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Workshop 9 – Teaching and Learning Science Communication

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**A Science Communication Programme  
for Researchers and Journalists: the experience of Labjor/Unicamp (Brazil).**

## Abstract

Science communication teaching in Brazil is, despite the small number of courses now available, a rather old phenomenon. The first courses took place in the 1970's, when the debates about the media coverage of science and technology within the academic community started to improve in number and quality. But many of the experiences in this area remained as an isolated initiative and did not continue after the first or second year on offer. Many are the reasons that explain this situation and couldn't be thoroughly explained here. But there are also other barriers, due to the definition of science communication itself, that helped create this curious condition.

Some characteristics, derived from the fact that science communication is not a established academic subject, seem to be shared with other countries, like the United States and United Kingdom, where courses in this area have, though, a long history and tradition. "How" to teach science communication, "to whom" and with "what contents" are questions that have not found a single answer.

In Brazil, as science communication teaching becomes a growing area, the number of programs tend to multiply, specially if we consider the creation of some recent governmental supports to improve science communication. But the objectives and structures of these courses are far from being consensual. An effort of analysis and a comparison with foreign experiences is, than, necessary to help establish parameters of evaluation. That is the aim of this paper, which draws a chronology of the courses,

discussing their aims and structures, and offer some comparisons with international experiences.

We describe, particularly, the case of the Graduate Course on Science Journalism. This course is offered by the State University of Campinas (Unicamp). It is run by the Center for Advanced Studies in Journalism (Lajor), the Center for Science and Technology Policy Studies (DPCT) and the Department of Multimedia (DMM). It began in 1999 and was conceived for journalists and scientists, emphasizing mutual activities, so as to improve their perception of the different ways of thinking and working and finally to contribute to reduce the gap between them.

The course's general objectives are vast: to improve journalists knowledge on science and technology and scientists' potential for a more competent and critical diffusion of science and science policies; to make them understand science's social role and the science and technology system; to encourage a critical evaluation of national's science and technology through the media. So, its program reflects this initial project by offering a wide variety of subjects, from history and sociology of science, ethics and linguistics to theory and practice of journalism.

We make an analysis of the experience and evaluate how interaction between scientists and journalists evolved during the development of the program. We show that contact between the two groups is mainly positive, but it does not change the nature of each profession, nor the different perspectives they have about science and society.

**A Science Communication Programme  
for Researchers and Journalists: the experience of Labjor/Unicamp (Brazil).**

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**The field of science communication teaching in Brazil and other countries**

Science communication teaching in Brazil is, despite the small number of courses now available, a rather old phenomenon. The first courses took place in the 1970's, when the debates about the media coverage of science and technology within the academic community started to improve in number and quality<sup>1</sup>. But many of the experiences in this area remained as an isolated initiative and did not continue after the first or second year on offer. Many are the reasons that explain this situation and couldn't be thoroughly explained here. The role of the military dictatorship in maintaining very unstable conditions at the universities specially during the 70's, for example, shouldn't be neglected. Difficulties to find financial and institutional support for these courses are also important. Science coverage on the media was a rather old phenomenon, but investing in the education of reporters and communicators was hardly faced as a priority. So, although an interest for science information existed, science communication remained a matter of some scientific associations or actually individuals, either scientists that showed a particular concern for communicating to the public or journalists that regularly covered the theme and "learned from practice". In consequence, there is a historical lack of experts in the field of science communication to teach in such courses and few institutions ready to invest on a long term program.

But there are also other barriers, due to the definition of science communication itself, that helped to create this curious condition. As science communication is (still) hardly recognized as an established academic subject, there is, in Brazil, a lack of experts in the field: few teachers to run the courses and few institutions ready to invest on a long term program. This is, though, a situation that does not go along with the media coverage of science and technology, which has been since many decades a quite important issue. Figueroa & Lopes (1997), for example, show that the subject occupied a significant part of the news on the main Brazilian newspapers of the nineteenth century, as a reflect of a national elite's technology based development project. Further, Massarani (1998), points to a strong movement of science diffusion on the 20's, in Rio de Janeiro, with a great number of magazines, books, conferences and other activities happening at that time.

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But, if it is true that the media coverage of science and technology is significant, the number of researchers studying the field is much lower. At the same time, the variety of course structures, curricula and diplomas makes it hard to assemble experiences and evaluate them. "Science communication", thus, assumes as many definitions as the number of groups concerned with it.

