

Science and technology on Catalan area television

Gemma Revuelta and Marzia Mazzonetto

- *The role of the media and especially of television is vital in acquiring new knowledge related to science and technology, although there is little presence of this kind of content when compared with other current issues. This article provides the preliminary findings of a study carried out by the Observatory of Scientific Communication of the Pompeu Fabra University, requested by the CAC, which has analysed the science and technology content broadcast by Catalan area television and its typology.*

Keywords

Scientific communication, mass media, television, content analysis, social perception of science

Introduction

Science and technology constitute fundamental pillars for the development of contemporary society. In the specific case of Catalonia, over the last few decades the confirmation of this situation has led to great efforts being made to improve the infrastructures and working conditions in the area of research, development and innovation (RDI). Notwithstanding this, merely promoting science is not enough to guarantee a society's progress if an adequate level of understanding is not also achieved on the part of the population. For this reason, and with the aim of encouraging citizens with more decision-making capacity, 2007 was declared the Year of Science, first in Barcelona and afterwards in Catalonia and in the rest of Spain. Encouraged by this programme, throughout the year hundreds of entities organised a large number of activities (in Barcelona alone it is calculated that more than one million people took part in these activities).

On the other hand, when studying how citizens acquire new knowledge of science and technology (S&T), of note is the key role played by the media. In fact, television is the main channel of information for the public at large, as is continuously concluded in various studies on the social perception of science. Of these, of particular note in our area are the Science and Technology Euro-barometers of the European Commission, as well as the studies coordinated by the Spanish Foundation for Science and Technology.

Notwithstanding this, in contrast to this fundamental role of television, when the S&T content in TV news or general programming has been analysed, one of the most disappointing conclusions is that it is scarcely present compared with the space occupied by other news areas, such as politics, sports or events (B. Leon 2006; S. de Cheveigné 2006; S. de Cheveigné and E. Veron 1996).

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In short, we are faced with increasingly more effort being made to disseminate scientific information on the part of administrations and RDI centres, television's potentially central role as the main means of information for the population, and a paradoxical shortage of science on this medium, as least in the news programmes.

Given this situation, and on the request of the Consell de l'Audiovisual de Catalunya (CAC), a team from the Observatory of Scientific Communication of Pompeu Fabra University (OCC) set up a study to analyse more extensively the science and technology content on television stations covering Catalonia and its typology. The findings from the first part of this study constitute the basis of this article.

Theoretical framework

A review of the existing literature revealed that the analysis of science and technology (S&T) on television is a relatively recent and undeveloped area. Because of this scarcity of literature, on designing our study it was therefore necessary to look for more general theoretical references.

Consequently, in the more generalist framework of television studies we have taken into account, among others, the critical focus of Briton John Fiske concerning the role of the economic and cultural aspects in TV production and how it is received by the audience (J. Fiske 1987; J. Fiske and J. Hartley 1989). Also of value have been the multidisciplinary instruments for the qualitative analysis of media produced by the Dane Klaus Jensen (K. Jensen and N. Jankowski 1993) and the instruments of quantitative analysis developed, among others, by the Italians Francesco Casetti and Federico di Chio (F. Casetti and F. di Chio 1999), which have been used to produce and study the database on the TV programmes.

For their part, studies on the relationship between S&T and television published to date have focused particularly on quantitative aspects. Firstly, we should note the research coordinated by Bienvenido León, lecturer at Navarre University, on the S&T content in five European countries: France, Italy, Germany, the United Kingdom and Spain (B. León 2006). This research, which was carried out in 2003, concluded that the news on science, technology, health and the environment accounted for a low percentage of all items

broadcast in news programmes (specifically 8.1%, with half of this percentage dedicated to health). And this proportion was much smaller than that for other subjects, such as politics (16.8%), sport (16.8%) or events (12.5%).

A few years earlier, in a study carried out in 8 European countries (and in which a team from the OCC-UPF took part, among other research groups and centres), the structures of S&T news items were analysed, broadcast by TV channels during the month of October 1994. Of the 69 most notable news items from this period, there was great variability in the origin of the news item depending on the country concerned. In fact, only one news item coincided in all countries on the same day and in the same time slot. This was information concerning the oil spill at Usinsk, to the south of the Arctic Circle. This news item was broadcast in a similar way in all the countries and even the images were the same. These were images provided by an ecologist group with an effective communications mechanism. The impact of this mechanism became very clear, especially when compared with the great variability found in the rest of the news items. The study also revealed that news items tended to be more local than international. Suzanne de Cheveigné, researcher from the SHADYC centre (sociology, history, anthropology and cultural dynamics) of the French CNRS, has gathered together in-depth findings from this study and adds to our knowledge of S&T on television in her work (S. de Cheveigné 2006; S. de Cheveigné and E. Veron 1996).

Objectives

The overall objective of this study was to analyse the science and technology content (S&T) in television programming for the Catalan area and to study how this content is handled by the different TV formats (especially in news programmes, specialist science and magazine programmes).

