

Popularising science and technology on generalist radio

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- *This article aims to show the impact of science and technology on the programming of Spanish and Catalan generalist radio. Based on an analysis of the programmes offered, we can determine the programming strategies applied at each broadcaster and/or channel and its treatment. Surely the homogenising trend of generalist programming is damaging the presence of this kind of specialist content, although the possibility of listening to the live programme online or downloading it as a podcast opens up new perspectives for the popularisation of science and technology.*

Keywords

Generalist radio, popularisation of science.

Introduction

The main consequence of the high degree of homogenisation on Catalan and Spanish generalist radio is the limited presence achieved by specialist content. This circumstance logically affects the popularisation of science and technology, although other causes can also be noted as a result of their own idiosyncrasies, such as the complexity of the issues likely to be covered and the essential training in this area that journalists must have in order to handle such themes.

In spite of the difficulties, scientific work has a social dimension that is fundamentally manifested in its application because research, in any sphere, looks to facilitate and improve the life of individuals and their environment. That is why broadcasters sometimes report on scientific discoveries in their radio news programmes or main news services and even might decide to extend this coverage to larger magazine programmes. In this way, what is new in this field is given the same journalistic treatment as political or economic news, i.e. the most outstanding facts are reported on from time to time. This action takes place within a context of the journalistic treatment of news that, as such, is governed by production criteria that are difficult to make compatible with the standards ruling the world of science. Popularisation requires the application of programme-based strategies that ensure science and technology are regularly present on the programming grids.

In order to produce this article, an analysis has been carried out of the programmes on offer that focus on issues of a scientific or technological nature on generalist Catalan radio stations (Catalunya Ràdio, COMRàdio, RAC1 and RNE-Ràdio 4) and also on Spanish radio stations separate local services (COPE, Onda Cero, Onda Rambla Punto

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Radio and SER) during the 2006-2007 season.¹ In the case of Spanish channels, broadcasts in MW and FM have been studied, given that other research has shown that radio broadcasters with two frequencies can present differentiated proposals on each, especially when broadcasting local programmes.

The objective of the analysis has been to determine the presence and treatment of this kind of content in the form of programme. The existence has also been taken into account of special sections in some magazine programmes that, although few in number, reveal different *modus* of approaching science and technology. At the same time, the information and availability has been studied of this kind of programme on the broadcasters' websites. In this way, we have studied the interest of generalist radio in this kind of content, the kind of journalistic treatment it receives and also some perspectives for the future.

Programming strategies

The role of generalist radio is fundamental for popularising science and technology, areas that affect citizens' lives in many different ways. Meeting the demands of a broad audience by offering a wide range of subjects based on the premise of general interest is the essence of their programming. However, the heterogeneity caused by the involvement of very different sectors in terms of interests and expectations can end up displacing subjects that, in spite of their interest to society, require listeners to have basic knowledge and journalists a high degree of specialisation.

In the 2006-2007 season, science and technology were tackled in specialist programmes on these areas and in fixed news sections, which do not enjoy a particularly outstanding presence in the generalist programmes offered overall. Certainly, they are less represented than other subjects, such as leisure, culture and style.

There are few programmes that opt to include and highlight fixed sections. But different ways are observed of tackling the issues:

- Training. The connection with the latest issues is the excuse to investigate any question and to highlight its influence on everyday life. This is the main argument of *Bocins de ciència* and *Dimarts ciència*. Both sections have the collaboration of specialists.
- Information. The latest research is the context for producing *Avances científicos* and *El CSIC en la SER*. In the first case, research is chosen while, in the second, a summary is provided of the week of the *Centro Superior de Investigaciones Científicas* (Higher Scientific Research Centre).

What is surprising, however, is the limited incidence of science on programmes specialising in health, given the close relationship between research and medicine. This situation ends up turning the specialist news programme *La salud en la SER*, into an exception. However, the absence of scientific and technological issues in these programmes is not only to be seen in the lack of fixed sections but also in the low presence of one-off information on congresses and research (GUTIÉRREZ, M.; HUERTAS, A. 2005).²

As shown in tables 1 and 2, the production of content concerning the world of science and technology is quite unequal in generalist radio programmes as a whole. Unlike other also minority subjects, programmes dedicated to spreading scientific knowledge and work are mostly located on public radio. Their presence on private radio is low and, in the season studied, was limited to one specific channel. Regarding the subjects covered within the programmes on offer, a certain balance is observed between a restricted conception, that would fundamentally focus on experimental and natural sciences, and a broader conception, which would add computing and telecommunications but which still seems reticent to integrate social and human sciences

1 The radio season does not correspond to a calendar year, as it starts in September and ends approximately in July the following year. The rest of the time summer programming is offered.

