Parallel Session 13: Lessons on PCST history

THE DYNAMIC PROCESS OF SCIENCE COMMUNICATION HISTORY IN BRAZIL

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Abstract

We analyse the dynamic process underlying the relationships between science and public in Brazil throughout the 20th century. We compare the science communication activities at three periods of time: (a) 1920s/1930s; (b) post-Second World War to 1960; (c) from 1980s to the present moment. With the support of historical analysis and comparisons, we discuss some of the current challenges and dilemmas for communicating science in Brazil.

Key Words: history of science communication; science communication in Brazil

Text

Our objective is to analyse, from a historical perspective, the dynamic process underlying the relationships between science and public in Brazil. We will map out how science communication has been developed throughout the 20th century considering the main actors, themes, motivations, objectives and the viewpoints on science. We will consider three periods of time: (a) 1920s/1930s; (b) post-Second World War to 1960s; (c) from 1980s to the present moment. The justification for choosing these periods is based on the fact that they were marked by more intense and diversified science communication activities, in comparison to other periods of time.

In the 1920s, science communication was an important tool used by the embryonic Brazilian scientific community to create a favourable atmosphere in the public opinion and in the public sphere aiming to allow the development of the basic research in the country. However, science communication had still a lacunar and fragmented character as direct reflex of the fragile situation of the Brazilian scientific structure.

The main characteristics of the science communication activities in this period were: the emphasis on basic scientific concepts; the participation of professors

and scientists, among them some important members of the Brazilian Academy of Science; the targeting of the activities to a small-illustrated elite.

There was also a significant link of science communication to the educational movement, seen as an essential factor for the Brazilian progress.

There was an optimist attitude toward the potential of the new mass communication media – the radio and the cinema. An evidence of this is the creation of the first radio in Brazil, in the scope of the Brazilian Academy of Science, and of an institute of educative cinema. The was the belief that the new technologies would allow a quick and cheap dissemination of knowledge even to remote regions, which would contribute for consolidating the national identity.

After the Second World War, with the national policy aiming at developing the country, several scientific institutions were created. Within this general context, science appeared under a redeeming perspective and as a tool for overpassing the economical underdeveloping.

There was a general interest from the public toward physics as consequence of the impact produced by the nuclear issue and of the participation of the Brazilian scientist Cesar Lattes in identifying the meson π in the years 1947/48. Magazines such as O Cruzeiro and Manchete and newspaper's supplements such as Ciência para Todos brought several articles on science, stressing the activities of Brazilian institutions and researchers, as well as recent developments, mainly in the nuclear domain.

In 1948, a group of scientists created the Brazilian Society for the Advancement of Science, the most representative Brazilian scientific society, including science communication as a strategical issue. This period is also characterized by the late appearance – in comparison to Europeans countries – of 'science writers', in contraposition to previous periods in which scientists and professors developed science communication activities as a secondary activity. José Reis is a significant example; he wrote for six decades for one important Brazilian newspaper and also hold other activities for different audiences.

The third and last period of our study, the 1980s to nowadays, is a rich moment in terms of science communication. It started with the foundation of Ciência Hoje (Science Today), a science popularisation project created by the Brazilian Society for the Advancement of Science. It embraces magazines for adults and kids, a newsletter on science policy and a website. The first science communication TV programs were created, such as Globo Ciência.

Following the international tendency, dozens of science centres and museums. They have been absorbing professionals with different backgrounds: young scientists, architects, journalists, educators, etc. Some of them, with an interactive character, seek to stimulate the curiosity, the interest toward science and a critical attitude. But there is a tendency to reproduce what is done in the United States and Europe with no significant integration of science with local cultural aspects. Only around 1.5 million people visit Brazilian science museums per year (about 1% of the Brazilian population).

Many newspapers have science sections, but the space is limited and few journalists are specialised in science. Most of the published articles are

adapted translations of press releases produced by international science journals, such as Science and Nature.