This problem, in fact, seems to be shared with other countries, where science communication teaching is, though, a traditional area. On a recent report on the Communication of Scientific and Technical Knowledge to the European Commission, Labasse (1999) brings a rather pessimistic analysis of the developments in this field. Besides the lack of science diffusion to different publics, the problem of science communication, he says, is paradoxically the lack of knowledge about the subject itself.

Labasse recognizes science communication teaching as an important issue; "one of the single initiatives that may bring together scientists and journalists, otherwise opposed by a total misunderstanding of one another's practices and concepts" (p. 71). But in the lack of a specific knowledge about the subject, the courses remain between the two fields with which they are concerned (science and communication) and risk to offer a fragmented teaching, where theory and practice are often not integrated. In fact, "how" to teach science communication, "to whom" and with "what contents" are questions that have not found a single answer in the many countries that have put into practice science communication courses.

In an analysis of science communication teaching in the UK, Jon Turney (1994) shows that the diversity of groups involved in this area the last years lead to different conceptions of the job of teaching science communication and, as a consequence, to a "wide range of types, styles and objectives" of the available courses<sup>ii</sup>. In an overall classification proposed by the author, these experiences could be assembled into three main groups. The first one ("communication skills courses") aimed at "helping scientists communicate better with non-technical audiences" (p. 436). The second ("skills with added theory") "including material to open up discussion about relations between science and its publics, or the possible reasons for promoting public understanding of science" (p. 436). The third ("big picture"), "incorporate the skills element but as part of a wider programme touching many disciplines on the intellectual map of science studies" (p. 437). All these courses have different ambitions and conceptions of what science communication is and Turney shows that it becomes more and more important to exchange experiences and try to verify what the courses have in common and how these various practical

activities could be evaluated.

If we look at other countries in Europe, the situation is not different. In Spain, for example, we will find courses like the “Master en Comunicacion Científica” at the University of Salamanca, a one year program, which has a main stream on the history and sociology of science and is focused on the discussion of relation between science and society. In 1999, as part of the European Union Alfa Program (Alfa Cuco), it assembled a multicultural group of Latin-American and European students.

A different program is the one of the Observatorio de la Comunicacion Científica at Pompeo Fabra’s University, which offers a “Master en Comunicacion de la Ciencia” with two different professional skills: Health Sciences and Museums. A basic science communication program, including science, epistemology and communications issues is followed by every student during the first six months. Then, each person choose one of the fields available and develop practical activities along with theoretical discussions about the theme.

In the United States, were around 40 science communication courses are available (Dunwoody et al., 1998), there are experiences as different as those of the “Knight Science Journalism Fellowship” (at the Massachussets Institute of Technology) and the Program in Science Journalism of the University of Boston. The former is offered to experienced science journalists, who, during nine months, attend to conferences and meetings with scientists and have to write a peace of work (usually a book) on a scientific domain of their choice. The purpose is to improve knowledge on a specific area that the journalist will cover afterwards. The selected group of students (not more than 10 per year) earn a US\$ 35.000 fellowship.

The other program, at the University of Boston, offers a course for a younger public, focusing on media skills rather than on science subjects. The curriculum includes courses such as Science News Writing, Broadcast Science News, Advanced Science Reporting, Science in the Mass Media. The prerequisites for admission are “some science background, either course work or work experience, and writing aptitude”. The program lasts a year and offers a M. S. degree in Science Communication. Tuition is of US\$ 22.830 per year.

In Brazil, a change seems to be taking place. In the last years, science communication teaching is becoming a growing area, with new courses being created, along with some public and

private support programs, for improving science communication, like the recent São Paulo's Science Foundation's Fellowship Program Mídia-Ciência. Also, there has been an improvement in the debate about the science communication among scientific associations, such as the Brazilian Science Journalism Association (ABJC) and the Brazilian Association for the Advancement of Science (SBPC).

To understand the contemporary situation of science communication teaching in Brazil, and try to draw a perspective for the next years it is worth to look more carefully to the history of these courses.

### **A chronology of science communication teaching in Brazil**

The first science communication course in Brazil took place in 1970, at the School of Communications and Arts (ECA) of the State University of São Paulo (USP). The Spanish science journalist, Manuel Calvo Hernando, was invited for a "Curso de Extensão em Jornalismo Científico" aimed at graduate students on communications, during a period of a year. The idea of science communication, then, was mainly based on the assumption of science as a "discovering process", which would be of interest for the lay public as greater was the capacity of the journalist to translate the scientific language in an interesting manner. From this experience, a book on the theory and practice of Science Journalism was published, but the course was not offered a second time. It stimulated, though, some students to pursue their graduate studies on science communication at ECA, giving birth to some thesis and dissertations<sup>iii</sup>. Later, ECA would again offer a course on the subject - Curso de Aperfeiçoamento em Divulgação Científica – that took place two times and then disappeared.

