, Paraguay and Peru. However, that is not true of the relation between competitiveness and economic growth and the relation of the latter with human development.

Useche insists that the formulas for overcoming this situation are linked to making stronger efforts to improve the country's infrastructure and education and strengthening its institutions and, naturally, its culture. In contrast with other countries, Colombia has one enormous advantage and that is its financial stability, its economic environment. "It is the envy of the region. It has never suffered from hyper-inflation or changed its currency. It has not even removed a zero from its bank notes or had trouble in paying off its foreign debt. Only in 1999 did it show a negative growth of its GDP for a whole year. No matter how big they are, its neighbors have had these problems several times," he points out.

Professor Reyes, for his part, sums up the message of their study: "In the first place, all of the efforts are important and the center of them all should be the human being and his society. In second place, we must acknowledge that it is only in companies, production units and organizations where wealth is really produced."



Giovanni Reyes concludes that all of the efforts are important and the center of them all should be the human being and his society. "We must acknowledge that it is only in companies, production units and organizations where wealth is really produced."



Alejandro Useche believes that "the more competitiveness we foment, the stronger we become in international markets and the better able to position ourselves with our products. That is going to lead to more international positioning."



The two researchers made those points in December, 2016, when they had the privilege of presenting their study at the plenary meeting of the universities affiliated with the Institute of Strategy and Competitiveness at the Harvard Business School, whose director is Porter. It was one of the six studies presented there and the first from Latin America to be so honored.

It was also published in the March, 2019 issue of the *Harvard Competitiveness Review*, as a further contribution to the debates on this subject which are taking place on a world level. ■

# IT IS POSSIBLE TO CONTROL PRICE VOLATILITY ON STOCK MARKETS

The volatility auction, a mechanism created by the Colombian Stock Exchange, does reduce price fluctuations. A team of researchers made up of experts from the Universidad del Rosario and the Universidad EAFIT were able to prove it.

By: Alejandro Ramírez Peña  
Photos: 123RF, Alberto Sierra

**W**e now know for certain that the Bolsa de Valores de Colombia [Colombian Stock Exchange] has managed to intervene in and reduce the volatility of stock prices with the use of a mechanism known as the volatility auction. It was proved by a study of markets, investments and financial performance undertaken by Professor Carlos Castro, of the Universidad del Rosario, and Professor Diego Agudelo, of the Universidad EAFIT.

The idea of the joint project which yielded this piece of good news arose three years ago, when the two experts first met in the middle of a symposium on subjects related to the micro-structure of markets. There, they discussed the mechanism which the stock markets of the world are implement-







ing to control strong price changes in stocks in a given interval of time. The Colombian Stock Exchange had already installed it, but at that time, in 2016, it had not yet assessed its effectiveness.

Professors Agudelo and Castro, along with Sergio Preciado, who was finishing his Masters in Quantitative Finances, decided to make this the subject of a thesis. In the end, the study which was intended for their degree turned into the earliest version of an article, based on their research, whose aim was to determine whether the mechanism, meant to halt the market, did achieve the desired results and the effects it might have on other variables of market quality, like liquidity and the volume of transactions.

“The research team managed to assess the mechanism used on the local market, which was of great interest to the Exchange. It showed that it did have the effect of lessening volatility, but not in the same way with the other variables of market quality. And, furthermore, it proposed a new method of causal inference to evaluate these kinds of studies of events in stock markets,” explains Castro, a researcher at the Faculty of Economics of the Rosario.

In Colombia, the mechanism is known as a volatility auction and what it does is to stop trading on the market for a few minutes in the midst of the movements of buying and sell-

ing, when the price of a stock goes beyond a predetermined price range in a very short time.

In that moment, the mechanism activates an auction in which there is no simultaneous encounter between buyers and sellers, but it simply uses the mechanism to make a list of who is selling and who is buying in order to find the equilibrium auction price.

“The auction has two parts: On the one hand, the orders to buy enter, which want low prices, and the orders to sell also appear, which want to negotiate at high amounts. In a given moment, the two positions cross and some of them can be executed. In that way, you reach an equilibrium but the interesting feature is that you halt the market for two or three minutes (it is not a fixed time because the closure is really a random one, intended to prevent a manipulation of the market), which also freezes further bids and establishes the number of shares which are going to be negotiated,” explains Diego Agudelo.

The mechanism is automatically activated by a previous calibration based on a calculation of certain price bands which trigger it, depending on whether that price is above or below the range which has been fixed.

## Results of the analysis

According to the researchers, their study enabled them to show that there was a clear and significant reduction of volatility, which indicates, in turn, that the mechanism implemented by the Colombian Stock Exchange is doing what it is expected to do.

Likewise, their analysis allowed them to review other variables of market quality, like liquidity and the volume of transactions. Even though these professors expected to obtain some improvements in those variables, they found none, but the two variables did not show a deterioration either.

“When it comes to drawing the balance sheet, I believe that the results were positive for the mechanism, in the sense that it fulfills the purpose it was designed for – to reduce volatility somewhat, without jeopardizing important variables like liquidity and the overall activity of the stock exchange,” notes Carlos Castro.

That being so, this is a mechanism which is designed to find a better price when it detects a kind of anomaly in the performance of a share or shares or they go beyond the range which is calculated on a daily basis. It thus provides the best scenario possible for those who sell and those who buy, because each of the parties always seeks the biggest benefit from these kinds of operations.

## HOW DOES THE VOLATILITY AUCTION MECHANISM WORK?

The volatility auction works in the following way: For example, a minimum and maximum price is set for the price of a share of ECOPETROL, in accordance with the expected price fluctuations in normal market conditions.

In a continuous market, purchase and sales orders are received and according to the order in which they arrive, the orders are transacted with the aim of finding the best price for all of the participants. If, in a given moment while trading goes on, the share price for ECOPETROL is above the maximum and the number of shares for which there is a demand is significant, the continuous process is halted and the volatility auction is activated.

During the approximately two and half minutes the volatility auction lasts, the purchase and sales orders build up. Then, at a given moment before this two and a half minute period ends, the auction is closed and the best price for the exchange of shares is determined in order to maximize the amounts which are being traded.



Reference price



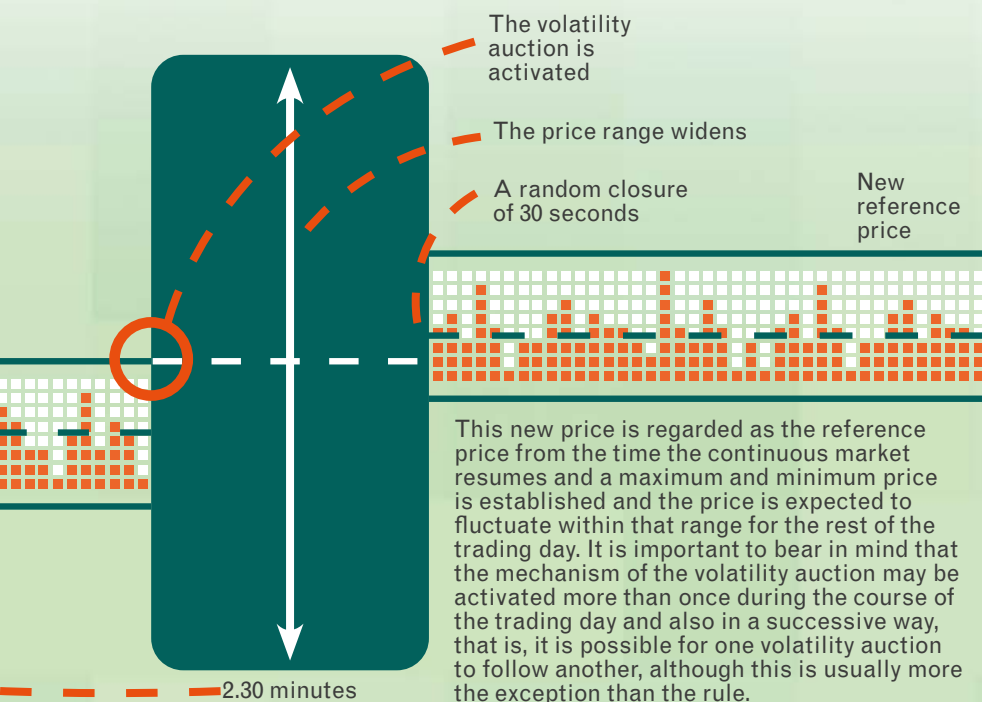


←  
“The results were positive for the mechanism of the volatility auction, in the sense that it fulfills the purpose it was designed for – to reduce volatility somewhat, without jeopardizing important variables like liquidity and the overall activity of the stock exchange,” notes Carlos Castro.