In the science communication activities, is hegemonic the 'deficit model'. In several cases, science communication is target to scientific marketing – emphasising the spectacular character of scientific and technological advances and with no critical attitude toward science– or as a missionary enterprise for 'science literacy' that uses to disqualify the public. Often important aspects are not considered in the construction of a realistic vision of science, including its insertion in the cultural and socio-economical context, controversies, uncertainties and risks. The organised participation of the scientists is still not very frequent and does not deserve significant institutional valorisation. The are still few studies on the activities hold in Brazil and their impact on the audience. The huge economical and social inequalities reflects in the science communication activities, which in general are concentrated in the big cities and in medium and high classes. There are still few initiatives aimed to communicate science, in a consistent way, for the poor sectors.

However, there is an interesting movement of re-thinking the activity, and several forums have been created for discussing strategies for improving it. An important characteristic of the present moment is the (small-scale) attempts throughout the country for professionalizing science communicators. In the last years, a debate has been holding on the formulation of national and regional programmes for communicating science.

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JOAQUÍN GALLO: A MEXICAN POPULARIZER OF ASTRONOMY (1914-1947)

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Abstract

We present a report of work in progress of our research in the popularization done by Joaquín Gallo, astronomer and director of the National Observatory in Mexico (OAN) from 1914 to 1947. We focus on one question to guide our research: What was Gallo's motivation for his work in popularization? We find many answers. Gallo did popularization to give Mexican astronomy a wider public recognition and support. He also did it for the public, as there was a demand for information. Finally, he believed this would make Mexico a better nation.

Key words: history, popularization, astronomy

Text

Introduction

The history of science popularization has only recently received serious attention by historians of science. For example, Shapin (1990) discusses science, the public, and the ways they have related through history. He proposes that the study of this activity should complete our panorama of science in society. Cooter and Pumphrey (1994) review previous work and suggest several ways that future research may go. Raichvarg and Jacques (1991) review the history of popularization in France asking the questions: why?, who?, for whom? and how?

The interesting results in this new area, however, come from studies of particular cases. Each casts light on one or more elements that are determinant in a certain place and time. Sheets-Pyenson (1985), for example, makes a distinction between high and low science and then compares low science in periodicals in France and England at the end of the nineteenth century. Lightman (1999) studies the narrative of British popularization in the nineteenth century and finds that natural theology was initially central to this narrative, and was later displaced by a secular discourse.

England, France and the nineteenth century are the most common subjects of this kind of study. Our case is different because it takes place in Mexico, a peripheral country, and in the twentieth century. We study a period of time beginning shortly before Gallo's start as director and ending with his departure from the Observatory. We hope to be able to find the reasons for his popularization, as well as any changes, both qualitative and quantitative.

We have consulted two archives: the *Fondo Joaquín Gallo* contains books, notebooks and many manuscripts for booklets about astronomy. There are also parts of a book, short stories, scripts for radio programs and photographs of the many scientific expeditions that Gallo participated in. The *Fondo Observatorio Astronómico Nacional* (AHUNAM-OAN) spans from around 1870 to 1970 and contains documents of different types related to the OAN.

Gallo´s Popularization

Joaquín Gallo was born in Mexico in 1882. He studied geographical engineering and began working at the OAN in 1903. He was director from 1914 until 1947. This period was dominated by instability and limitations for the observatory (Bartolucci, 2000).

From the documents consulted we find that Gallo did the following popularization activities: wrote for the press and for journals, answered letters from the public, gave public lectures and had public observations, wrote pamphlets and gave interviews.

We detect three types of documents in the AHUNAM-OAN related to Gallo's activities as popularizer. First, there are numerous internal documents related to the "open nights" which were held two times a week. These had, in his words, the purpose of "showing a little bit of the cosmos" to the general public. These sessions were interrupted once due to a cut in personnel. The public were neighbors of the OAN as well as people from all over the country.

The second kind of documents are notes to the press written by Gallo between 1919 and 1928. There are three kinds of subjects covered by these notes: news about astronomical discoveries around the world, information about astronomical phenomena observable in Mexico and informative articles about established knowledge. These are the subjects Gallo chose to communicate.

