

Visualizing scientist on Argentinian TV

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Abstract

Public perception studies show that the stereotypical images of scientists are dominant. This work analyzes how scientists from different areas are visually represented in Argentinian television in order to evaluate how this media influences this social construction. The analysis focuses on the scientist characters presented like visual aspect, age, clothing, gender and ethnicity; time on screen, knowledge, quality of speech, job title and physical context in which they are presented are also considered.

This analysis is based on 10 programs selected from a corpus of programs considered to be of scientific dissemination - criteria established ad hoc- for years 2011 and 2013 ($n = 174 / n = 142$) in 15 channels . These programs were categorized by their format (documentary, reality, magazine, etc.) and the scientific-technological areas they present (Biological Science, Medicine, Environment, etc.). We also focus, in particular , on the revision of established format-area relations , understanding formats not as communicative packaging loaded content (areas), but as flexible and dynamic significant structures constructed and projected areas of science and technology, . In this way we wonder how mutually conditioned format and content are.

This study allow us to think about science and technology in Argentinian television and what social imaginaries this media reinforce in a critical moment for the audiovisual production in our country. The implementation of a new national law on audiovisual communications is opening the possibility to generate new programs, at the same time the

field of communication and dissemination of science and technology is in the focus of current public policies.

This study is part of a bigger analysis of science and technology (S&T) in Argentinian TV which has been conducted from two urban centers, Bariloche and El Bolsón (Río Negro) in Patagonia, about 1600-2000 km from Buenos Aires City. We are trying to understand which is the public image of S&T that TV is building in a political context which is encouraging the development of these fields and stimulating young people to study scientific and technological university courses. Another important contextual factor is that our country has a new national media law¹ which aims to the diversification of the origin of the audiovisual productions which, until now, was concentrated in Buenos Aires City and the rest of the country remained underexposed. These conditions create a favorable situation to innovate in audiovisual productions about S&T and, from the university we are involved both in analysis and in production for TV. So, our central question about which social imaginaries are proposed and reinforced by the TV productions in this field pretends a critical analysis of the present offer in order to avoid the uncritical reproduction of formats, languages and contents in a key moment to renew our local and national audiovisual cultural policies.

In addition, we agree with the classic arguments (cultural, democratic, economics, political and practical) of the importance of the public understanding of science (Durant, 2005; Moledo y Polino, 1998; Calvo Hernando, 2006) but we also think that this task is part of the production of science itself as it was demonstrated by Phillips *et al* (1991) in their study of science in the press. In consequence, understanding the logic of TV as a media is a condition to be able to integrate it in the dynamics of the science communication.

In this study we initiate an analysis which tries to understand the role of TV in the social imaginary, so the attention to the scientists and experts on the Argentinian productions is a step on this way. For decades studies have shown that the stereotypical views of scientists are dominant in western cultures, particularly amongst children and

¹ Ley de servicios de comunicación audiovisual (Ley n° 26.522).

teenagers (Long *et al*, 2001) ; other studies have shown that this early constructions tends to persist in adulthood if there is no special input to modify this (Rodari 2007, Mengascini *et al* 2004). Also is well known that this stereotypical image seems to be an obstacle to encourage women and minorities to study sciences and engineering courses and that many efforts were done to counteract this tendency (Long et al, op cit).

In this process TV role is, without any doubt, crucial. As Dorothy Nelkin (1987) said several decades ago, if we assume that for the majority of our society science *is* what appears in the press, nowadays we can extrapolate this affirmation to TV. In fact, public perception surveys which analyse informative habits, identify TV as a reference media in Europe and, USA as well as in Latin America (SeCyT, 2007; León, 2008) instead of the expansion of the Internet. In Argentina, TV was present in 96 %² of the houses and the paid service turns dominant in the last years (Lamac, 2014).

On the other hand we considered that is impossible to encourage TV or any other media unbound from the contemporary narratives. In which kind of televisual configuration is our actual offer in S&T? To understand changes in TV we choose the evolutionist Eco's perspective (1983) which assumes two big periods: *paleo-television and neo-television*, the former characterized as "a window to the world" and, the latter revealing the TV fiction and telling the audience "we are you". Since then, and specially with the digital expansion, new television forms have appeared and Scolari (2008), from an ecological perspective , called this contemporary stage *Hipertelevisión*: here the limit between public and private is diffuse, the interaction with audience, fragmentation and shortness are dominant , the image imitates the logic of other digital media and from that point it expands.