←  
In the opinion of Diego Agudelo, the implementation of volatility auctions makes a lot of sense, because there are shares which, while they are traded in a continuous market and are regarded as liquid, actually show periods of high and low trading which may distort the process of forming prices.

## THE VOLATILITY AUCTION



Source: Bolsa de Valores de Colombia [Colombian Stock Exchange].

And it also seems that both the buyers and the sellers have understood that: They appreciate the transparency it affords to their transactions, without any margin of manipulation and with a random closure of the auction. Furthermore, it offers the possibility of finding out whether a person wants to induce volatility in the market with a price which is above that established by the band and it keeps it within the auction, which stops that person from achieving his aim.

“Going beyond the investors perception of the mechanism, the important thing is that its design allows it to fulfill its purpose and, in turn, prevents people from being able to strategically use it to influence the performance of the market”, Castro adds.

Another aspect which should be taken into account is that, in accordance with international experience, these kinds of mechanisms are now being implemented in almost all of the stock exchanges in the world.

The researchers explain that when you put that into a global context, our markets – with stocks which are as liquid as that of ECOPE-TROL, the State oil company – can transact around 500 operations in a day, which are not many if you compare it what happens on markets, like the New York Stock Exchange or Nasdaq, whose operations take place in thousandths of a second and easily reach a million in half an hour.

In these highly liquid markets, discussions about the virtues of the volatility auction mechanism have focused on its effects on algorithmic trading and the implications these new technologies have for the behavior in the market of different types of investors.

“In the case of Colombia, the implementation of volatility auctions makes a lot of sense, because there are shares traded in a continuous market and hence regarded as liquid, but in reality they show periods of high and low trading which may distort the process of forming prices,” Agudelo adds.

Finally, the authors of the study underline their use of the synthetic portfolio method, which is none other than the methodology with which you establish the “proxy” for what might have happened with the share if it had not entered into the auction. This portfolio is constructed with stocks which did not enter the auction so that you can follow the performance of those which did enter it and thus have a referent.

There is no doubt that studies of this kind have been very important for the spotting of structural factors which allow one to understand how the local market works. ■

# URosario, scientific divulgation and visibility



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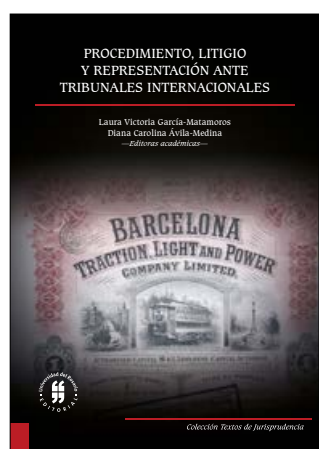
## HUMAN RIGHTS AND DEMOCRACY IN THE DIGITAL ERA

**María Lucía Torres-Villarreal, Paola Marcela Iregui-Parra**  
[Academic editors]

**Co-published with the Hanss Seidel Foundation**

The Universidad del Rosario, through its Legislative Observatory and the *Human Rights Research Group* of the Faculty of Jurisprudence, joined with the Hanss Seidel Foundation to organize a forum on *Subjects of special constitutional protection in the era of digital democracy*. The main aim of the forum was to create a venue to reflect, from different perspectives, on the current discussions about the changes in democracy and human rights in the digital era.

In addition, as has happened for the past seven years, the 8th National Competition on Research Incubators, entitled *The protection of human rights and democracy in the digital era*, took place in the framework of the abovementioned forum, which sought to encourage the participation of university students interested in subjects related to human rights and democracy in terms of the challenges posed by the implementation of new technologies.



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## PROCEEDINGS, LITIGATION AND REPRESENTATION AT INTERNATIONAL COURTS

**Laura Victoria García-Matamoros, Diana Carolina Ávila-Medina**  
[Academic editors]

This book is a theoretical-practical study of the norms on proceedings applicable as five mechanisms for solving international controversies, chosen as those which best represent the different ambits of international justice. Towards that end, the book discusses litigation and proceedings before: The International Court of Justice; the Inter-American System for the Protection of Human Rights as a whole—which includes the Inter-American Court of Human Rights and the Inter-American Commission on Human Rights—; the International Criminal Court; the International Centre for Settlement of Investment Disputes; and the Dispute Settlement Body of the World Trade Organization.

Based on a study of the primary documents, the book explains the proceedings of each international court or mechanism, so that it affords the reader an integral, coherent and systematic account of the judicial and quasi-judicial methods of international justice.



## Recursos Humanos en redes y organizaciones

Algunas reflexiones y desafíos

Merlin Patricia  
Grueso Hinestroza

— Editora académica —



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## HUMAN RESOURCES IN NETWORKS AND ORGANIZATIONS: SOME REFLECTIONS AND CHALLENGES

**Merlin Patricia Grueso Hinestroza**  
[Academic Editor]

Strategic Human Resources Management is a highly important subject in the world of organizations, since it is closely related to the results of operational performance like innovation, productivity and competitiveness. In the same way, Strategic Human Resources Management has proved to be a powerful predictor of instances of psycho-social performance like commitment to the organization, engagement with one's work, motivation and work satisfaction, among other results.

Due to the current challenges which organizations face, they have been driven to expand the limits of the management of human resources. Thus, an emphasis on the management of persons surpasses the limits of the organizational structure and touches on the inter-organizational structure in contexts like inter-organizational networks, alliances and clusters. Subjects like the organization's culture, leadership, trust and the management of human resources in organizations, networks, alliances and clusters receive a special attention in this book.

## ODONATA FROM PROTECTED AREAS IN COLOMBIA WITH NEW RECORDS AND A DESCRIPTION OF *CORA VERAPAX SP. NOV* (ZYGOPTERA: POLYTHORIDAE)

**Cornelio Andrés Bota-Sierra, Melissa Sánchez-Herrera, Fredy Palacino-Rodríguez**

Colombia is one of the most mega-diverse countries on the planet, but, paradoxically, it is one of the least explored. The recent editions of the Red List of Endangered Species show that the country has the biggest number of endangered species in the neo-tropical region. However, the effort to survey them has been weak, especially in protected areas which may probably harbor some of the rare species on the Red List. Recent explorations in six protected areas of Colombia have reported twelve new registers and for the first time describe *Cora verapax sp. nov.*, a rare species of Damselfly collected after more than 300 days of field work in the Tatamá National Natural Park.



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## BETWEEN - GROUP COMPETITION IN HANCES COOPERATION IN RESOURCE APPROPRIATION GAMES

**Juan-Camilo Cárdenas, Santiago Gómez y César Mantilla**

This study tested the effect of competition between groups with a game involving the appropriation of resources. In contrast with the shaping of voluntary contributions, the yield of the group in this game increases with the choice of a passive option: To not appropriate units of a resource of open access. This experiment was done with 276 undergraduate students who were divided into groups of four. It was found that the implementation of this multiplier of yield in small groups reduced the average assignment of resources by 31%. This device for improving efficiency was responsible for a 19 percentage point increase in the overall benefits in a given session.