The third kind of document is also the most abundant. We have a great variety of letters from the public spanning from 1927 to 1947. These can be placed into several groups according to the subject of their questions: about the yearbook published by the OAN, related to meteorology, about popular beliefs and about amateur astronomy. In contrast with the second kind of documents, these show the subjects that the public wanted to know about.

Conclusions

In agreement with Kärnfelt's (2003) results, we find that the main reason Gallo did popularization was to promote his discipline in an effort to get more support. At the same time, he believed that communicating science to the people would result in progress for Mexico. And, finally, given the nature of his subject, part of his work was in response to an avid public.

The study of the history of popularization is necessary in order to have a complete image of science in society. For popularizers, it is an important tool for teaching and for the consolidation of the discipline.

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LESSONS ON PCST HISTORY

INJECTION DRUG USE AND CONSTRUCTIONS OF RISK

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Abstract

American injection drug users today use injection methods and respond to opiate overdose with methods similar to those used by physicians in the mid-nineteenth century--methods consistent with nineteenth-century medical theory. Their isolation from sources of public health knowledge has in effect left them in a nineteenth-century medical world. Ironically, this fact affords the historian better understanding of how physicians understood and responded to risks associated with injection in the past. Needle exchange programs seek to bring injection drug users into the twenty-first century.

Key Words: injection drug use, history, public health

Text

The standard insulin syringe, made of steel and plastic, is a precision engineered instrument, yet it is mass produced and disposable. It costs seven and a half American cents. The hypodermic syringe symbolizes medical technological prowess made mundane. Yet the syringe is also a charged object, as it pierces the skin. The heroin injector emerged in the twentieth century as a symbol of deviance.

The hypodermic syringe also symbolizes a clash between American drug policy and the public health imperative to control infectious disease. Laws passed in the 1970s and 1980s to prohibit possession of devices used to consume illicit drugs typically included syringes in their lists of banned items. Yet the sterile syringe affords a cheap and effective way to prevent HIV transmission among a high-risk population.

The American junkie has symbolized obduracy as he willfully practices dangerous behaviors. But needle exchange workers have found that injectors readily adopt a range of risk-reducing behaviors at the same time that they find addictions and related problems difficult to manage and either struggle with or reject a health care system that often treats them badly: with hostility; or with ignorance about managing the health consequences of drug use, or managing other disease in the presence of opiate addiction.

Thus, drug injectors and needle exchange activists, like historians of science, realize that the development and implementation of public health knowledge is complex. Developing effective public health knowledge is not just a matter of translating scientific findings into prescriptive statements; the flow of knowledge is not just from the experts to target groups. Any encountered difficulties do not just represent unreasoning resistance or ignorance.

Rather, science does not simply provide ever more accurate views of the world. In a dynamic process, we continually reshape the world to make science work in it. For example, Tomes (1998) has shown how many aspects of daily life, from hand washing to the design of furniture and clothing, were transformed in order for ordinary people to act in ways consistent with germ theory.

When their friends overdose, opiate injectors immerse the person in water, shock the soles of the feet with electric cords, or inject the person with salt or bleach. Similarly, the first generation of physicians to use hypodermic syringes to inject morphine treated overdose with cold water, electric shock, and injection of coffee, whiskey, or other substances. Similarities also appear in injection technique: William Burroughs (1977) and mid-nineteenth-century physicians both dissolved morphine in spoons, heating the drug over a flame (Kane 1880).

Nineteenth-century physicians identified all the risks associated with injection--overdose; contamination or spoilage of injected solution; abscesses; disease transmission; tissue damage from repeated injection. Medical management of the risks associated with the syringe itself falls into three periods. In the nineteenth century, physicians, individually and through collective means such as journal and textbook writing, developed techniques and refinements to reduce harms to the patients they injected. For the first half of the twentieth century, these risks were primarily managed through the labor and skill of nurses and through hospital systems for sterilizing and maintaining equipment. Finally, with the advent of the disposable syringe in the early 1960s, engineering and manufacture brought the risks under control.