In the context of the changes of the television narratives which affects formats and discourses we analyzed for our corpus we find that some studies reveal an intention to modify the traditional image of science and scientists (Long et al, op cit). This search is also present in national audiovisual productions and on them we focus our work. In her analysis about *Canal Encuentro* (López, 2012) the author found the intention to move away from the classical representation of scientists who appear in an informal way, showing life stories and even contextualizing the sociopolitical productions of science

² Sistema Nacional de Consumos Culturales (2006).

and technology. However, López emphasizes the absence of productions which tackle controversial topics and escape the dominant view of popularization condemned by Hilgartner (1990).

Hence, when we talk about public communication sciences in TV we find ourselves conditioned between the scientific discourse and the distinctive features of a means of communication which has historically been establishing a construction of reality from fugacity, fragmentation and spectacularity. So what happens when TV constructs science and a scientists' images? Which is the prevailing logic? Scientific or mediatic? How are these narrative forms related to S&T public communication? These are just a few questions which emerged from this first analysis.

Methodology and results

- ***The corpus***

In order to know the actual offer of S&T in TV we made a comparative study in two selected weeks, one in 2011 and another in 2013. We analysed the programs considered to be of “scientific dissemination” - criteria established *ad hoc*- for both years (n = 174 / n = 184) in 15 channels, its presence in the air, its thematic areas, its genres and formats. We focused in particular on the revision of established format-area relations understanding formats not as communicative packaging loaded content (areas), but as flexible and dynamic significant structures constructed and projected areas of science and technology. In this way we wonder how mutually conditioned format and content are.

We defined a *scientific dissemination program* all those which meet at least two of these criteria:

- Topic: related with the thematic areas defined for this study .
- Treatment: a scientific view or analysis of the topic.
- Institutional references: S&T institutions as participants or sponsors.
- Scientists or experts participation: as presenters, protagonists, interviewers or interviewees.

The audiovisual formats considered based on Gordillo (2009) and Nichols (1997) were: interview, expositive documentary, reality, magazine, fiction and talk show. The

subject areas were adapted from (Gopfert,1996 ; Ramalho *et al* 2011) and were identified as Biological & Geological Sciences , Medicine & Health, Engineering & technology , Social Sciences & humanities, Environment , Exact Sciences , Social studies of S&T.

- ***Visualizing scientists***

From the *corpus* of our research we selected a sample of 10 programs produced in Argentina and which were categorized in different areas and formats. In most of them the main role is for a “visible scientist” (Goodell, 1977). They are broadcasted in the national channels *Tv pública*, *Canal Encuentro* and *TEC TV*. Here we present a short description of the program as they are presented for the broadcaster:

1. ***Mentira la verdad*** (*Encuentro*)

“We are used to having a particular look on the world and, occasionally, our way of thinking seems unquestionable. However, what underlies our ideas? Is there a single way of thinking the reality or the state of things? With the philosophical discourse as a partner, Darío Sztajnszrajber develops, problematizes and puts tension on different assumptions about history, beauty, love, happiness, identity and other issues. Mentira la verdad, a program made for young people but to be consumed at any age; a proposal to reflect upon what supports our value judgments, but also to think about the reasons that, over the years, have made visible some facts about others and have supported the stories that tell us about a country, a region, a society.”

2. ***Filosofía aquí y ahora*** (*Encuentro*)

“Filosofía aquí y ahora is an Argentinian program presented by José Pablo Feinmann which began to be broadcasted in 2008. Each chapter seeks to treat topics related with philosophy in a clear and didactical way. This task is carried out through the analysis of some philosopher, specific work or from the interpretation of facts (i.e. Auschwitz) based on different philosophical approaches. The illustrations are made by the cartoonist Miguel Rep.

3. ***Proyecto G*** (*Encuentro*)

Are women and men in fact so different? Why does our stomach make noise when we are hungry? Why do we have lint in the navel? How does a match work? These are some of the questions of our everyday life that we ask ourselves in Proyecto G. And to find the answers, nobody better than Doctor G. In the company of their experimental subjects, Sir from Here and Sir from There, they surprise the audience with researches and experiments to help us solve these daily mysteries.

4. **Desde la ciencia** (Tec Tv)

Diego Golombek, well known biologist and science communicator presents this series of interviews in which different aspects of the professional and private life of other recognized scientists is shown. Which are their passions, projects and commitments? Why is their work so important for our society? Technologists, chemists, sociologists, physicists, mathematicians, historians, nobody is left out.

5. **Marcianos - Cronología de la deuda externa** (Encuentro)

Argentina, 3668. After a nuclear disaster which took place 1400 years ago, three Martians, after traveling for years at the speed of light, wake up from hibernation and find the Earth as a desolated planet. The computer of the spacecraft collects information of the pastime of humanity and it is presented to the aliens along the series, in a huge screen with graphics and holographic characters created to give an explanation of the foreign debt.