In the first part of the study, the specific objectives set were: to measure the relative weight of S&T compared with other news areas and to analyse how television treated S&T topics in terms of distribution of information by area and sub-area, sources of information (including not only the representation of each sector but also the participation of women as a source of information), geographic origin, the focus of

the news item, etc. We also wished to know whether the fact that 2007 was the Year of Science might be reflected in the data obtained by our study (particularly in terms of an increase in the volume of information or specific references to activities carried out as part of the Year of Science).

In a second part (currently underway), the study pursues another four specific objectives: to analyse the presence of science carried out in Catalonia, gender representation, to study the comprehensibility and discourse in information and a specific study of programmes specialising in science broadcast for the area of Catalonia.

This article summarises the findings from the first part of the study.

Methodology and sample

The periods of study were the second quarter of 2006 and of 2007 (hereinafter 2Q-2006 and 2Q-2007). A comparison between the two quarters has allowed us to analyse the potential impact of the Year of Science 2007. Moreover, these are “regular” quarters in the sense that they do not coincide with any great events in the area of science that might have biased the results in one direction or another. In fact, during the period studied, the only event that partially affected local TV programming for a few days were the municipal elections in Catalonia in the month of May 2007.

The sample was made up of the following three kinds of elements:

- A database containing the news items on science and technology broadcast in the midday or evening news programmes (either) provided by the CAC, corresponding to the period under study and on the following four channels: TV3, TVE a Catalunya, 8tv and Barcelona TV. The database contained information on the time of the broadcast, the duration and the headline for the news item.
- The programming grids provided by the CAC for the channels (TV3, K3/33, 8tv and Barcelona TV, in this case) corresponding to the period under study. These grids contain information on the planned programmes. In some cases, the information was very detailed (TV3, K3/33) including, for example, the name of the guests on a specific programme, the title and a brief summary of a

film, etc. In other cases (8tv and BTV), the information was much less, which restricted the search for S&T content on these channels.

- A sample of the different recordings: news, specialist science programmes (*Redes* - La 2, *Einstein a la platja* - Barcelona TV and *El environment* - TV3), magazine programmes (*Els matins* - TV3), etc.

Based on the elements provided by the CAC (news database, programming grids and recordings), two new databases were created specifically for this study: one for news programmes and another for the general programming grids. In the first database, each record corresponded to a news item talking about S&T. In the second, each record corresponded to a programme or part of a programme of any journalistic genre (except for news) that dealt with S&T.

The analysis of the presence of S&T in the news and in general programming, as well as the impact of the Year of Science 2007, was quantified in terms of the number of items (or records in the databases) and the broadcasting times, to be compared with other areas.

In order to analyse the S&T content, the distribution was studied according to themes and sub-themes, sources of information (by sector and by gender), geographic origin and the focus of the news item.

- The **themes** were divided into “science and technology” (including scientific advances in general and bioethics, both in Spain and abroad), “environment” (including information talking about natural phenomena, pollution, ecology, forest fires, eclipses, pandemics, etc. happening around the world) and “health” (referring to news items that talked about illnesses, drugs, addictions, intoxications, food safety, healthy habits, government actions regarding health issues, etc.).
- Given that the themes were so broad, the categories used to classify the more specific **sub-themes** were as follows: “biomedicine” (biotechnology, cloning, stem cells, pharmacogenetics, etc.), “psychology and mental health”, “medicine and health” (this category excludes news items related to biomedicine and psychology and mental health), “nature and biology”, “environment” (excluding those of nature and biology), information and communication technologies or ICTs, “technologies”

(excluding ICTs), “astronomy”, “exact sciences” and “other disciplines”.

- The **focus** refers to the specific emphasis of the news item on one aspect or another of the information. So the news items were grouped according to five categories of focus: “research” (when the news item focused principally on research and advances in scientific knowledge), “policy” (when the content was related to specific policies and announcements related to the management of science, health and/or the environment), “controversy” (debates between different groups or opinions), “risk” (when emphasis was placed on information regarding the risks resulting from exposure to certain factors, be it to health or the environment) and “catastrophe” (this group included information on large-scale natural or artificial phenomena regarding their consequences: earthquakes, hurricanes, etc.)
- For their part, the **sources of information** were grouped according to the following categories: “scientific and academic sector”, “administration”, “medical sector”, “civil associations”, “industrial sector” and “museums and science centres”. Data was also gathered regarding whether the source of the information was male or female.
- To analyse the **territorial origin** of the news items, these were grouped into three categories: “Catalonia”, “state” and “abroad”.

Science, little presence as news

The most constant observation in all phases of this study was the limited space dedicated by television to information on science and technology. The journalistic genre where this stands out most evidently is that of the news. On average, news dedicated 1.7% of the total time to items about science or technology, environment or health (Table 1).

Notwithstanding this, based on the data provided by the Content Analysis unit of the CAC, on comparing the percentage of time dedicated to S&T in the news programmes of the four channels (TV3, TVE a Catalunya, 8tv and Barcelona TV) during the second quarter of 2006 (2Q-2006) and of 2007 (2Q-2007), a rising trend could be observed. In 2007, on most channels the number of news items on S&T

rose in comparison with the same period in 2006: on TV3 this went from 1.20% to 1.71%; on TVE a Catalunya from 1.61% to 1.83%; on BTV from 1.43% to 1.45%.