In the nineteenth century, the medical and nonmedical were not sharply divided. From the earliest deployment of the syringe, many people injected themselves with morphine or other drugs. When the 1914 Harrison Narcotic Act banned nonmedical use of opiates, and when physicians in the 1920s defined junkies as psychological defectives and undesirable patients, opiate injectors were closed out of the medical advances that continued to improve the syringe. Thus, nonmedical injectors became increasingly isolated from the world of medical progress. Yet, like other laypeople, they absorbed the broader currents of medical advance and used this knowledge to reduce the risks they perceived. In addition, as members of what was increasingly defined as a deviant subculture, they communicated what they knew (or believed) among themselves and in this way established norms of practice that were handed down over time.

Clinical records of narcotic ward patients in Philadelphia in the 1920s reveal some of these practices. (Acker 2002) Many addicts sterilized their needles; one wiped the skin with iodine before injecting. Addicts typically used 4-6 needles a month;

since opiate addicts typically inject 4-6 times a day, this meant using a needle up to 30 times.

Nineteenth-century physicians developed methods of managing patients' addiction to morphine that also resemble later practice. One practice is described in 1880 (Kane 1880), 1926,[1] 1951 (Burroughs), and 1990[2]. Each describes the same dose reduction tactic--replacing withdrawn drug solution with an equal volume of fluid containing no drug. Thus, the 1990 junkie bought and dissolved month's worth of heroin. Each time he withdrew a syringe-full, he replaced it with a syringe full of water. Such similarity suggests transmission of knowledge across 110 years.

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2. Anonymous heroin addict, personal communication.

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AN APPROACH TO THE HISTORY OF THE MAIN TRADITIONS OF SCIENCE POPULARISATION

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Abstract

This paper puts forward a model for the study of the popularisation of science history. The model, based on qualitative methodologies, distinguishes four schools each with their own fundamental characteristics, their authors and their seminal works. The first of these is the school born out of the Italian Renaissance, whose greatest figure was Galileo. The second school is the French one which reached its apogee in the 18th century; authors like Fontenelle, Buffon, Diderot and, already in the 19th, Flammarion comprise its best known representatives. The third school is the Germano-Prussian one. Its most important figure was Albert Einstein, a nonpareil writer and lecturer. The fourth and last school is the powerful Anglo-Saxon one. This school, the latest and most preponderant, counts popularisers like Darwin, Gamow, Asimov, Sagan and Gould among its numbers.

Key words: Science popularisation, populariser

Text

Introduction

Science popularisation has a long and distinguished history. This paper tries to separate this history into four traditions. They are, in chronological order: the Italian Renaissance, the French tradition, the Germano-Prussian and the Anglo-Saxon[i].

The Italian Renaissance

The Italian Renaissance tradition begins with Galileo Galilei (1564-1642). Although interest in science was lively before his contribution, he is the first science populariser in a totally modern sense. In many respects he represents the delayed culmination of the ideals and forces at work during the Renaissance. One of these ideals is the liberation of language: Galileo chose to write in Italian rather than Latin. In the *Dialogue* (1632) he presents his ideas in the form of a dialogue with all the concomitant benefits of charm, lucidity and irony. This tradition allows the union of the sciences and the humanities and will become the model all other schools try to reproduce.

The French School

The Enlightenment represents the second great moment in the popularisation of science. In the French school special attention is paid to its literary aspects.

Moreover, it is the first time that a completely conscious attitude is taken to science popularisation.

The fundamental texts of this tradition are *Entretiens sur la pluralité des mondes* (1686) by Fontenelle, *Histoire naturelle* (1749-1788) by Buffon, *Encyclopédie* (1751-1780) by Diderot and *Astronomie populaire* (1879) by Flammarion.