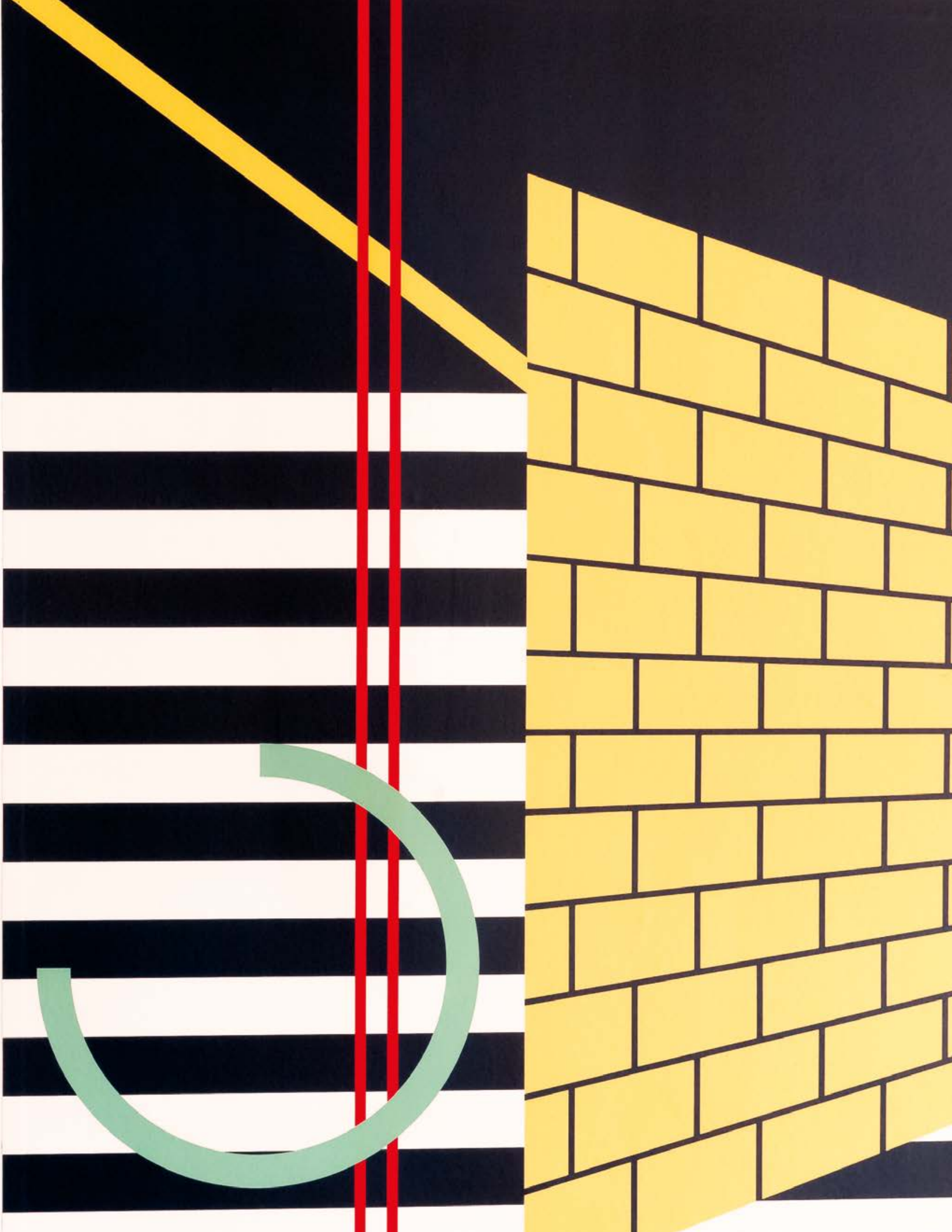


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# 7

**Efforts which  
transcend  
research**







# SCIENCE AND RELIGION: IS IT A COCK FIGHT?

No, there is no reason for their relationship to be defined as a clash nor do we have to spur them on. In the view of a group of philosopher/researchers at the Rosario, Nacional and Javeriana Universities in Bogotá, science and religion are two different and complementary human ambits which may coexist in modernity.





By: Amira Abultaif Kadamani  
Photos: Leonardo Parra, Ximena Serrano

**J**ane Wilde, the first wife of the British physicist Stephen Hawking, devoted herself, body and soul, to her husband, with the aim of helping his genius to stand out so that he would leave a mark on history. And in fact he did. From an early age, when he was only 32, this scientist proved his brilliance by trying, for the first time to unify the two major theories of 20th century physics: The theory of relativity and the theory of quantum mechanics.

He dedicated his life to finding the answer to such profound questions as the origin of the universe and establishing principles as absolute as the “theory of everything”, which was the preamble of his final conclusion – “God does not exist” – as set forth in his last book *Brief Answers to the Big Questions*, published in October 2018, seven months after his death.

However, in the opinion of Wilde, the two questions which Hawking and many modern scientists have not answered are: Why are we here?, and, for what purpose? Why haven’t they found the answers?: They are digging in the wrong place. For this linguist who believes in God, the answer does not lie in science, but in faith and love. The same concepts which, in her opinion, wrought a miracle in the life of her husband, who was diagnosed with lateral amyotrophic sclerosis at the age of 22, when his doctors told him he would only live for two more years. But he lived 54 years more.

That famous cosmologist, who sought to explain the great design of the universe to millions of laymen, turned into a cult hero for the mass public and an icon of the ironclad rationalism which so strongly governs modern science. According to that rationalism, religion – understood as a set of beliefs and practices in which the idea of a God may or may not exist – is based on superstitions which, of course, do not have any cognitive value and therefore the only possible relationship between the two (science and religious faith) is a conflictive one.

But, in the opinion of the researchers Carlos Miguel Gómez, Raúl Meléndez and Luis Fernando Múnera (of the Rosario, Nacional and Javeriana Universities, respectively), this combative image is not necessary and, in addition, it turns out to be very impoverishing because it does not allow one to fully understand what reason is or what religion is or what science is, nor their respective scopes and purposes. While from the scientific standpoint, it is assumed that rigorous research is the best approach man has to attaining a real knowledge of nature, and if, in turn, a certain way of understanding religion holds that only the doctrines of belief allow for a true view of the world in its totality, these three doctors of philosophy propose a third way: That in which science and religion are thought of “as human practices which emerge within a framework or horizon of prior meaning,” as they write in the introduction to their recently published book *Ciencia y Creación* [Science and Creation], which presents nine essays by well-known philosophers who uphold that point of view.

The analysis of Gómez, Meléndez and Múnera rests on the idea that “all of science presupposes an image of nature” and that this premise is analogous to an act of faith. It is worth noting that it is



Raúl Meléndez, a researcher at the Universidad Nacional de Colombia, believes that it is obvious that science does not exhaust all of the forms of rationality. "In any case, it is important that religion does not ignore the advances of science," he adds.

not necessarily religious, but an act of faith in the sense of trusting in something whose truth or falsehood cannot be proved. That is, the image of nature on which scientific research is based is not the result of the same image, but of the way one understands reality, which is given by science.

They resort to a metaphor which Ludwig Wittgenstein employs in *On Certainty*: "I distinguish between the movement of the waters on the river-bed and the shift of the bed itself."

In the words of Carlos Miguel Gómez, director of the Center for the Study of Theology and Religions (CETRE, in its Spanish initials), at the School of Human Sciences of the University del Rosario, "both science and religion and, in general, all human activity, are based on assumptions, on tacit principles, on taking for granted something which we have not stopped to think about or prove: It is an articulated and meaningfully ordered pre-understanding of the world on the basis of which we build knowledge and meaning." For this believer whose religion is theistic but not institutional and whose faith is, above all, a kind of experience and way of life, "you first believe and then you justify."