The only channel with a reduction was 8tv, which went from 2.28% in 2Q-2006 to 1.91% in 2Q-2007. This is partially influenced by the high percentage of time (if compared with the average) that this channel in particular dedicated in 2Q-2006 to news about the “environment” (4.40%), in dealing with numerous events, most of a catastrophic nature, which affected different zones in the world, such as floods (in Europe and the United States), earthquakes (Iran and Indonesia) and volcanic eruptions (Japan and Peru), as well as threats, both local and state-wide, due to the rise in temperatures and the lack of rain.

In spite of the increase in news items on S&T observed in 2007 in comparison with 2006, the news items of the later year rarely referred specifically to the celebration of the Year of Science 2007. Specifically, only five from more than 1,200 news items analysed in the news programme sample were related to events from the Year of Science programme (including the announcement of the celebration and some prior exhibitions that took place in 2006 and not in 2007).

Environment and health, the most newsworthy

Evaluating the data as a whole from the news programmes on the four channels, the subjects that received most attention were those of the “environment” (2.52% of the total time occupied by the news) and “health” (1.60% of the total); in last place was the category of “science and technology” with 0.94% of the news.

Regarding the time that each channel dedicates to information, of note is the fact that 8tv is the channel that dedicates most time to news on S&T: 2.10%. The other channels analysed dedicate, respectively, 1.72% on TVE a Catalunya, 1.49% on TV3 and 1.44% on Barcelona TV.

Subdividing the broad themes into more specific sub-themes, the news was distributed as follows: medicine and health (n = 399), environment (n = 271), nature and biology (n = 215), technologies (n = 67), biomedicine (n = 49), TIC (n = 39), astronomy (n = 22), psychology and health mental (n = 17), exact sciences (n = 14) and other disciplines (n = 3).

Different focus of news by theme

A study of the distribution of focus for news items on science and technology broadcast by the news programmes of the sample has provided information on how the news items are handled or focused according to each theme.

In 29% of the news items, what is fundamentally emphasised are aspects related to “research”. 25% place more emphasis on aspects of “scientific and/or medical policy”. 22% focus more on information related to certain “risks”. 16% don’t talk about risks but of “catastrophes”. And in 8% of the cases the news items are from the focus of “controversy”.

The results obtained in cross referencing these data with that of the news distribution in the three broad themes – “science and technology”, “environment” and “health” – have been represented in figure 1. Most of the news on the “environment” is located in the focus categories of “risk” and “catastrophe” (news items such as “The little rainfall in April

and May has increased precautions concerning water consumption”, “The high concentration of pollen in the atmosphere will lead to a lot of allergy cases this year” and “World alert on the impact of climate change”, “A strong earthquake on the Indonesian island of Java has caused more than three thousand deaths”).

On the other hand, most of the news items on health were in the category of “policy” (“Together with Berlin, Barcelona will manage the first European stem cell register”, “Spain has become the fourth state in Europe to approve therapeutic cloning”) and “research” (“First simultaneous heart and lung transplant in Catalonia”, “Babies aged under 6 months distinguish by facial gesture between people talking to them in English or French”).

Finally, the news items dedicated to “science and technology” are mostly of a “research” type focus (“A craft from the European Space Agency has reached Venus for the first time”, “A group of scientists has detected a focus of contamination in the high mountain lakes of Aragon”).

Table 1. Percentage of time dedicated to the news on S&T compared with the total time of news programmes

<i>Channels:</i>		<i>Theme:</i>	Science and technology	Environment	Health	Average percentage per channel
TV3	2Q-06		0.50	2.04	1.25	1.49
	2Q-07		0.94	2.42	1.78	
TVE a Catalunya	2Q-06		0.43	2.65	1.76	1.72
	2Q-07		0.97	2.62	1.89	
8tv	2Q-06		0.29	4.40	2.15	2.10
	2Q-07		1.96	2.14	1.63	
BTV	2Q-06		0.92	2.24	1.12	1.44
	2Q-07		1.48	1.62	1.24	
Average percentage per theme			0.94	2.52	1.60	

Source: author, based on data provided by the CAC.