6. **Área 23** (Tec Tv)

Starring Carolina Peleritti, this series tells the story of Eugenia Simone, a scientist expert in Molecular Biology who returns to the country after having lived 10 years abroad. Eugenia returns to join a group in a specialized laboratory which treats problems of the most diverse topics from medical issues to ecology. Her life will change when, unexpectedly, she has to run the Institute.

7. **El mundo según Galeano** (Encuentro)

The renowned writer Eduardo Galeano brings us his particular way to see Latin America and the world. His short and compelling stories, range from small details to the major issues mankind is facing nowadays. The journey has no limits, sincerity and the astonishment for human beings and the things around them are the guide.

8. **Mundo Bayer** (Encuentro)

The voice, the story and Osvaldo Bayer's personal files constitute an invaluable legacy for the country's cultural heritage. Mundo Bayer reviews the work and the career of historians, and affords us their anecdotes and researches. The proposal, narrated in the first person, proposes a deep encounter with the writer and journalist, his work and his opinions about the Argentinian history. Iconic photos, memories of journeys, published books, projects and much more.

9. **Científicos Industria Argentina** (Tv pública)

Científicos Industria Argentina tours the country to reach the frontier of knowledge, accessing the dreams of those who produce science and technology. It treats topics and stories of the daily task of the researchers, their findings, motivations and the impact of their work in the quality of people's lives.

10. **Alterados por PI** (Encuentro)

In this series Adrián Paenza explains in an entertaining way the route of Mathematics. He outlines the mathematical challenges which arose along history and which were resolved; he uses colloquial language to introduce problematic situations and its solutions.

In order to analyze how scientists from different areas are visually represented we focus on the scientist character presented inspired in the study of Long et al (2001). They belong to three categories: demographic, aspect and context and status.

Demographic:

- *Gender:* male/female
- *Apparent age:* age range , ten to ten years old, beginning at 20
- *Ethnicity:* Caucasian, Asiatic, African, Latin American , indeterminate

Aspect and context:

- *Clothing:*
- *Context:* laboratory (lab coats)/ special (designed for this purpose)/daily
- *Formality:* casual/ rather formal/ formal (suit).
- *Hairstyle:*Length: short haired/long haired- *Aspect:* tidy/ untidy
- *Voice:*:Regional accent: neutral/ urban/ regional
- *Attitude:*inquisitive/uninquisitive-serious/funny-explicative/dialogic-

reflexive/unreasoning

- *Physical context:* Nature: studio/ location-Environment: domestic/ work setting/public

Location: outside/inside

Status:

- *Job title/profession:* scientists with academic degree/ recognized experts
- *Role:* presenter/protagonist/interviewer
- *Knowledge:* own voice/authorized references (orals or graphics)

Program	Expert	Area	Ethnicity	Gender	Age	Clothing	Hairstyle	Voice	Context	Profession	Role	Knowledge	Attitude
<i>Mentira la verdad</i>	Dario Sztajnszrajber	Social Sciences & Humanities	Caucasian	Male	40-50	casual / daily	long haired / tidy	metropolitan (BsAs)	location / public / inside-outside	Philosopher	presenter	own voice / authorized references	inquiring / dialogic
<i>Filosofía aquí y ahora</i>	José Pablo Feinmann	Social Sciences & Humanities	Caucasian	Male	60-70	rather formal / daily	long haired / untidy	metropolitan (BsAs)	modern studio / virtual / inside	Philosopher	presenter	own voice	serious / explicative
<i>Proyecto G</i>	Diego Golombek	Biological & Geological Sciences - Exact Sciences	Caucasian	Male	40-50	special clothes	short haired / tidy	metropolitan (BsAs)	modern studio / virtual / inside	Biologist	presenter	own voice	serious / explicative
<i>Desde la ciencia</i>	Diego Golombek	Multi-area	Caucasian	male	40-50	rather formal/daily	short haired / tidy	metropolitan (BsAs)	studio (simulates a theatre with audience) / inside	Biologist	interviewer	shared	serious / explicative
<i>Marcianos - Cronología de la deuda externa</i>	the economist (animation)	Social & Humanities	Caucasian	male	40-50	rather formal/daily	short haired / tidy	neutral (Lat.Am)	virtual (spatial navy)	Economist	protagonist	own voice	serious / explicative
<i>Area 23</i>	the principal researcher	Biological & Geological Sciences - Exact Sciences	Caucasian	female	40	lab clothes	short haired / tidy	metropolitan (BsAs)	location / working setting (laboratory) / inside-outside	Molecular biologist	protagonist	shared	serious / explicative-dialogic
<i>El mundo según Galeano</i>	Eduardo Galeano	Social Sciences & Humanities	Caucasian	male	50-60	rather formal/daily	short haired / tidy	metropolitan (BsAs)	studio, working setting (office), inside	Social sciences writer (expert)	presenter	own voice / authorized references	reflexive / serious / dialogic
<i>Mundo Bayer</i>	Oswaldo Bayer	Social Sciences & Humanities	Caucasian	male	80-90	rather formal / daily	short haired / tidy	metropolitan (BsAs)	different locations, inside / outside	Historian	protagonist	own voice	reflexive (anecdotal) / serious
<i>Científicos Industria Argentina</i>	Adrian Paeza	Multi-area	Caucasian	male	60-70	rather formal/daily	short haired/tidy	metropolitan (BsAs)	modern studio / virtual/inside	Mathematician	presenter	shared	serious / explicative
<i>Alterados por PI</i>	Adrian Paeza	Exact Sciences	Caucasian	male	60-70	rather formal/daily	short haired / tidy	metropolitan (BsAs)	outside/inside (lectures & experiences in different locations)	Mathematician	presenter	own voice / shared	serious / explicative