### Modern science and religion: A false opposition

According to what these researchers say in their book, "The Christian doctrine of the Creation, built on Biblical foundations and a fruitful dialogue with the philosophy of Ancient Greece, has become the pillar on which a new understanding of nature as Creation and the place of man in nature was established." And, thanks to that understanding, modern science arose, along with its turbulent but productive conversation with religion.

Hence, in their opinion, the idea that the two are opposed is basically wrong and "arises more from an effort to defend positions close to atheism or agnosticism than a scrupulous examination of the history of the emergence of science and the evolution of ideas."

The battle between science and religion occurred at a particular moment in history, specifically, after the Enlightenment, and it became very heated in the course of the 19th century, when the sciences began to flourish and understood their potential strength, which lay in the development of a mode of knowledge that was theoretically free of presuppositions and prejudices and, with a direct, privileged and objective view of reality, would guarantee a valid and more firmly based one than the view offered until then by philosophical doctrines in accordance with religion. However, this did not take that pre-comprehension of the universe into account nor the subjective assessments of the researcher – inherent in his human nature and formed by his culture and tradition – nor, in the end, that reason is not entirely autonomous nor can science completely justify itself.







**In the words of Carlos Miguel Gómez, director of the Center for the Study of Theology and Religions, at the School of Human Sciences of the Universidad del Rosario, “both science and religion and, in general, all human activity, are based on assumptions, on tacit principles, on taking for granted something which we have not stopped to think about nor prove: It is an articulated and meaningfully ordered pre-understanding of the world on the basis of which we build knowledge and meaning.”**

Does belief have a cognitive value? While this question has been one of the unfinished leitmotifs of 20th century philosophy, the approach of Gómez, Meléndez and Múnera says that it clearly does. In addition, they validate the opinion that science and religion pertain to categories which are different but not contradictory, since each is concerned with answering different questions. Since they are synthetic but not reductionist, we might say that the former tries to discover the laws which explain the

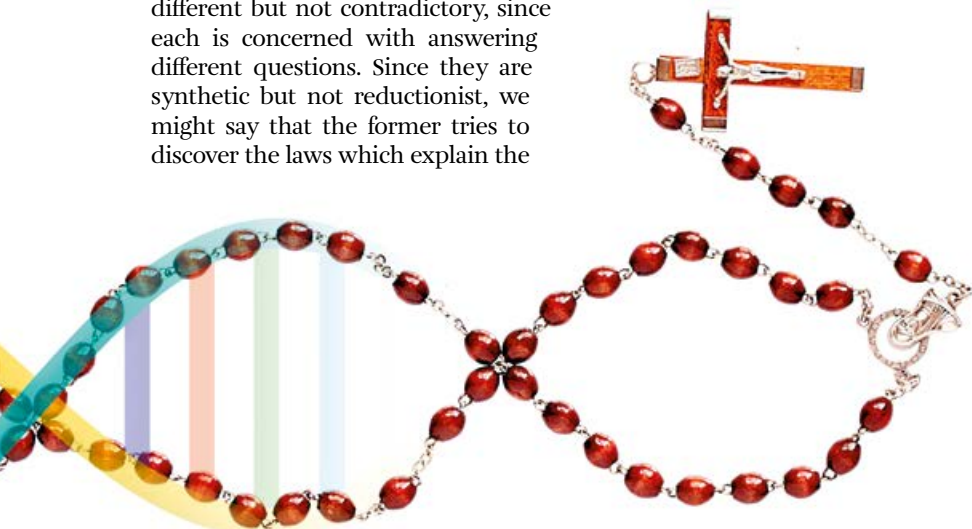
causal order of nature, while the latter makes an assessment of reality and the orientation and meaning of life. Thus, it is thought that the kind of questions which they address are different and that makes them complementary rather than incompatible.

But, even so, science may argue that no cognitive value can be derived from those functions of faith, only an ethical function perhaps. And in the face of that, these authors respond that “while religious belief plays different roles in the life of believers, all of them are only possible because religious belief points to what is real par excellence, that which gives a foundation, meaning and direction to all of the rest”. That is why a believer who does not assume that his faith says something about reality would fall into a sort of self-deceit, insofar as his beliefs would serve to steer his life in a certain direction at the same time that it would deny the possibility of embracing a truth, in the manner of the person who states that he is going to be happy but simultaneously thinks that happiness does not exist. In other words: Faith cannot understand itself if it excludes any pretension to truth from that.

“We are saying that science and religion pertain to different human ambits, but that to separate them too much may turn out to be problematic, because it may deny that beliefs have a cognitive dimension and for many, that is essential if it assumed that religion entails our understanding of the world,” Raúl Meléndez remarks, who believes that it is obvious that science does not exhaust all of the forms of rationality. “In any case, it is important that religion does not ignore the advances of science,” he adds.

To achieve that is very demanding, to say the least. But it turns out to be essential, otherwise there is a risk of not only succumbing to fundamentalism but also of clipping the wings of faith. “There is no reason to believe that the Creation is a matter of ‘once and for all’, as a single act which originates all that exists, but it should be understood as an unfinished process in which God deploys his work of creation through the very unfolding of his Creation,” the authors explain in their book.

According to this precept that creation is a continuous act, religion may work hand in hand with science to reveal the mysteries of the universe, which would allow mankind to find the meaning of that effort in the same process, something which Hawking perhaps noticed – and admitted – if we take into account that, according to his three children, he once said that: “The universe wouldn’t be much of a thing if it were not the home of people that you love.” ■



# FROM THE SHADOWS TO THE LIGHT:

## The motivations of a young researcher

To pursue knowledge, understand realities, broaden one's outlook and help others with their skills is what motivates the daily work of Nicolás González Tamayo, a lawyer and expert on international affairs who is devoted to research.

By: Carolina Lancheros Ruiz

Photos: Alberto Sierra, Milagro Castro

**A**cave. Men who are tied from head to foot look towards a wall. There is a burning fire and some shadows which are projected, as if they were the only truth. Later, they are freed, see a light in front of them, are temporarily blinded and then get a glimpse of a broader piece of knowledge which deserves to be shared with others.

For Nicolás González Tamayo, these aspects of the famous allegory –or myth– of the cave which Plato used to think about the concepts of truth and reality symbolize the greatest aspiration of his life.

He became interested in philosophy at a very early age and made knowledge one of his biggest objectives: “Knowledge as



“You turn into the disseminator of your own work and can spread the word to others. You can transfer what you initially think and materialize on a theoretical-academic plane into an everyday reality in a conversation at a moment when you are sharing your ideas with other people. It is another way of disseminating knowledge,” Nicolás González stresses.











His mission there involves field work with institutions and groups of migrants in Santa Marta, Pereira, Cúcuta and Bogotá, which has provided him with the information needed for his research but has also enabled him to get closer to these women and “learn about their experiences, outlooks and illusions” in a manner which would make anyone leave his or her cave and stop seeing only their shadows in order to get a look at, if not the light, then the shadows of something else at least.

Helping others is the source of one of his strongest motivations. He comes from a family of doctors, thus his willingness to serve others is more than latent and that is why he regards his profession as an opportunity to contribute to society “beyond the strictly academic plane”, thinking of “the impact it may have on people”, he says, even though that impact is not so clear when the result of his work are academic publications. He knows it and is very aware of that recurrent dilemma researchers face when they decide whether to maintain their academic language or make it more accessible to the general public, but he trusts that his research projects will have a sort of cascade effect.

Hence, with a study which evaluated the treatment of sexual crimes in international courts, for example, he sought to have a positive impact on the development of the cases brought before Colombian tribunals, in order to benefit the victims of sexual violence in the

**González, being a researcher is not limited to doing your job as an academic, but a condition which becomes part of your whole life. Whatever you do or whatever the role you play, you begin to see reality in a different way, which allows you to fight against stereotypes, deconstruct dogmas and analyze situations from different standpoints.**

context of the country’s armed conflict. “Perhaps those women will never read it, but when this information reaches the hands of a judge, he may be able to give life to this lifeless information and use it in favor of the victims.”