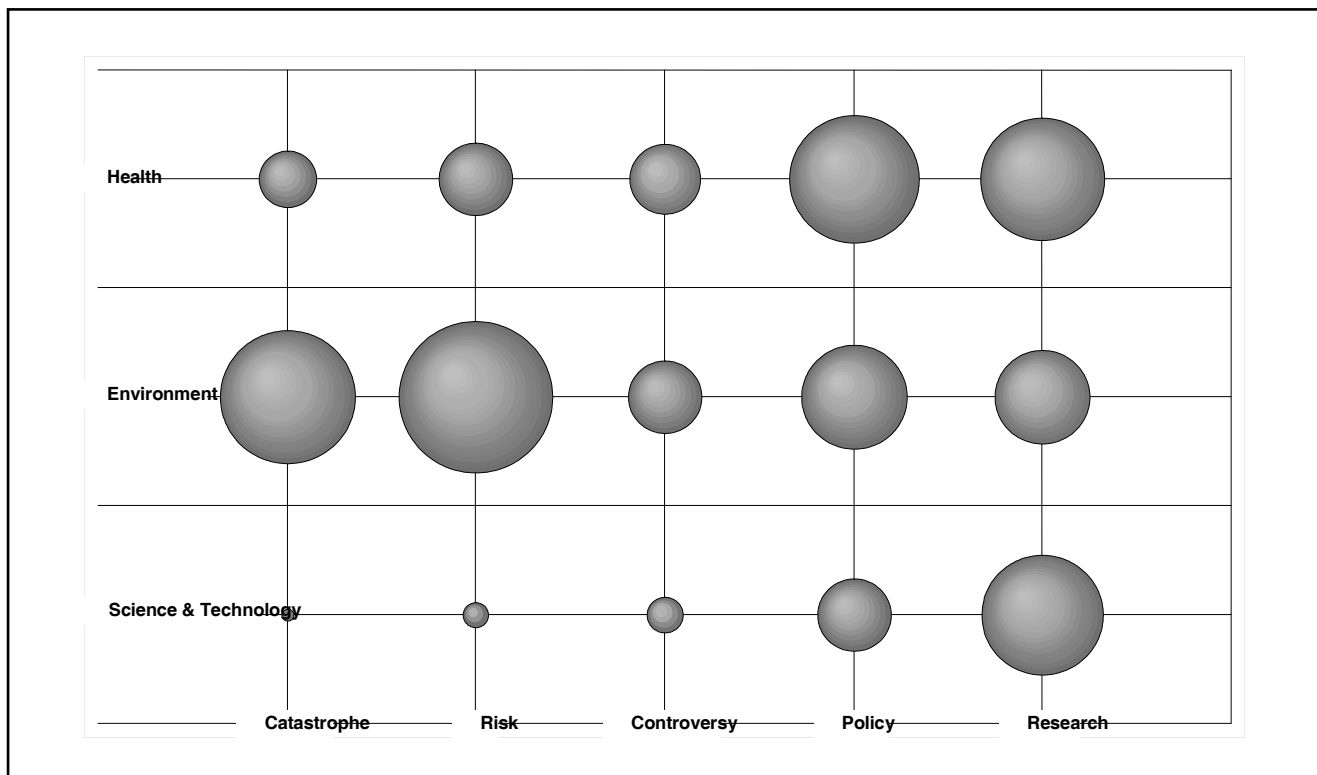
In other words, and as can be seen in figure 1, news items on health are fundamentally presented from a dual perspective in which issues of health policy and research predominate, with little presence of information on risks for health, controversy or situations of a catastrophic nature that affect health. On the other hand, information on environmental issues is presented by highlighting aspects of catastrophe and risk, with information on policies and research being secondary and with little information on the possible controversies that exist. Finally, news items on science and technology are totally different in nature: in this case, the information focuses on announcing advances in research and, secondly but at some distance, information related to scientific policy. The other three types of focus (controversy, risk and catastrophe) are practically non-existent.

Origin of the information: sources and territory

With regard to the study of the sources of information, among those news items where it has been possible to identify the origin apart from the owner (70% of the cases), the most present sectors are medical and administration, followed closely by the scientific and academic sector.

The news items with the medical sector as their main source of information focus fundamentally on the following subjects: success achieved by medical personnel pioneering therapies and advances in the area of research (“Dermatologists from Hospital Clínic have carried out a new study that facilitates the early detection of skin cancer”, “French surgeons commemorate the success of restorative surgery with a view to a second operation in China”), the holding of conferences or seminars on different health issues (“Celebration of the World Day Without Tobacco with

Figure 1. Distribution of the number of records on science and technology, environment and health, by news item focus



Source: author.

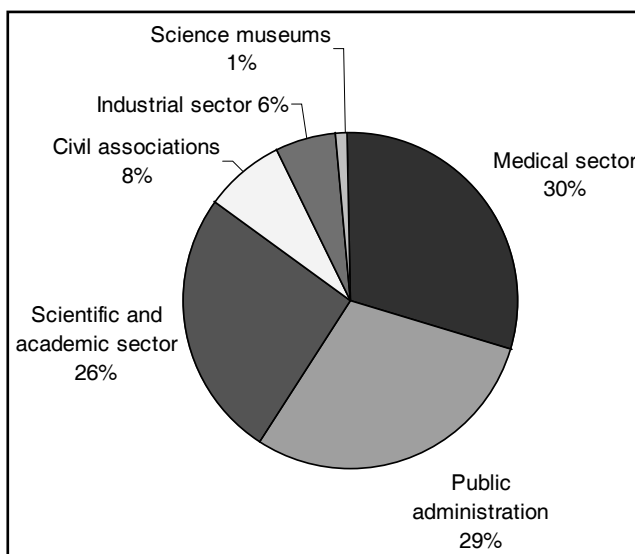
free treatments for giving up smoking”, “Celebration of the World Blood Donation Day, when it is reported that the number of donations has grown at the same rate as the population”) and, finally, controversies or problems resulting from the health system itself (“Paediatricians demonstrate in Barcelona against the Health Department’s plan to reorganise paediatrics”, and “20% of resident doctors in the Vall d’Hebron are foreigners because of the prestige of practical medical training in Catalonia”).