Table 1

Table 1 shows the results of this categorization. Here, it is possible to notice that most of them are Caucasian males and that the only woman represented is a fictional

character (*Area 23*). No other ethnicity is represented and none of them is under 40 years old. Most of their clothes are rather formal and their hairstyle is tidy, even if long haired. One case (*Mentira la verdad*) is more casual but always in dark colors and it is correlated with the aesthetic proposal of the program and the target audience. Two exceptions were found in which the experts wear a lab coat, one in the fiction (*Area 23*) where the scientist wears a real one, and the other (*Proyecto G*) where the presenter wears a “specially designed” one, colorful and well differentiated from the typical white one. The hairstyle also goes from the formal aspect in most of the programs to a rather informal one in the more innovative proposal (*Mentira la verdad*). The dominant accent of the voices are the metropolitan one, which is characteristic of Buenos Aires city and there is no regional voice represented. In 8 out of 10 cases the scientist or the expert is the authorized voice to announce the truth, to explain whatever to the audience or to the other protagonists. The exceptions are the programs with interviews (*Desde la Ciencia / Científicos Industria Argentina*) in which the interviewee is a colleague so, the knowledge can be shared. The oral explanations, sometimes with some graphic help, are dominant in a clear transference of the academic way to teach some contents. Looking at a post-modern aesthetic, some words appear on screen to reinforce the spoken message, and they are treated as images. The scientists analyzed show a reflexive attitude, rather serious yet in a somewhat comic context (*Proyecto G*). The physical context is a typical research laboratory only in the fiction (*Area 23*), but this location is avoided in the other productions, three of which evidence the studio (*Desde la Ciencia, Proyecto G, Científicos Industria Argentina*) with a rather post-modern aesthetic while the others offer a variety of possibilities from a random street to the private office of the writer.

Ideas to discuss

In spite of the fact that the stereotypical image seems to be avoided by the national productions, some stereotypical characters appear. Most scientists and experts shown by the Argentinian TV are male, middle aged and rather serious and formal in their visual aspect. The scientists/experts are the “owners” of the knowledge, which is shared with colleagues of similar academic status; however, if the interlocutor is not a peer, the difference is highlighted. This status in knowledge is consistent with the

traditional, criticized but still dominant “deficit model”, and these examples make evident the difficulties that persist to make a proposal of a more dialogical model to the public communication of S&T (Bucci, 2008). The explanation, as the typical academic resource, is transferred to the screen in different formats and it is present also in the fiction. In addition, most of the scientists/experts analyzed appear without their research group or the institution of reference, reinforcing the idea of an individual work and knowledge.

We noticed that formats either fiction or reality are beginning to be experimented in Argentinian TV to communicate S&T and probably this innovation could expand in the new context of production. Likewise, new hybrid formats are emerging, modifying the possibilities of the discourses and messages. What is more, we could say that the *hipertelevisión* offers a variety of resources and narratives constantly changing which give the possibility to a broader way to communicate S&T.

The dominant metropolitan accent shows how centralized the audiovisual productions still are, being this a characteristic bound to change in the context of the new national audiovisual law which aims to diversificate the origin of the productions.

To conclude, it would be right to say that this is just a small sample of our scientists/experts in our TV and lots of questions arise about the reception of their image amongst the audience. Without any doubt, all these changes are correlated with deep changes in the escopic’s regime (Jay, 2007) which are necessary to understand. From another perspective and in order to analyze the scientific production, it is also interesting to study what happens with the scientists when they become “famous” because of their TV image. What kind of treatment do they receive from the academic community? These are questions to be answered in a future research.

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