Bernard le Bovier de Fontenelle (1657-1757) was the first luminary of this tradition when he presented the astronomical discoveries of the 16th and 17th centuries in a popular text, written in an easy, flowing style. His example was followed by the Comte de Buffon (1707-1788) who directed his attention to the natural sciences (Domínguez, 2001). The next writer of importance was Denis Diderot (1713-1784). He undertook the massive task of collating and compiling all the knowledge then available in a single work. After him Nicolas Camille Flammarion (1842-1925) popularised astronomy and was read avidly in the 19th century. Although these writers are the best known, many others also deserve mention such as the Marquise of Châtelet, Voltaire, Verne, Moigno, Figuier and Tissandier. Although greatly admired throughout these two centuries their influence visibly declined during the 20th century (Raichvarg and Jacques, 1991).

The Germano-Prussian School

The Germano-Prussian school rose to prominence between the last decades of the 19th century and the Second World War[ii]. Headed by physicists of the calibre of Einstein, Schrödinger, Heisenberg and Planck, it was characterised by cutting edge science by professional scientists who were also excellent popularisers. An example of this great scientific exposition was Albert Einstein (1879-1955). In his book *On the Theory of Relativity* (1917) he outlined and explained in unparalled clarity his physical ideas and some of the wider implications that could be drawn from them. Another example of the type of writing prevalent in this tradition was Schrödinger's *What is Life?* (1944) that drew public attention to the burgeoning importance of biology.

The Germano-Prussian tradition is characterised by a strong consubstantial philosophical and ethical component. It also marked the move away from the individual to the university as the centre of research and popularisation.

The Anglo-Saxon School

Despite a period of significant overlap with both the French and German traditions, this movement achieved hegemony during the 20th century, largely through the influence of the United States as a world power in scientific research (Laszlo, 1993). During the Victorian age Charles Darwin (1809-1882) was the greatest exponent of this tradition and Michael Faraday (1791-1867), author of *The Chemical History of a Candle* (1860), its greatest lecturer. Darwin's *On the Origin of Species* (1859) was probably the last scientific treatise that could be read by someone who had no previous, specialised knowledge.

The geographical centre of this tradition shifted in the 20th century to the United States. The increasing scientific dominance of the US after the First World War lead to an efflorescence of popular writing. The most important contributors were George Gamow (1904-1968), author of *One, Two, Three ...*

Infinity; Isaac Asimov (1920-1992) a prolific populariser and author of science fiction; Stephen Jay Gould (1941-2002), author of *The Panda's Thumb* (1980); James Watson (1928), author of *The Double Helix* (1968) which revealed the crudity and ambition in scientific research; and Carl Sagan (1934-1996) who captured the imagination of millions through his ground-breaking series and book 'Cosmos' (Guerrero, 1997).

This tradition is characterised by the multifarious means of popularisation used by its exponents[iii]. It is also characterised by its use of English, a functional and versatile language. Just as English has become the language of science, so equally it has become the *lingua franca* of scientific dissemination (Calsamiglia, 1997). The style that has evolved to meet this need is clear, precise and down-to-earth.

Notes

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[i] This paper is a summary of a part of my doctoral thesis on popularisation of science, still in course, directed by Dr. Josep Maria Casasús (UPF).

[ii] Goethe was, in a sense, the main precursor of this tradition

[iii] The Anglo-Saxons have operated trough books, even the poetry, young literature, conferences and, mainly, the mass media -newspapers and magazines, radio and television programs. "Science Times", the excellent weekly section of *The New York Times*, was created in 1978 by John Noble Wilford

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SCIENCE, JOURNALISTS AND MASS PRESS IN THE XXTH CENTURY.

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Abstract

We have analyzed all the information about science, medicine and technology in 23 tryings realized between 1888 and 1983 - a whole of 1212 texts - of La Vanguardia and the Diario de Barcelona (two newspapers from Barcelona). We have done a quantitative analysis, and we demonstrate that the communicative link that the journal drow up at the beginning of this century established that the analysis had more importance than the information. From 1943 the information about science has lived through a period of normalization and has begun to be a part of a communicative model of mass.