The news items whose main source of information are public administrations and institutions focus on information on public policies related to scientific research, health and preventing pollution provided by local authorities (“The department for Telecommunications and Information Society of the Generalitat is promoting training courses on new technologies”, “The Department of the Environment will extend the protected zones within the Natura 2000 European network”, “The Spanish parliament has approved the new medication act”) and international sources (“UNESCO is promoting a campaign in educational centres to raise awareness of the socially-aware use of water”, “Water resources are not within reach of everyone, according to a United Nations report”).

Close behind comes the third most mentioned sector, namely the scientific and academic sector (26%). In this case, the specific content of information is on discoveries and advances in research, development and innovation (“A team of European astronomers has discovered a planet very similar to Earth outside the solar system that might contain liquid water”, “A study carried out by European researchers reveals that aerosols for cleaning might cause respiratory problems or asthma”), conferences and congresses (“Celebration of the Spanish Computing Olympics at the UPC in Barcelona”) and institutional news items (“Inauguration of the Biomedical Research Park in Barcelona”).

On the other hand, civil associations are mentioned as a source of information in 8% of the news items on S&T. This is information on local initiatives or debates on controversial subjects (“Greenpeace denounces the illegal fishing of tuna”, “UNICEF is starting a campaign demanding the involvement of governments in the fight against the AIDS pandemic”). The industrial sector is mentioned in 6% of the news items, especially related to innovation, inventions or institutional news (“A company in Reus has invented the first

Figure 2. Distribution of the number of news items by the sector to which their sources of information belong



Source: author.

domestic security robot in the world”). Finally, science museums are mentioned in 1% of the news items.

Regarding the territory where the news item takes place, Catalonia is the most represented area, with 49% of the news focusing specifically on this territory. For its part, 35% of the cases are about international news items and 16% are from Spain.

Science “pushes in” to general programming

On average, the content on science and technology take up a higher percentage of general programming of the four channels analysed (TV3, K3/33, 8tv and BTV) in terms of the number of programmes or sections of programmes (records in our database) than news programmes. Specifically, this percentage was 9%, obtained from the programming grids provided by the TV channels themselves to the CAC, excluding only news programmes, which were analysed independently.

It can also be noted that the channels analysed dedicate different percentages of general programming to S&T content. So, including information on the weather, K3/33 dedi-

cated on average almost 20% of the total of its programming to S&T, while on TV3 this percentage is 10%. At the other extreme, BTV dedicated 4.2% of its total and 8tv, 1.7%. Notwithstanding this, this last observation must be taken with caution as the grids sent by 8tv and BTV had less detailed information than those from TV3 and K3/33 and this often made it impossible to know the content of programmes (e.g. while the autonomous community channels provided the title of films in their programming, in the case of BTV and 8tv this information was missing). This has meant that these channels are underrepresented in the overall calculation.

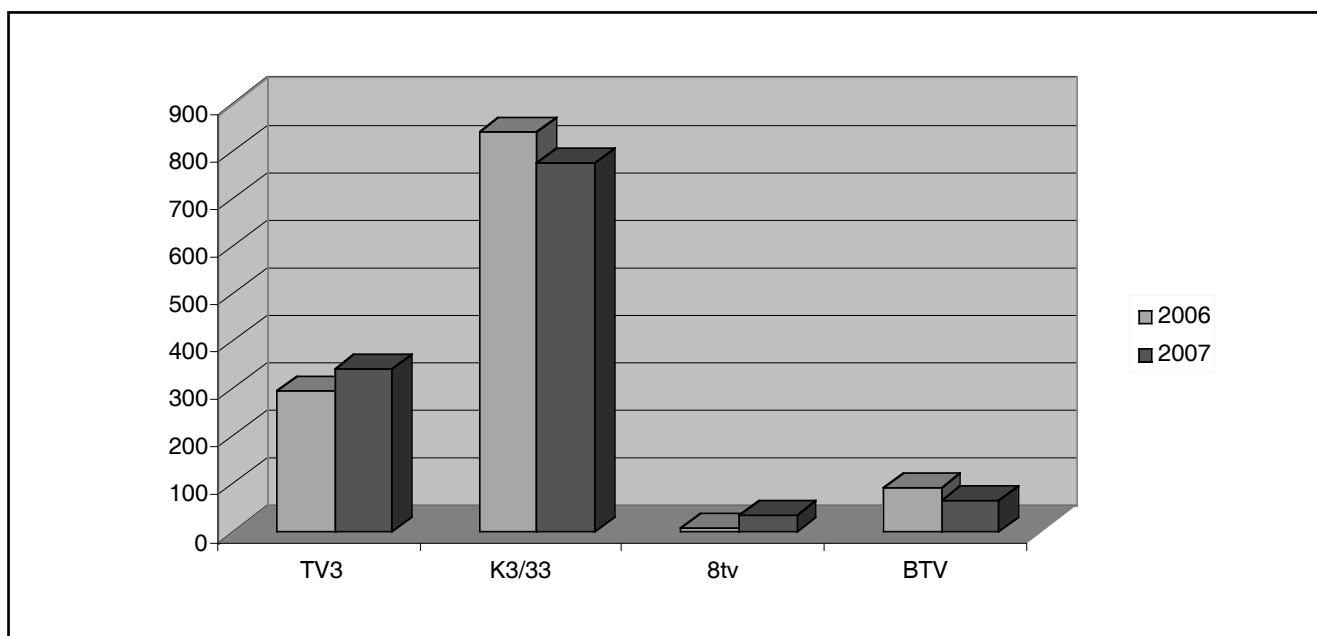
In comparing the number of records accumulated in the second quarter of 2007 with those from 2006, we can see that these fell by 0.5%. This variation, although minimal, contrasts with that corresponding to news programmes, where we can clearly see a rise in S&T content from one year to another. Also in this case there are differences between channels: K3/33 has been characterised by a re-