It is worth to mention the activities of ECA's Experimental Press Agency (Agência Universitária de Notícias – AUN), ran by students and teachers, in 1971. By the time of Calvo Hernando's course, AUN began to concentrate its work on diffusing USP's science and technology projects and events, as a way of putting into practice the discussions about science journalism that were taking place. This activity was suddenly stopped in 1977, when the School's directors were dismissed by the military government.

Some of the former members of ECA went to the Graduate School of Communications at the Methodist University of São Paulo (UMESP), where, in 1978, they created a research area on

“Science and Technology Communication” in the Master Program of Communication Sciences. This course (initially a master and since 1996, including a PhD) is offered to science and communications graduate students, with a focus on the formation of researchers and teachers. Curriculum includes “Communication Theories”, “Methodology”, “Epistemology and Communication”, “Science, Technology and Society”. It represents the largest experience in this field in Brazil, from which resulted several dissertations and some thesis, particularly many case studies and surveys of science and technology in the media. UMESP is, for example, the Latin-American leader of the “Comsalud Project”, an international research program supported by the World Health Organisation (WHO) and the Pan-American Health Organisation (PAHO), to survey the media coverage on health and medicine matters on the press, radio and TV and further improve this activity, through courses for journalists and scientists and meetings on the subject.

Together with the Science and Technology Communication graduate program, UMESP developed, between september/1981 and february/1982, an activity similar to that of AUN press agency, at ECA. It was the Brazilian Agency for Science Communication (ABDC), on which graduate students in communication produced the news, features and articles for the media. This activity had initially the support of the National Council for Scientific and Technological Development (CNPq), but it stopped the following year.

In 1982, the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes), an agency of the Ministry of Education for financing the formation of human resources, offered a distance education course on science journalism to editors and reporters from different regions of the country. The program was structured in modules and the 30 participants received, once a month, a number of texts on a science subject, from which they had to write a short dissertation. The tasks were followed by a tutor (usually an experienced scientist) who conducted the study of the group and evaluated the reports. Many students, though, quit the course before the end, because the volume of information was too big to be learned in their available time. Most felt it was as if they were supposed to become “experts” in various science areas in a period of months. The course was not offered a second time.

A few years later, in 1988, the Center for Science and Technology Policies at the State University of Brasilia (UnB), with the support of CNPq, offered the Curso de Especialização em Comunicação Científica, a six month program, which consisted basically of a series of

conferences with researchers and science journalists for science or communications graduate students. The course didn't happen either a second time. Courses like these can be understood more as "activities" to improve science communication rather than "teaching programs". They do not reach the status of a graduate program at the institutions.

Among graduate courses that include an area on science communication, we shall also mention the experiences of the School of Communications (ECO) and of the Department of Medical Biochemistry, both at the Federal University of Rio de Janeiro (UFRJ). In the first case, the Master in Communications Program includes, since the 1980's, an area on "Information, Science and Society", focusing the role of scientific information in different social, political and cultural contexts. In the second case, the Department recently created an area on "Education, Diffusion and Management in Biosciences", which receives students from different backgrounds, including human sciences (specially communication and journalism). Two of them put into practice an experience of a distance education short term course, called "Science Communication for Scientists and Journalists", that succeeded and had a second edition last year. Using internet chatting and e-mail they reached participants from several Brazilian regions and could notice a significant demand for this kind of course which is not answered by the local educational institutions.

In the last three or four years, new science communication courses appeared. An interesting case is the one of Undergraduate Schools of Journalism, in the States of São Paulo and Pernambuco. At the Federal University of Pernambuco (UFPE), motivated by the activity of the Group for Communication and Science Studies from the Brazilian Communications Association (INTERCOM), under the coordination of Isaltina Melo Gomes, the faculty created a stream on Science Journalism. The main focus here is to teach students how to find trustful scientific information, to deal and interview researchers and to produce texts for the daily press. Discussions of cases in scientific news on the media also make part of this kind of course. Similar experiences take place at the State University of São Paulo (USP), the Methodist University of São Paulo (UMESP), University of Mogi das Cruzes (UMC), University of Vale do Paraíba (UNIVAP), Santa Cecília University (Unisantia).