2 GUTIÉRREZ, M.; HUERTAS, A. *Presència i tractament del contingut sobre la salut en la programació de la ràdio generalista*. Research financed by the CAC. Available at <<http://www.cac.cat>>

Table 1. List of programmes specialising in science and technology. 2006-2007 season

Broadcaster	Programme	Main subject	Day and time broadcast	Coverage
Catalunya Ràdio	<i>L'internauta</i>	Internet	Saturday*:13.00 to 14.00	Catalonia
COMRàdio	<i>La Malla Ràdio</i>	Internet	Tuesday to Friday: 00.00 to 01.00	Catalonia
Ràdio 4	<i>L'observatori</i>	Science and technology	Tuesday: 20.00 to 21.00	Catalonia
Ràdio 4	<i>Què està passant? Versió 4.0</i>	Internet	Monday to Friday: 17.00 to 18.00	Catalonia
Ràdio 4	<i>Efectes positius</i>	Health and environment	Monday to Friday **: 11:00 to 12:00	Catalonia
Ràdio 4	<i>L'altra ràdio</i>	Radio and technology	Monday: 00.00 to 01.00	Catalonia
Radio 1	<i>El sueño de Arquímedes</i>	Science and technology	Sunday: 15.00 to 16.00	Spain
Radio 1	<i>Reserva natural</i>	Environment	Friday: 12.00 to 13.00	Spain
SER FM/OM	<i>La hora del siglo XXI</i>	Science and technology	Sunday: 07.30 to 08.00	Spain
SER FM/OM	<i>Ser digital</i>	Internet	Saturday: 16.00 to 16.30	Spain

* This programme is repeated on Sunday in the early hours of the morning (05.00 to 06.00).

** This programme forms part of the broadcaster's strategy to repeat programmes in the early morning slot (02.00 to 03.00) during this season.

Source: author.

Table 2. List of fixed news sections on science and technology. 2006-2007 season

Broadcaster	Programme	Section	Day and time broadcast / coverage
Catalunya Ràdio	<i>El Cafè de la República</i>	<i>Dimarts ciència</i>	Tuesday: 21.00 to 23.00 / Catalonia
	<i>Geografia humana</i>	<i>Bocins de ciència</i>	Monday and Sunday: 03.00 to 05.00 / Catalonia
SER FM/OM	<i>La salud en la Ser</i>	<i>Avances científicos</i>	Saturday: 16.30 to 17.00 / Spain
	<i>Ser curiosos</i>	<i>El CSIC en la SER</i>	Saturday: 04.00 to 06.00 / Spain

Source: author.

in the area of scientific communication.³ Certainly, its representation in this kind of programme is almost anecdotal.

The single-theme presentation is the dominant trend in treating science and technology on generalist radio, leading to an increase in some subjects to the detriment of others. It has also been observed that the programme genre of information has become the most suitable context for developing issues that are tackled in these products, given their complexity and the rigour with which they must be treated. With regard to its treatment, scientific knowledge is shown from its most practical perspective, i.e. highlighting its effect on everyday life in the short or long-term. Moreover, this media view re-establishes the researcher's role in society at the same time as highlighting the importance of investment in research.

Regarding location on the programming grids, a weekly frequency is the tendency followed by most broadcasters in the 2006-2007 season. However, with regard to the day and time of the broadcast, variety is the general tone, as the offer is distributed unequally throughout the week and this rules out direct competition.

The commitment of Catalan public radio to science and technology

In the 2006-2007 season, Catalan public radio was the one that dedicated most space to programming with this kind of content on its grids. Out of all the programmes offered on Spanish generalist radio, public stations also show their interest in these issues, while in private radio only the SER channel seems to be interested. This strategy is also the same in the case of special sections.

The fact that most programmes dedicated to science and technology belong to public radio is a circumstance that is difficult to appreciate in other kinds of subjects, such as travel, the rural world and health, mostly present on generalist radio. Even in the case of content on health, research

applied to medicine is relegated to second place to the dissemination of guidelines regarding the prevention and curing of illnesses, the main objective of this kind of programme. So scientific research and science popularisation are content that is generally assumed by public broadcasters, as found by the analysis of the radio programmes offered.

However, what might be the factors leading to this situation? On the one hand, commitment to society, given their public service nature and, on the other hand, the complexity of the subjects tackled that require specialist journalists acting as mediators, making the subjects more attractive and helping people to understand them. The first of these elements noted does not necessarily need to figure among the principles supporting the programming grids of private broadcasters, while the second is basically a question of profitability in terms of audience. In other words, the return on the investment required to have specialist professionals, via an increase in audience, is surely not immediate, and this is the fundamental goal of private radio.

Given these premises, the question is why does the channel SER, leader in audience ratings in Spain, have a different strategy? Based on the data provided by table 1, we can see that the programmes it offers focusing on scientific and technology content do not benefit from a time slot when a large number of listeners can congregate, a situation that extends to the fixed news sections. Profitability in these terms is therefore not the cause. Probably, the reasons can essentially be found in a structure and organisation based on the comprehensive management of content, which benefits programming as a whole. So specialist journalists take part both in the main news services and also direct and present a news report on science and technology.⁴

Regarding Catalan public radio, Ràdio 4 is the leading broadcaster in science and technology content. It has the largest number of programmes and subjects, while Catalunya Ràdio and COMRàdio limit their production to

3 HERNANDO CUADRO, L. A.; HERNANDO GARCÍA-CERVIGÓN, A. (2006) *Lengua y comunicación en el discurso periodístico de divulgación científica y tecnológica*. Madrid: Ed. Fragua.