Key Words: Newspapers, journalist, history

Text

From 1888 to 1918 we can see how the majority of information is produced by the newspaper editing itself. There are mainly two different types of text. Those texts that are clearly impartial and those that have the opinion of the author in it.

In this moment in history, 57% of the texts of our sample are in impartial articles without the author's signature, 26% don't have the author's signature but are analytical, and 17% are signed by the author.

From 1918 and until 1933, the appearance of information agencies and the following modernization of the newspapers shows a change in the author's implication in scientific news. In fact, during this time the unsigned

information and the information without implication of the author descends to 39%.

The first conclusion we can make about this period of time (1888-1933) is that the articles signed by the author usually have the author's interpretation and opinion in it. Some 45% of the articles are signed by the author.

In the same period of time mentioned earlier, there are two types of journalists that sign articles about science: correspondents or contributors specialized in scientific themes. In this last case the information is firmly linked to the author's interpretation and opinion. Certain specialists in the History of Communication (1) believe that the moment of modernization of the press must have been between 1902-1923. This was also the moment of the construction of a system of mass communication in Catalonia. Very important to note, is that in this period of time, the science journalists usually give their own opinion in their articles. Our hypothesis is, that the uniformity in the structure of the media didn't influence the science journalists until the period of time that is called the Big Science. (2)

From 1953 onwards, the "lateral" information about science and technology is considerably reduced. We can also see new sections in newspapers, exclusively about scientific subjects, and a new usage of language.

In the last part of our sample study (1953-1983) we found out that journalists started naming their information source. As from 1963, this becomes a constant fact.

Furthermore, we observed that during the Spanish transition (1975-1982), journalists wrote less about scientific subjects. But after 1983 the science journalist becomes a mass media worker and takes part of the features of this communicative system.

Conclusions

Historical events, such as the civil war, the World War, Franco's dictatorship and the transition towards democracy, have marked the relationship between science journalism and the mass media in Catalonia. Also this relationship has been marked by the special relationship between science and mass media.

After the information vacuum between 1933-1953 the articles about science were introduced into the system of mass communication. From this moment on, the number of articles with the author's interpretation in it descend considerably, giving place to a larger amount of articles in which the author and the information are closely linked. It is in this moment that the journalistic language is applied to science.

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POPULARIZING THE HISTORY OF SCIENTIFIC EXCHANGES IN THE "PERIPHERY"

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Abstract

We present a popularization project in the history of contemporary science, that to the publication of the book Ciencia entre España e Hispanoamérica. Ecos del siglo XX (available at www.uab.es/cehic/proj/fecyt.htm). We discuss our experience as science communicators in an academic institution, paying special attention to methodological issues and to the cross-fertlization between science communication and the history of science. We also question the idea that knowledge created in peripheral regions is not relevant.

Key words: history of science communication, scientific exchanges, peripheries in science and technology

Text

Introduction

In April 2002 we submitted to the Fundación Española para la Ciencia y la Tecnología (FECYT) a project that aimed at popularizing scientific and technological exchanges between Spain and Latinamerica in the 20th century. We wanted to make known both the history of science and the knowledge produced in purported peripheral regions to modern and contemporary science. We did not share the idea that the history of science and peripheral knowledge were largely irrelevant, even though they are often attractive enough to science communicators.

The project was carried out during the first half of 2003 by three people: a Catalan physicist and historian of science at the Universitat Autònoma de Barcelona, and two PhD students of the Programme in History of Science at the same university (a geologist from Colombia and a biologist from Equador) who had also trained as science communicators.

The sources

First we had to select our sources. Historians often distinguish primary sources (originating in the scientists to be studied, such as manuscripts or published papers) from secondary ones (the product of the work of historians). Time constraints and the availability of secondary information made us choose secondary sources for most of the 20th century, and primary ones for recent years, above all the 1990s. We drew mostly on Spanish journals and books in

the History of Science, and we also got advice and information from a number of experts.