Some research institutions have also put into practice short term courses aimed, in general, at two different publics. On one side, there are those who teach science to journalists, in the goal of improving their background on specific subjects. On the other, those who teach researchers

how to deal with journalists, how to behave in an interview and discuss the dynamics of the media. It is the case of “Immunology for Journalists”, offered by Oswaldo Cruz Foundation’s (Fiocruz) and available on the internet: (<http://www.ioc.fiocruz.br/jornalismo/lj>) and “Curso de Comunicação em Saúde para profissionais da imprensa”, by the Federal University of São Paulo’s (Unifesp).

A similar experience was the Ofjor Ciência, offered in 1997 by the Center for Journalism Studies (Labjor) of the State University of Campinas (UNICAMP) and Brasmotor S.A./Multibrás Eletrodomésticos S. A.. But in this case the group assembled journalists, researchers and public information officers (PIO). Contents were mainly related to the analysis of media coverage of science and technology (specially food engineering) and teachers were mostly journalists with large professional practice.

### **The LABJOR’s Programme**

In 1999, the State University of Campinas (Unicamp) started a Graduate Course on Science Journalism, which has as its main characteristic the fact that it’s aimed simultaneously at scientists and journalists. The purpose of such a program is to make both groups work together, to improve their perception of one another’s ways of thinking and try to reduce the gap between what Snow called the “two cultures”. The course is run by the Center for Journalism Studies (Labjor), in cooperation with the Center for Science and Technology Policy (DPCT) and the Department of Multimedia (DMM).

The first year, there were 148 applicants and in 2001, 211. This demand allowed to build a highly qualified group of students, with different academic and professional backgrounds. Among scientists (half of the group) there were PhD’s (in microbiology, geology and mechanics) and graduate students in biology, chemistry, physics and social sciences. Journalists (the other half) were generally younger and recently graduated, although there were some with professional experience in the press and also public relations officers from universities and research institutions.

Designing a curriculum that takes into account the interests and previous knowledge of such a diverse group is not simple and Labjor’s choice was to include a wide range of subjects, divided into two main groups: one focusing on social sciences and history of science and the other on theory and practice of journalism.

The curriculum is formed by six disciplines:

Science, Technology and Society  
Science and Technology Policies and Institutions  
Social Studies of Science and Technology  
Sources of information on Science and Technology  
Reporting and interviewing techniques  
Multimedia techniques  
Ethics in Science and Journalism  
Language, Journalism, Science and Technology  
Science Journalism Practices

But the main difficulties that had to be faced during the development of the program lie in the modes of interaction between the two groups.

First of all, there's the difficulty of establishing a common "language", a minimum common background. To allow a dialogue between scientists and journalists, for "science communication" does not mean the same thing for each group.

Establishing this common language concerns, on the one hand, "technical" aspects, such as sharing a terminology (definitions for audience, target public, data mining, source of information, literature review, interview etc) and writing techniques (differences between an article, a feature, a notice, a release). Some of these aspects could be examined and solved, but not all. Although all the students had a good writing performance, which was a main criterion for selection, to switch from a specialized, formal, register to a non specialized writing is not an easy step and it takes quite a long time and practice until both groups achieve a similar level.

On the other hand, it concerns ethical and epistemological aspects, such as criteria for selecting news (novelty of the subject, originality, social relevance?), criteria for validating information (peer review, audience?), content to be emphasized when reporting a research project (hypothesis, methods, results?), linguistic strategies allowed (demonstration, argument, seduction, manipulation?). A strong conflict between scientists and journalists appeared, for example, when it was to decide what title to give to a feature, what comparison to offer between a scientific concept and common sense. Scientists would have preciseness as their most important value, while journalists would do all they could to use metaphors when reporting a subject.

Time was also an important obstacle, because The delays with which scientists and journalists

work are quite different. For the former, research's logic predominates. If it is to take some more time to validate data the delays may be extended. Unpredictable issues raise discussions that may change the timing of a project. For journalists, although accuracy of information is important, the compromise with time must be respected above all. If an issue of a magazine or a newspaper is to come up on a particular date it has to be ready for so. To determine **what** could be diffused in the required delay of time was a frequent source of misunderstandings and the answer could not always be achieved.

An interesting way to follow these discussions along the course is to look at the on line science magazine that was produced by the students and the labjor's staff and wich is called Com Ciencia (<http://www.comciencia.br>).