duction in the records of 7.6% between 2006 and 2007, while on TV3 the records rose by 13%. In this last case, in order to analyse correctly the data, the records had to be excluded that corresponded to information on the weather, as sometimes this was within the news programmes and sometimes separate (i.e. sometimes it is counted as independent records and sometime it isn't included in the calculation).

An analysis of the distribution of S&T content according to journalistic genre has shown that this type of content is presented to viewers primarily via "cultural and documentary" programmes (54%). The distribution by other journalistic genres is as follows: "infoshow/magazine", 10%; "weather information", 9%; "children's programmes", 9%; "news programmes", 8%; "series", 7%; "fiction" less than 3%, and "show" and "sports" less than 1%.

Also in this case, the distribution of records has been influenced by the characteristics defining the style of each

Figure 3. Breakdown of the number of records on S&T in the general programming grids by channel and quarter analysed (*)



Source: author.

(*) It should be noted that the programming grids sent by TV3 and K3/33 were much more detailed than those from 8tv and BTV, which has meant that the two latter channels are underrepresented.

broadcaster. For example, on K3/33 most of the programmes with S&T content are cultural and/or documentaries (*Quèquicom*, *Món salvatge*, *Thalassa*, *El jardí vivent*, etc.) or children's programmes (the cartoons on *Club Súper3* and *3xl.cat*). On the other hand, on TV3 the scientific content is distributed more uniformly among the different journalistic genres: most is found in "infoshow/magazine" type programmes (*Els matins*, *El club*, *TVíst*) and "news programmes" (*El environment*, *30 minuts*, *Ve de gust!*), secondly in "series" (*Star Trek Voyager*, *Around the World in 80 Days*, *Strong Medicine*) and, lastly, "fiction" films (*Anthrax*, *Matrix*, *Epicenter*), "children's programmes" and "cultural/documentary" programmes (*3.0*, *Tot un món*). In the part of Barcelona TV and 8tv's programming that has been possible to analyse, S&T is present in some cultural programmes (*Einstein a la platja* and *Tic Tac Web*), in the information on the weather and in some fiction films.

Some of the channels analysed have specialist S&T programmes. This is the case of *Quèquicom* on K3/33 and *Einstein a la platja* on BTv. On other occasions, these specialist programmes focus on more specific issues, such as the environment or nature. This is the case, for example, of the programme *El medi ambient* on TV3, and *Thalassa* and *Món salvatge* on K3/33. We should remember that, at the time of writing this article, the second part of our study, which includes a specific analysis of specialist programmes, has still not been finished.

An analysis of the distribution of records by geographic origin has revealed that 49.5% of the total programmes with S&T content were produced in Catalonia, 1.8% in Spain and 48.7% in the rest of the world. 30.7% of the total records last between 50 and 60 minutes (especially cultural/documentary programmes). 28.6% between 25 and 35 minutes (cultural programmes and sections of magazine programmes). 10% of the records last between 10 and 20 minutes (news and children's programmes) and 3% of the total last 5 minutes or less (in most cases information on the weather). Remember that each record corresponds to a programme or section of a programme (in the case that information from the programming grid or that contained on the channel's website has allowed us to identify the content of the different sections in a programme, especially in magazine and information type programmes).

Regarding the question of gender, the study has detected

that not only are most of the experts interviewed or taking part in different ways in the programmes speaking at some point on S&T subjects are men (82.1%), but also most of the presenters of these programmes are male (81.3%).