That is why research is important, because it provides people with tools to understand and describe realities but also to help to change or improve them. And not necessarily for the segments of the population which are studied, but even for the researchers themselves as well.

In that regard, Nicolás also recalls a study about the forced employment of minors in the informal sector of the economy, where he found that the premises which are regarded as unavoidable in one sector of the country are in some way inconceivable in others. Thus, while public policies and the bulk of the urban population are dogmatic about preventing minors from working, many rural, small-farmer, indigenous and Afro-Colombian communities believe that using children for farm work is part of their tradition and that ending those cus-





toms would even lead to the end of their communities. It is a thorny question about which he was only able to reach a conclusion for his individual life.

His close acquaintance with the clash between ancestral and traditional ways of life and the logic of a Western kind which tries to impose itself through the law made him understand that the urban life of those who are probably reading this article now – a sector he belongs to himself – is like a shadow which the men who are tied up see on a wall in the cave. In that case, he, as a researcher, can depict himself as one of the men who were liberated and able to see that there was something else beyond the cave. And that “something else”, which is also his country, deserves to be shared with those who continue to only see the shadows. That is his aim.

The same thing happened with a study he did in the context of the “Security, Peace and Conflict” project of the *Political and International Studies Research Group* (CEPI, in its Spanish initials) of the Faculty of Political Science, Government and International Relations at the Universidad del Rosario. The project was devoted to a study of the strategic development of the FARC guerrilla group during the peace negotiations with the Colombian government in Havana. His job was to keep up with what was happening there. “It was a living research project, which took on new nuances every day, changed and was nourished by new events. It implied studying the quotidian reality,” he enthusiastically recalls.

He is also aware of the importance of living a balanced life which includes not only his work, but his family and friends, and love and leisure, so during that period when he was strenuously following the trail of the negotiators and their decisions, he also found time to sit down and converse with his friends. And since the atmosphere of the country was so polarized and the information in the mass media turned out to be insuffi-

## A passion for research

Long before he formally became a part of a research group, Nicolás González formed a group with his undergraduate friends to undertake critical studies of the law. While it was not an institutional one, it was very rigorous. They called themselves the “*Escride*” group and it was his first project of an academic kind. During a period of a year and a half, those students held weekly meetings in which they presented their working documents. They were eventually joined by a professor who threw light on the subjects they were concerned with, a role similar to the one Nicolás now plays in an official capacity as an advisor to the research incubators of the *Human Right Research Group*. His role is to guide the training of the younger members, provide feedback for them and show them the right path for the continuance of their research projects.

cient, at least for him, Nicolás was able to share the ideas which he was formulating on the basis of his profound knowledge of the situation at that particular time and thus challenge prejudices about disarmament, the juridical status of the agreements, the political ambitions of the FARC and what might happen when the peace agreement began to be implemented. “Making use of what I had built up in my study, I had criteria of judgment that allowed me to speak of other realities,” he remarks, with satisfaction.

That is another version of the cascade effect which he refers to when he speaks of linking his work as a researcher with society as a whole, and it is also another example of how “standing outside of the cave” can help others to stop only seeing shadows. “You turn into the disseminator of your own work and can spread the word to others. You can transfer what you initially think and materialize on a theoretical-academic plane into an everyday reality in a conversation at a moment when you are sharing your ideas with other people. It is another way of disseminating knowledge,” because in the end, he believes, “being a researcher as such is not limited to doing your job as an academic, but a condition which becomes part of your whole life. Whatever you do or whatever the role you play, you begin to see reality in a different way, which allows you to fight against stereotypes, deconstruct dogmas and analyze situations from different standpoints.” ■







# CHRISTIANITY CHANGED THE IDENTITY OF THE INDIGENOUS INHABITANTS OF GUAINÍA

The communities of this Colombian Department mostly practice an evangelical Christianity. Some anthropologists interpret this as a case of cultural loss. For the indigenous people, the adoption of Christianity is regarded as a positive change in their relations with agricultural colonists and the State. Who is right?

By: Juliana Vergara Agámez  
Photos: Alberto Sierra, Esteban Rozo

**T**he past and present of the native inhabitants of the Colombian Amazon cannot be understood without taking into account the processes of evangelization and colonization which have reshaped these societies. As in all human societies, there are nuances, variables and very complex relations which have been built up over centuries. To understand a little more of this reality, Esteban Rozo, Professor of Anthropology at the School of Human Sciences of the Universidad del Rosario, has been carrying out several anthropological and historical studies, mainly in the Departments of Guainía and Vaupés.

He became interested in this subject when he was doing field work in Guainía in 2005 at a time when he was working on a project on indigenous political organizations. There, he began to see the social and political importance of the indigenous evangelical churches. It was then that he witnessed the process of a mass conversion to evangelical Christianity which involved most of the Department's indigenous population. That and other parallel processes, like the establishment of the Commissariat in 1965, and the differences and similarities between the

← The racism of White men and mestizos still exists in Guainía and a certain empowerment by evangelization gives the victims a chance to defend themselves against it.



Catholic and evangelical missionaries there, are the subject he studies, which has resulted in a number of publications.

Rozo began by showing that this could not simply be regarded as a phenomenon of cultural loss. He explains that the evangelical churches in Guainía are autonomous, and their followers speak their own language and have their own pastors. Its present situation is the result of a new cultural configuration, in which its practitioners do not see any contradiction between simultaneously asserting their indigenous and evangelical identities. He refers to an indigenous Christianity which causes a special relationship with modernity and indigenous practices that are considered to be traditional. The indigenous evangelical Christians do not “*mambear*” (consume coca leaves) or smoke or drink alcohol, nor do they celebrate their traditional fiestas.

When seen from without, the changes associated with their conversion to Christianity are thought of in a negative way. As Rozo points out, “in the imaginary there is the idea that for an indigenous person to be really indigenous, he or she must be less modern, more scantily dressed and live in a more remote place.” The idea that they are children who have to be cared for persists, when in reality they are free beings with rights and the autonomy to make their own decisions.

How do you notice the changes? Many communities in Guainía have their own church and have changed their internal political organization. There are two heads of each community: The captain (*capitán*), a powerful figure who emerged in the epoch when wild rubber was exploited in the region and is responsible for the community’s relations with the State, and the pastor, the spiritual and moral leader. In the face of external actors, like miners, they are responsible for establishing the norms of coexistence, like the prohibition of alcohol and prostitution, in exchange for which they permit such actors to exploit their natural resources and provide jobs for the men of the community.

But while anthropologists have traditionally had a negative view of such arrangements, the indigenous inhabitants themselves see it in a different way, as Rozo has been able to show. What they feel is that they are building new relationships with the colonizers and *blancos* (white men), since the latter two cannot treat them as savages. They defend their position, emphasizing that evangelization “civilized” them and put them on the same level as those external actors, because they now know how to read and write in their own languages, but also know basic mathematics,







which enables them to do business with those outsiders and defend their interests.

### It all began with a woman

In an article entitled *Between rupture and continuity. The politics of conversion in the Colombian Amazon*, Esteban Rozo, who has a doctorate in Anthropology and History, tells how the process of converting the indigenous communities began in the 1940's with the arrival of a U.S. missionary, Sophie Muller, who penetrated these remote territories, learned several native languages and then translated the New Testament into them. She thus taught the indigenous peoples to read and write in their own languages. "She won the race with the Catholics," he says.