One of the first features was about a Brazilian research project on the sugar cane genome, that had been created at that time: SUCEST (part of the ONSA network). The relevance of the subject was its strategic value, because it associated a cutting edge technology with an important product of Brazilian exports (Brazil is responsible for 25% of the world's sugar production). In July 1999, when the feature was published, the project was at the point of starting clone distribution for sequencing. So, this feature was mainly about science policy matters and explained what was involved in the genome sequencing technology.

The title of the article was the object of a great discussion among scientists and journalists participating on the coverage. The final title "Sweet Genome: Project will investigate the genetic intimacy of the sugar cane" was considered by the scientists as non acceptable, because it created a representation of the genome that in some sense "corrupted" the scientific concept and at the same time associated to the sugar cane a human characteristic (intimacy) that was not appropriate. On the other hand, journalists claimed that explanations could be made in the body of the text, while title should first attract the attention of readers (its journalistic value). In this case, "attractiveness" created, indeed, a weird image of the genome, but from that experience concepts and values started to emerge in a more organized way.

In a later feature, about marine biodiversity, another formula was put into practice. there was an effort to maintain scientific terminology and include a glossary to explain the concepts. The text was motivated by a national research project on the fauna and flora of Brazilian coast: the Revizee (Program for Evaluating the Sustainable Life Resources at the Exclusive Economic

Zone). The project's objective is to reach the criteria stated by the United Nations Convention on the Sea Rights for a country to keep its right to explore the natural resources of its coast. Compared to the former feature, there was a refinement in the use of images and in general design, but text's structure is closer to that of a handbook than to a journalistic report. It starts by a general context, explains what species are and how is their distribution in the ocean, and only later presents the subject that motivated the coverage. Journalists would say that there was no news in this text, but for scientists it seemed rather fine.

Gradually, Com Ciência evolved to a model that integrates articles, written by scientists, and reporting and interviews, usually by journalists. Features became much longer and the magazine assumed a more essayist characteristic, with explicit authorship, and a thematic structure. An example is a recent feature about psychoanalysis ("A century from Freud's Traumdeutung"). Each month, there is a cover story which is treated from various points of view. Both scientists and journalists participate on the issue, but with different contributions.

At the end of the first edition, students and teachers evaluations lead to some modifications on the program: the inclusion of a discipline on Ethics and two on practical skills (multimedia techniques and science journalism practices).

### **Conclusions and practical perspectives**

During many years science communication teaching in Brazil remained an isolated, and almost individual, effort of some academics that had a particular concern for the matter. Working under unstable political conditions and having very few institutional support these individuals or group of researchers did not succeed in putting into practice long lasting courses. At that time, scientific associations, although promoting some science diffusion activities, were not enough structured to assume the coordination of such programs. The media and the private companies, on their side, have never (for the majority of them until now) showed a particular interest in the formation of their employees on science communication and, thus, have not invested systematically in such courses.

The later changes in the political, economical and academic scenario did not seem to entirely solve this situation. Besides, the number of recent programs that didn't reach a second offer reflect an epistemological problem: it is not clear, neither for academics nor for professionals,

what science communication is. Each group put into practice its own representations of the subject, without exactly knowing what to expect from students who complete these courses. Weak integration between scientists and journalists also contributes to this problem and it is exactly what Labjor's course tries to surpass.

the experience showed that the relationship between the two groups had a positive effect of making them regard one another's ethos in a more respectful way. But it didn't change the nature of each profession. Different perspectives about science and science communication continued to exist, although they did not remain untouched.

finally, If we want to integrate scientists and journalists on the process of science communication, it is inappropriate to make a scientist become a journalist and vice-versa. their roles in communicating science is different. complementary, but still different.

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<sup>i</sup> For a more recent study on media coverage of science and technology, see also MARQUES DE MELO, J. (1986) Quando a ciência é notícia, São Paulo: ECA/USP.

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<sup>ii</sup> The number of courses now running in the UK, according to the Wellcome Trust's Science Communication Course Directory - <http://www.wellcome.ac.uk/en/1/misothscd.html>, is 24. In the US, there are 38 courses, according to the guide prepared by Sharon Dunwoody and colleagues (Directory of Science Communication Programs & Courses in the US - <http://murrow.journalism.wisc.edu/dsc/>).

<sup>iii</sup> See Marques de Melo, J. (1982). O Jornalismo Científico na Universidade Brasileira - anotações de um observador participante, Proceedings of the 4th Congresso Ibero-Americano de Jornalismo Científico, 369-379.