Nature, meteorology and health, the greatest presence in general programming

"Nature" is the area of interest most frequently covered (34%) among the records that go to make up the percentage of general programming that Catalan TV channels dedicate to S&T. The habits, lives and characteristics of animal species, ecology and natural catastrophes are among the most frequent themes in this area, especially covered in documentaries, in cultural programmes and cartoons. In second place comes "meteorology" (27%, in most cases brief programmes with information on the weather that accompany news programmes) and, in third place, the area of "medicine", biomedicine and quality of life (15%). This is a broad area, which more specifically includes, as the most frequent sub-theme, what we have called "medicine and quality of life" (especially issues to do with food, sexuality, some illnesses such as cancer, AIDS or heart problems and the health system itself). Secondly, by order of frequency, also included in the general programming are the sub-themes of "biomedicine" (transgenics, stem cells, genetics, cloning, assisted reproduction) and "psychology and health mental" (mental illness, addition to alcohol or drugs, social relations). The area of "medicine and quality of life" is present in several journalistic genres: it is the topic of debate in magazine programmes, as well as the context for series and films. The issues that go to make up the sub-theme of "biomedicine" and that, in general, are related to genetics and biotechnologies are also the source of inspiration for some of the films broadcast during the period of study.

Closely following medicine comes the "environment" (12%), including themes such as the lack of water, energy resources, conservation of land, climate change, pollution and global warming.

4% of the records deal with themes of "science fiction" or "information and communication technologies or ICTs", while 2% of the records are taken up with "exact sciences" and "other technologies".

Science and technology in a magazine programme

While carrying out the project, the role of non-specialist programmes in transmitting scientific and technological information aroused particular interest. In other words, although S&T information is not very abundant in news programmes, and specialist programmes are not very abundant either, it is true that magazine type programmes often deal with issues related to these subjects.

Specifically, we analysed the magazine programme *Els matins*, broadcast live from Monday to Friday, from 8 am to 1 pm by TV3. The programme is mostly dedicated to analysing political happenings and local news, is directed by Josep Cuní and presented by himself and also by Helena Garcia Melero – until February 2007 – and afterwards by Lúdia Heredia.

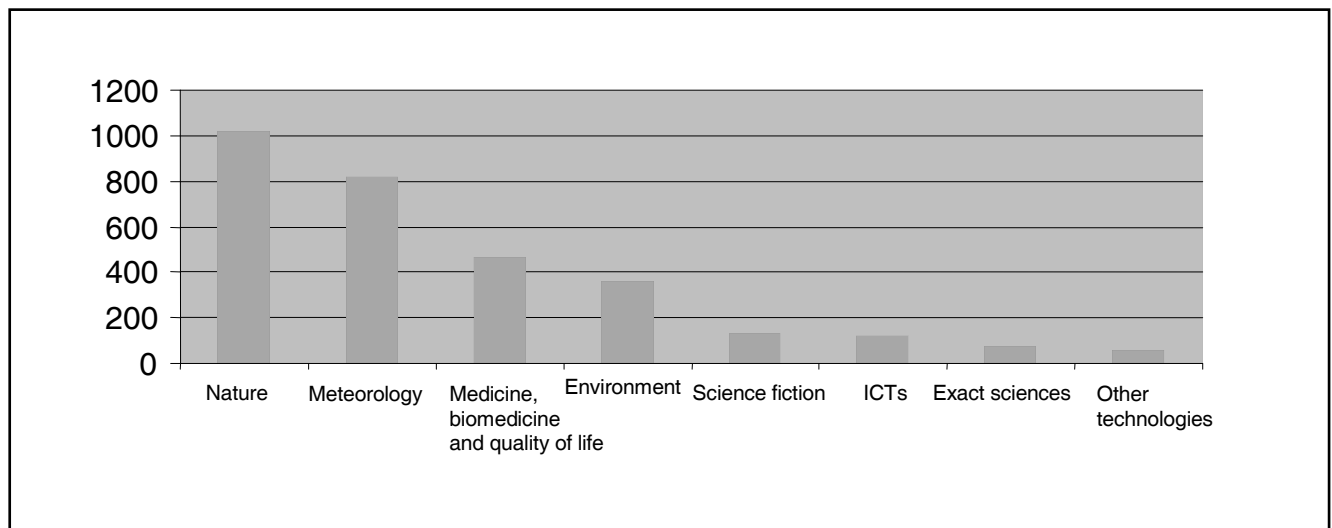
A sample of fifteen episodes was selected using the method of the week constructed between the total chapters broadcast in the period of study. Of these fifteen episodes, thirteen had at least one interview, debate, talk or face to face on themes of science, medicine, environment and/or technology. In this case, the most recurrent areas of interest were also “medicine and quality of life” and that of the “environment”.

The most important characteristic of the programme, in addition to its special attention on current scientific themes, consists of the wide range of people that take part in the debates most of the time. In the episodes analysed, debates were detected with up to ten people for the different sectors involved. This is the case, for example, of a debate on maternity (5 May 2006), in which seven mothers took part (worker, single adoptive, etc.), two representatives from civil associations and a gynaecologist. And the debate on recycling, with the participation of a scientist, two politicians, four citizens and three representatives from public institutions. In other words, in this kind of television format the sources of information do not only come from the area of science, medicine or administration but citizens themselves clearly take part in the debate, thereby bringing this format closer to the audience. This emphasis on proximity is also to be found in the themes chosen, which are everyday contemporary issues.