The Catholic missionaries, specifically the Montfort Fathers, many of them French, arrived in the region within the framework of an Agreement (*Convenio de Misiones*) between the Colombian State and the Vatican that was signed in 1902. Their official status was as "protectors of the indigenous peoples": They were also sent to exercise the State's sovereignty over a vast region then known as the "National Territories". Their work of evangelization was a little more tolerant of the traditional practices of the indigenous inhabitants of the region. They took charge of the education of children and youngsters in boarding schools and orphanages, while the evangelicals focused more on the adults. The Catholic missionaries settled in Vaupés, while the evangelical ones settled in Guainía.

Rather than defending one or another of the two missionary groups, Rozo seeks to analyze the role of Christianity in what were then known as the National Territories. He stresses that it had a much more ambiguous effect than is usually recognized, one which has to be investigated and analyzed because "it forces us to rethink the relations between the indigenous communities



In the opinion of Esteban Rozo, "in the imaginary there is the idea that for an indigenous person to be really indigenous, he or she must be less modern, more scantily dressed and live in a more remote place."

**The indigenous evangelical Christians do not "mambear" (consume coca leaves) nor smoke or drink alcohol, nor do they practice their traditional fiestas.**

and the State," taking into account the heterogeneous experiences of the different ethnic groups with the political-administrative institutions and their representatives.

### Racism persists

This researcher also points out that stereotypes about the indigenous peoples still persist, like the notion that they are lazy or their women are an easy sexual prey for White men. The racism of White men and *mestizos* (those of mixed blood) still exists in Guainía and their empowerment by means of evangelization offers the indigenous people a way to defend themselves. For those reasons, Rozo believes that the key is to intervene in negative imaginaries and stereotypes which deny the humanity of the indigenous inhabitants of the region. "We have to start with a fundamental acknowledgment of the truth that races only exist as social facts, not as a biological one," he vehemently insists.

That is why it is important to understand the social and political context of racism, as well as its new forms of expression, which are more subtle, but just as harmful. It is likewise essential to think about how the peripheral and marginal regions of the country have been shaped, employing a more complex view of colonization and evangelization as processes which have been crucial in the configuration of the nation and its indigenous societies. ■





**JOIN A  
RESEARCH  
INCUBATOR:  
IT'S WORTH IT!**





Training in research and identifying the lines of interest in which students can develop their professional skills has been an opportunity for learning for the Research Incubator of Applied Economics of the Faculty of Economics. Those who have been part of this group underline the importance of working with Masters students and young researchers.

By: Inés Elvira Ospina

Photos Leonardo Parra, Alberto Sierra

**T**he Research Incubator of Applied Economics at the Universidad del Rosario is a response to a mixture of concepts set forth in the book by Tom Apostol (a U.S. engineer and mathematician who specialized in analytic number theory) and the colloquiums hosted by Manuela Sanz de Santamaría in the colonial period, where a number of intellectuals from the country then known as Nueva Granada got together to discuss subjects they were interested in.

Darwin Cortés Cortés, the current director of the group, recalls that the incubator emerged at the end of the 20th century, in a very informal way, and how it was an initiative by a number of students who wanted to round off their formal studies. Between 2002 and 2003, it became part of the Faculty of Economics and turned into an important driving force in the training and selection of students who might join the “Young Researchers” program.

“Those outstanding students became young researchers and then enriched the Faculty as professors, after they got their post-graduate degrees and acquired professional experience,” Professor Cortés explains. In those years Andrés Zambrano and José Guerra were teachers at the Faculty and they got together with the idea of creating a venue for work along two lines: The first of discussion, and the second, training students in the basic skills of research.

In the first, a subject of interest in some field of economics was set forth and then studied in discussion groups, with guest speakers who joined in the debates with the students. Thematic groups which worked on subjects of common interest were also formed.

In the line which sought to develop skills, students were strengthened in the use of econometric methods, the handling of statistical packages and the use of word processors like LaTeX or Stata and some aspects of programming which were not included in the undergraduate curriculum at that time.

“Zambrano and Guerra were two very charismatic people who took on a load of things and that provided a very important thrust for the incubator. They also employed subtle methods of assessing

the candidates so that those who were chosen would participate out of a pure interest in the work. For example, the meetings were held on Friday evenings, which tested the commitment of those who were truly interested,” Cortés recalls, who was then a junior researcher at the university.

This way of working led the group to become a tool to strengthen the Faculty. “The incubator was a fundamental part of the change the Faculty went through in the same years, because it helped us to choose the students who were interested in research, who had the profile of very strong candidates since they belonged to the group of young researchers and would certainly follow the path of a postgraduate and later a doctorate degree,” Darwin Cortés explains.

Another founding member of the group is Paul Rodríguez, who is currently a professor at the Faculty too. “I met him when he was a student of mine in the Masters program, he later became a young researcher and worked with me on his thesis and during that period he took charge of the group, along with Jorge Pérez, who is currently a researcher at the *Banco de México*,” adds Cortés, who has a doctorate in Economics from the Toulouse School of Economics.

That is how the incubator consolidated itself in 2006. At that time, the Masters students who made up the group proposed an even stiffer challenge: To publish a magazine, which resulted in several print editions and whose final working document, by Juan David Gómez, was published in 2011. After that, it became an online journal.

### A new thrust

To continue with their postgraduate studies, the founding professors left the incubator and its leadership passed to other teachers who continued with the job and managed to enroll more than 50 students in the program between 2008 and 2009.

When he took over the reins of the program, Cortés found that a number of changes had occurred, like the fact that the meetings were no longer held on Friday evenings and the curriculum of the course included subjects which dealt with econometric methods and others which arose in the incubator. Thus, novel aspects began to appear, like panels of experts who spoke about monetary policy, education and illegal mining, among other subjects.

In 2010, the Faculty issued a norm whereby young researchers had to participate in incubators, which led some people to regard the group as yet another academic burden and not as a venue for discussion, enrichment and debate.



Juliana Sofía Aragón says she began to get an in-depth understanding of much of what she now works on at the incubator. “When you do research, it entails a systematic effort which will always be useful to you.”



Hence, its members decided to reinvent themselves and face the new challenges. The first: How to capture the interest of the students. “To begin with, an incubator always has a high enrollment of students, but as the semesters of their courses go by, the academic burden leads them to abandon it,” Professor Cortés explains.

The second challenge is how to coordinate the interests of the different participants, since the group originated in the Faculty rather than a particular interest of a professor and that is why it has to achieve a balance between the interests of the students, young researchers and professors.

The third challenge, says Cortés, is to make sure that the content remains novel, that is, different from that of the undergraduate curriculum, and that it strikes the attention of everyone.

At the current time, the group issues an invitation to students who wish to be in the incubator, and on the basis of the group which joins the incubator, the interests they have are defined, a number of working groups devoted to those subjects are formed and the young researchers who are interested in them are selected.

**The incubator issues a general invitation to students who wish to join it, and on the basis of the youngsters who are chosen, an assessment of their interests is made and the working groups are defined.**

### Going beyond an academic approach

In 2017, when they were studying for their Masters, Juliana Sofía Aragón and Germán Pulido coordinated the work of the incubator. Before that, in 2013, when they were undergraduates, they were already part of it. “It was a new stage in the incubator. We worked in thematic groups and the young researchers participated much more. We discussed ideas, read documents and shared what we understood,” Juliana Sofía recalls.

“What most stood out was this inter-generational reciprocity. Some of those students in the incubator became young researchers and those who had been among them took over the coordination of the incubator. It was a very interesting example of one generation replacing the other,” she remarks.





Darwin Cortés Cortés, current director of the group, explains that the incubator has turned into an important driving force in the training and selection of students who might join the “Young Researchers” program.

### The three major challenges which the incubator now faces:

- Motivation
- The coordination of interests
- Maintaining a novel content

At the current time, the incubator is made up of 10 Masters students and 20 undergraduate students.

The thematic groups investigate political economy, the economics of gender, econometrics and simulation and macro-economics, among other fields.