In search of a structure

We had to settle on the book's structure, and several alternatives were considered. We discarded a chronological structure —too lineal or even traditional. To discuss one knowledge area after the other would have excessively fragmented the narrative, and we feared this would also be the case of a geographical structure. We also considered priorizing the forms of exchange (letters, journals, exhibitions…), but this we found problematic too.

In the end we decided to focus on the protagonists of the exchanges, people and institutions, arranged in chronological rather than geographical order. We discussed in separate insets additional information that did not fit this structure, such as bibliometric information, specific exchange projects or key institutions. Even so, we had to devote separate chapters to two substantial issues: the role of the Spanish language, and the exchanges prior to 1900.

Academic versus popularization interests

It is widely admitted that academics and science communicators do not write for the same people. The former address their peers, the latter the public at large. We think academics should pay more attention to lay people, and also that science communicators have much to learn from academics.

Our project built on such interaction of interests: it was carried out within an academic history of science center, by people with experience in science and science communication. Yet some tension inevitably appeared, particularly in three regards: style, reference to sources, and conclusions.

As for style, we were convinced it had to be both attractive to a wide public and rigorous. We used fictional situations such as interviews or travels. We also used analogies, metaphors, and a prose rethorical enough to sustent interest in the story, even though the academic partner had to be convinced this style was convenient. The reception accorded to the book by scientists and historians of science suggests that we managed to avoid academic technicisms.

The second problematic issue was how to refer to sources. We let historians talk by themselves, and thus made ample use of literal transcriptions. The problem was then how to give the references without burdening the text. To make the text as "clean" as possible, we placed footnotes at the end, and we also limited references to works quoted in the text, referring to the rest of our references in a complete bibliography that is available , together with the book, in Internet.

The third issue had to do with the book's conclusions. The science communicator in us was happy enough with the histories, conclusions were for him built in the text. However, the academic partner could not do without conclusions. In the end we did draw some conclusions and found that a valuable addition to the work, even though aware of their provisional status and counting with the professional historian's indulgence.

Conclusions

Scie nce popularization tends to focus in recent findings, particularly as they regard biomedicine in advanced countries —those at the core of contemporary science. This has to do above all with the need to have an impact, but if we grant that the perception of such an impact is socially construed, we can also grant that the public's awareness and interest could be increased, if only we provided the public with more resources.

We need to broaden the scope of knowledge that gets into the media, to take into account and value knowledge from «peripheral» regions. This is unlikely to harm science communication, while leaving this knowledge aside casts a shadow over the media's agenda and raises suspicion about their interests in neocolonial policies. New technologies no longer leave the excuse that information is not readily avalilable.

All regions produce knowledge. Instead of talking about technological backwardness, we need to let each region create each own knowledge and technology, those best suited to its environment, less dependant from other regions, most able to sustain its basic necessities.

This kind of popularization can be done from the media and academic institutions. A balance must be kept, in historical matters, between the public interest on one hand and academic rigour on the other, and this in turn demands paying close attention to style and the use of references. The historian may profit from rethorical figures, and the communicator may have to provide explicit historical conclusions. Our experience shows that a positive feedback can be established between history of science and science communication.

We also think that information should be freely available. Private handling of information damages both science and science communication. We edited our work, but we also placed it in Internet so that anyone can access it.The reader may also find there our historical conclusions (p. 116-121, at www.uab.es/cehic/proj/fecyt.htm).

Parallel Session 13: Lessons on PCST history

DALÍ AND SCIENCE

Mònica Lòpez

Media 3.14

Abstract

Salvador Dali had an obsession for science that lasted all his life and that can be traced to his paintings. He was a compulsive reader of scientific literature, from psychoanalysis to quantum mechanics, from mathematics to genetics. Moreover, he strived all his life to meet relevant scientists: he met Sigmund Freud, J.D. Watson, René Thom, Ilya Prigogine and many others. The scientists were surprised to discover that beyond the façade of a clownish showman there was a genial artist with whom they get into entertain meaningful discussions.