Conclusions

Firstly, as happened with earlier studies carried out in other geographical areas, our study concludes that the presence

Figure 4. Breakdown of the number of records by area of interest



Source: author.

of S&T content on news programmes on Catalan television channels is very limited in terms of the percentage of time dedicated to this area. Notwithstanding this, it is interesting to observe a significant rise in this percentage in the second quarter of 2007 compared with the same period in 2006. This observation, which might be due at first to the effect of the Year of Science 2007, is not entirely clear, as the number of news items that talked about activities as part of this cultural programme throughout 2007 is too small to justify the rise. On the other hand, the general programming has no increase when comparing 2007 to 2006, and we have even found a decrease, although this is not significant.

A new contribution provided by our study has been the analysis of the focus of news items according to the theme being covered. The focus on catastrophes surrounding information on the environment, with little concern for research or policies in this area, contrasts with the treatment given to news on science and technology, practically centred on talking about advances and achievements of research, a focus also of the news items on health, and sharing a great degree of interest, in this case, with information on health policies.

The study of the general programming by the geographical origin of the information, the formats in which it appears as well as the distribution of the “actors” has also been very valuable to understanding how the social representation of S&T is constructed. So research has allowed us to verify that, on the channels studied, the Catalan area dominates the territorial representation and, in second place, the international area, with a much smaller proportion coming from the rest of Spain.

Regarding the formats in which it is more usual to find S&T content, the study has confirmed that this depends very much on the channel. The clearest case is that of the autonomous community channels: while S&T appears particularly in cultural and documentary programmes on K3/33, on TV3 we might say that it “pushes in” throughout the programme, from magazine and news type programmes to films, cartoons and children’s programmes.

By gender, the study shows that women are not very visible, with less than one woman for every four men, both among the people interviewed and also among those presenting or directing the programmes that talk about S&T.

By sector, the most represented when talking about S&T

were the medical sector, administrations and the scientific sector, in this order, followed by the industrial sector, civil associations and science museums. This distribution, which is very similar in the news programmes, is significantly different in the magazine type programmes, where we see a greater representation of citizens and other groups. These data suggest that magazine programmes talk about S&T issues in a less technical format, closer to the audience and probably less “rigid”. But it is important to note that, in this format, the S&T content focuses more on the environment and medicine and quality of life, which are more familiar and everyday issues. It would be good to continue studying the role of this kind of programme in transmitting and receiving scientific information on the part of the public given that, to date, analyses have focused particularly on specialist or news programmes.

Bibliography

AIMC. *Estudio General de Medios. Febrero a noviembre de 2007 y octubre 2006 a mayo de 2007*.

<<http://www.aimc.es/aimc.php>>

BATES, A. *Broadcasting and education*. London: Open University, 1984.

BENNET, J. "Science on Television". In: SCANLON, E. [et al.] (ed.) *Communicating Science 2*. London: Routledge, 1999.

CONSEJO AUDIOVISUAL DE ANDALUCÍA. *Recomendaciones sobre la comunicación social de la ciencia y la tecnología (divulgación científica) en los medios audiovisuales*, 20 December 2007.

<http://www.consejoaudiovisualdeandalucia.es/export/sites/caa/Galerias/descargas/recomendaciones/Recomendacion_es_Electorales_del_CAA.pdf>

CONSELL DE L'AUDIOVISUAL DE CATALUNYA. *Informe sobre l'audiovisual a Catalunya 2006*. Barcelona, 2007.

<http://www.cac.cat/pfw_files/cma/recerca/altres/Informe_Audiovisual_2006.pdf>

COROMINAS, M.; GUIMERÀ, J. À.; FERNÁNDEZ, I.; BONET, M. "Polítiques públiques de ràdio i televisió local en l'entorn digital a Espanya (1997-2004)". In: *III Congrés Internacional Comunicació i Realitat*, Portal de la Comunicació.

<<http://www.portalcomunicacion.com/both/opc/tripodos.pdf>>

FUNDACIÓ CATALANA PER A LA RECERCA. *Llibre blanc de la divulgació científica i tecnològica a Catalunya*. Barcelona: Fundació Catalana per a la Recerca, 1996.

MORLEY, D. *Televisión, audiencias y estudios culturales*. Buenos Aires: Amorrortu, 1996.

PUJADAS, E. "Televisió de qualitat i pragmatisme". In: *Quaderns del CAC*. Barcelona: maig-juny 2002, no. 13, p. 3-11.

REVUELTA, G. "Salud y medios de comunicación en España". In: *Gaceta Sanitaria*. Barcelona: Elsevier Doyma, 20 (supl. 1), 2006, p. 203-8.

RIBAS, C.; CÁCERES, J. "Perceptions of science in Catalan society". In: *Public Understanding of Science*. United Kingdom: IOP Publishing Ltd. Vol. 6 (1997), p. 143-166.