Both of them entered the Program of Young Researchers and took over the coordination of the research incubator. Under their leadership, Juli-ana Sofía Aragón and Germán Pulido explain, they worked on three fronts. By means of the groups they sought to guide students towards the subjects which they would potentially like and might further develop as professionals, ones which were not dealt with in depth when they were undergraduates. In the second place, they strengthened the students skills in programming and wrote texts used in an introductory course on programming, which provided the students with the basic tools needed for research work. And the third line built a bridge between the students and the Faculty by inviting guest speakers to talk about a specific subject.

“Much of what I now work on – the fields of the economics of education and health which I am now researching – were part of the subjects which I began to study in depth at the incubator. The way in which I work also derives from there, because when you do research, it entails a systematic effort which will always be useful to you,” Aragón points out.

Like him, other graduates on the Faculty acknowledge that their time in the incubator was invaluable, due to the experience they gained, their training in the research techniques and its leadership. ■



Germán Pulido, who is now a professional, belonged to the incubator in his student days. He recalls that its most outstanding feature was its intergenerational reciprocity. Some of the students at the incubator later became young researchers.









# CARLOS EDUARDO MÉNDEZ:

## Teaching is much more than his work, it is his life

Everyone has had a teacher who has left a mark on their professional life. This is true of Carlos Eduardo Méndez Álvarez, one of the most outstanding professors at the School of Management and Business of the Universidad del Rosario, who, for more than four decades, has had a positive influence on his students, many of whom are well-known professors, including some presidents of the Rosario.

By: Ximena Serrano Gil  
Photo: Leonardo Parra

**U**pright and composed, he stands in the midst of the students who come and go. How you can fail to recognize him?: A man of medium height, with perfectly combed hair, an impeccable suit and a gentlemanly hello, accompanied by a kind smile which complements our meeting on a cold morning in Bogotá.

On the way to his office, as he walks with a slow gait, we cross the green, spacious campus of the Universidad del Rosario, seat of the School of Entrepreneurship and Innovation, and while he proudly points out its new buildings, including its sophisticated laboratories, he says: "Who could have believed it, 42 years ago we only had 250 students."

Professor Méndez is a distinguished business consultant and also recognized for his important contributions to the study of the culture, climate and changes in organizations. In addition to his achievements in the academic, research and professional ambits, he is a charismatic human being, noble

and sensitive, who enjoys the boundless esteem of his old and new students. When he is told that this article will try to focus on his academic work and his human side, his eyes moisten and his voice breaks.

### From a seminarian to a sociologist

Comfortably seated in his armchair in his office, which is not very big but comfortable, his face lit by a smile which is half-roguish and half-nostalgic, Professor Méndez speaks of his life in a quiet and measured tone of voice and how, when he was only 10 and someone asked him what he wanted to become when he was grown up, like any child, he said a doctor one day and an engineer the next, but there came a day when he said "I want to be a priest."

At once his mother enrolled him in a school (*preseminario*) which prepared boys for a seminary. Thus, a building which stood alongside what is now the Santa Clara Church, on calle 100 with Carrera 7th in Bogotá, became his

Among his greatest achievements, this academic singles out his role in the training of many people and his academic output. In 2018, he was nominated for the *Portafolio* magazine's Prize for the Best University Teacher.

home, a place where, along with 500 other boys, he began his high school courses. After that, he entered the *Seminario Menor San Benito* (San Benito Minor Seminary), which lay in the town of Sibaté, on the outskirts of Bogotá, and is now the seat of the *Escuela de Suboficiales de la Policía Gonzalo Jiménez de Quesada* (Gonzalo Jiménez de Quesada School for Non-Commissioned Officers of the Police). "It was a pleasant life where I was trained, taught discipline and learned about spirituality, but where they also allowed us to be boys. It was there that my passion for writing began: I did it for the Seminary's newspaper."

Two years before his courses ended, he decided he no longer wanted to become a priest, so, once he obtained his high school degree, when he was a little confused about his future course, he chose to study sociology at the Universidad Santo Tomás, without having a clear idea of what sociology was.

When he was awarded his degree, with a thesis which won an honorable mention, he looked for a job, but it was a time when sociologists had the reputation of being *guerrilleros*. With a smile, he jokingly explains: "There was the referent of Camilo Torres, a well-known sociologist, a teacher of the Universidad Nacional, who wound up with the guerrilla in the bush. They told us that sociology was useless." In the end, he got a post as a teacher of philosophy and religion in a high school and after that, worked as a sociologist in the *Instituto Colombiano de Bienestar Familiar* – ICBF (Colombian Institute of Family Welfare).

### The academy is his life

The life of this calm and always smiling academic has been devoted to research, teaching and the private sector. One moment which changed his life was when, at the age of 24, he decided to study for a Masters in Business Administration at the Universidad de los Andes. "That opened the world to me at a time when



↑ Professor Méndez places a special emphasis on respecting and setting an example for one's students, which are the two fundamental factors in the life of an academic.

people did not know what a MBA was. I was interested in marketing, but after that I focused on the study of organizations."

For 22 years, he was linked to the Universidad Santo Tomás as a professor, dean, and director of research, director of the Masters program and director of specialized studies, until the Universidad del Rosario asked him to devote himself exclusively to its programs.

With a serene gaze, he becomes absorbed in the view from his window, where he takes in the mountainous landscape and says in a tone of nostalgia and gratitude: "Here, I have been able to lead my life as a teacher, researcher, person and also as a professional." He pauses to catch his breath and continues: "The academy is my life and the Rosario has been the driving force of my career."

He worked in the private sector for ten years: In the *Carulla* supermarket chain and the *Kokoriko* restaurant chain as their manager of operations; and in *Texaco*, where he managed the founding of the "Star Mart" mini-supermarkets attached to their gas stations. After that, he worked for the consultants firm of Enrique Luque Carulla, who had been the general manager of *Carulla* and his professor at the Universidad de los Andes. Finally, the owner of *Hamburguesas El Corral*, a chain of hamburger restaurants, who had been his student, employed him as the human resources manager of the company. That was a very enriching experience, but as he himself says. "I rethought my life and decided to return to the university, full time, 22 years ago."

### A witness of great changes

His eyes, which show signs of tiredness, have witnessed the evolution of the University's School of Management and Business:





“The creation of the undergraduate programs in International Business, Logistics and Production provided us with a great forward thrust, along with the specializations, the Masters and the Doctorate. We transformed the Faculty of Administration into the School of Management and Business. In a parallel manner, the University in general began to grow, strengthening its positioning and accreditation in higher education with research, the high quality of its programs and new challenges.”

“In 1977, the university did not have more than 800 students. We all knew one another and we would meet up in the *plazoleta* (little plaza) of the University. Many important people in the country had studied at the Rosario. We only taught Law, Administration, Economics, Philosophy and Medicine,” he finishes, with a sigh.

### A harsh blow

Four years ago, he suffered the harshest blow in his life. He had cancer of the liver and had to undergo a liver transplant. When he speaks of that experience, he cannot avoid a look of distress. There is a silence during which he struggles to regain his composure and all he can say is: “I got over it. We battled on and I am grateful to the Universidad del Rosario for its support and unconditional accompaniment”.

As he explains, the following two years were very difficult, but, harsh as the experience was, he found that the best therapy was to keep active and write a book. He counts off the time: 29 months since he has not returned to the clinic and the results of his examinations are now normal.

He was terminally ill a couple of times: “That occurrence brought me close to God again. That is why I wrote the follow-

**Professor Méndez is an outstanding business consultant, he is also known for his important contributions to the fields of organizational culture, climate and change.**

ing in my last book: ‘I testify to the importance of prayer, faith and a positive attitude in the moments of one’s life.’” Despite how painful it is to speak of and remember that setback, he always finishes with a smile he draws strength from.

### His legacy

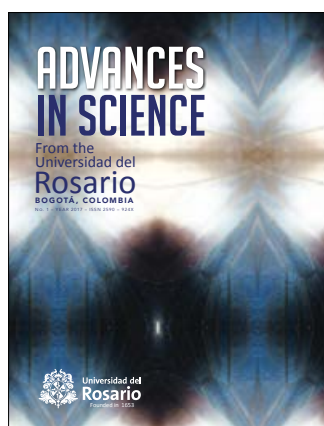
As he reminisces, Professor Carlos enters into a sort of monologue in which he says, in his own words, “one day, as I was reflecting, I said to myself: Hey, people have a lot of problems in writing their degree thesis. Let’s create a 20 page pamphlet to give them some instructions – it became the *Guide for drafting designs for research in the economic, administrative and accounting sciences*. It gradually grew and evolved to become a book of more than 300 pages, entitled the *Design of processes of research, with an emphasis on the managerial sciences*. It has now gone through four editions.”

Méndez has made major contributions to the fields of the methodologies of research and organizational culture. At the current time, thanks to his dedication, there is a project on organizational culture in the line of organizational studies of the *Business and Management Research Group* of the university. In addition, he is revising his latest book, which is entitled *Culture, the condition for the success of the strategy*.

Professor Méndez places a special emphasis on respecting and setting an example for one’s students, which are the two fundamental factors in the life of an academic. Last year he was nominated for the *Portafolio* magazine’s Prize for the Best University Teacher and he explains that his greatest achievements have been to participate in the training of many people and his academic output. “I have always counted on the support of the deans of the School. Some of them have been my students,” he says in a quiet voice, adding that he feels very proud of that, because leaving a mark is a great satisfaction.

In a voice choked with emotion, this tireless and active professor remarks: “After my illness, what has motivated me is to come here, be with people, sit down at my desk and write, go the classrooms and transmit knowledge: In other words, feel that I am alive.” ■

# URosario, scientific divulgation and visibility



## ADVANCES IN SCIENCE UNIVERSIDAD DEL ROSARIO NO. 01 - 2017 - BOGOTÁ, COLOMBIA NO. 02 - 2018 - BOGOTÁ, COLOMBIA

We are convinced of the importance of making the subjects which we discuss in this publication accessible to our readers, so that they may be informed of the advances of our studies, which are framed within and motivated by the ideal of benefitting society. Our readers may engage in a conversation with researchers of different subjects, who look at and focus on different areas of knowledge. Our aim is to provide a rich picture of the studies which we undertake as a university. It is a kind of navigational map to find the best paths and follow them towards the future. To communicate what we are doing connects us with all those who are interested in such subjects, who will find that the contributions made by the Rosario will provide them with tools to think about development and build the best possible future.



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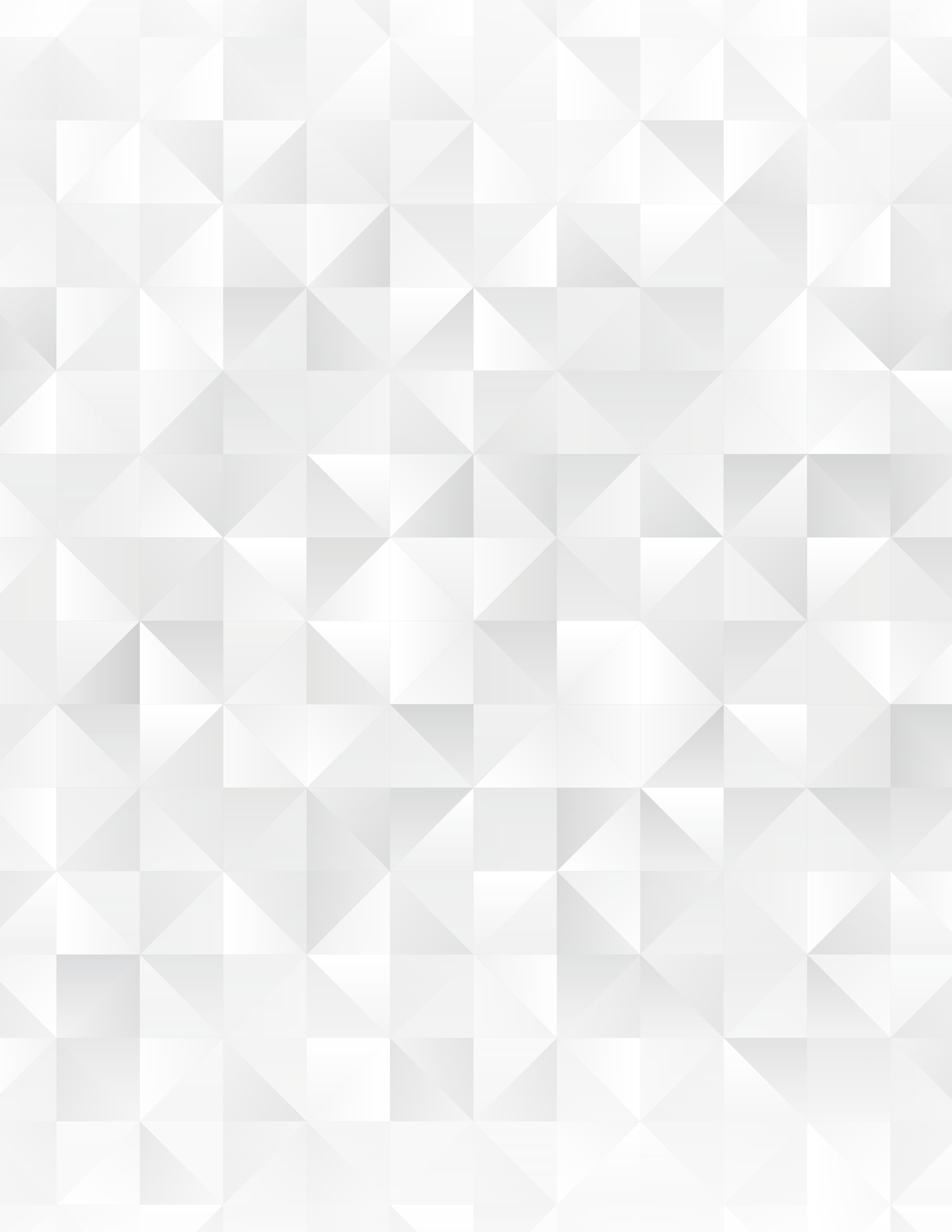
## MEDIA COVERAGE OF COLOMBIA'S PEACE SETTLEMENT AT THE BEGINNING OF IVÁN DUQUE'S RULE. BETWEEN PESSIMISM AND NEGATIVITY

**Carlos Charry Joya, Diego García Ramírez,  
Germán Ortiz Leiva**

The aim of this article is to analyze the way in which some of the main Colombian communications media have dealt with the subject of the peace negotiations and the implementation of the peace agreements made with the now disbanded FARC guerrilla. The first section discusses the informative meaning of news as a general conceptual framework which enables us to identify its dimensions and characteristics. The second section deals with the climate of opinion which has arisen in Colombia after President Iván Duque took office. Finally, the third section, which is based on a standpoint grounded in mixed methods, analyzes the main trends of the news which the communications media have disseminated about the peace negotiations and the implementation of the peace agreements during the first few months of the new administration. The article finishes with a number of conclusions, which present some of the possible consequences negative news items may have for the shaping of current public opinion in Colombia.

\* THE PAGES CORRESPOND TO THE ARTICLES ON THE DIFFERENT SUBJECTS IN THIS ISSUE OF ADVANCES IN SCIENCE NO. 3 - 2019







QUITA  
VIRGENCITA  
RAYES

Bórrame este raye

**VIRGEN DE LA BORDADITA, SYMBOL OF  
THE UNIVERSIDAD DEL ROSARIO**

**Illustration: Felipe Rozental & Francisco Moreno**

Cooperativa Multiactiva Mentes Diferentes  
(The Different Minds Multiactive Cooperative – Coopmente)



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