4 This is the case of Javier Gregori, director and presenter of *La hora del siglo XXI*.

technology and specifically to those applied to the internet. However, the high index of programmes on Ràdio 4 contrasts with the crisis that, due to the restructuring of RTVE, impregnated the design of the programming grid for the 2006-2007 season. *Enigmes i misteris* disappeared, while *L'observatori* and *L'altra ràdio* were maintained and new programmes *Efectes positius* and *Què està passant? Versió 4.0* appeared, these two broadcast from Monday to Friday.

So, Ràdio 4 reacted by applying an alternative competitive strategy, increasing the production and realisation of content that, although present in the programming of other Catalan public radio stations, did not enjoy a significant presence. We should also add that this strategy continued to be applied in the 2007-2008 season. Quite the opposite to Radio 1 that, also affected by the restructuring, has transferred *Reserva natural* to the grid of Radio 5, a news broadcaster and has ended the production of new editions of *El sueño de Arquímedes*, keeping those programmes already broadcast as repeats on Radio Exterior de España and on the internet. Consequently, programmes of a scientific or technological nature have disappeared from the generalist programming of the RNE radio group at a state level.

Themes represented and their treatment

From the point of view of content, an analysis of the season 2006-2007 shows that content has been integrated within generalist radio programming grids via four different types of theme: internet, science and technology, environment and radio and technology. Each of these has its own particular case.

- **Internet.** All the Catalan public broadcasters, together with SER, have programming centred on communication technologies, emphasising particularly the internet and its environment. Apart from more technological issues, social aspects are also covered, either from the point of view of digital users and also via debate and reflection on the effects of digital technology. With the exception of *Què està passant? Versió 4.0*, constructed based on a more extensive treatment, the rest of the programmes

are defined as specialist news. With regard to format, *L'internauta*⁵ opts for single-themed conversations, investigating and reflecting, based on a specific issue, the strengths and weaknesses of the internet, while *La Malla ràdio* and *Ser digital* are structured as magazine programmes with differentiated sections. On these two programmes research is present when digital technology is the theme or when technology has been fundamental in developing a project in another scientific area. With this treatment, the role of communication technologies is highlighted and, specifically, the internet in scientific and social development. The approach of *Què està passant? Versió 4.0* is different to that of the other programmes, as it includes the perspective of leisure in the use of the internet.

- **Science and technology.** The three programmes that go to make up this area are based on the genre of information, each edition offering news from the week and investigating some more specific issues via interviews and reports. In all three programmes, the approach to the world of science and technology is focused on the consequences and benefits of the research presented for the individual and society. Moreover, information is provided on scientific work that has just started but that is of great interest due to the future repercussions of its conclusions. It should be noted that the approximate duration of these research projects figures among the data provided, an important aspect for the audience to understand the rigour of scientific method. It is quite habitual for researchers to be present connected with research centres and Spanish or Catalan universities as a source of information, explaining the nature of their projects or as a specialist helping people to understand some of the most outstanding scientific news of the week. Finally, but rather exceptionally, we should also mention the inclusion in *El sueño de Arquímedes* of a fiction, at the end of the programme, that adds a humorous note by recreating an impossible experiment or the process of creating a fantastic piece of machinery.
- **Environment.** From different but not contradictory points

5 *L'internauta* was born in 1995 thanks to the idea of journalist Jordi Vendrell. It is the first radio programme in Spain on the internet.

of view, nature becomes the backbone of the two programmes offered. *Efectes positius* is based on the proposal that the planet's health benefits its inhabitants and it therefore stresses the connection between wellbeing and the environment. *Reserva natural* emphasises the supervision and care of the countryside, asking questions that range from botany to gardening.

- **Radio and technology.** *L'altra ràdio*⁶ is the only programme that, based on radio, covers the area of telecommunications and audiovisual culture. From this perspective, radio broadcasting is observed from different angles, such as radio hams, history, weekly news and new breakthroughs in technology.

Producing content

Any specialised area at least requires the presence of a specifically trained journalist to produce the information, a process that involves the selection and treatment of the news items. Scientific and technology content does not escape this consideration. Firstly, their complexity can hinder comprehension on the part of listeners. Secondly, only training in scientific communication provides the tools to evaluate the social dimension of a scientific discovery, thereby avoiding sensationalism and also alarmism. In this respect, we cannot forget that generalist radio approaches the scientific area to tackle issues mostly related more or less directly to health and the environment, both subjects of maximum interest for individuals.

Another important aspect is the knowledge that a science journalist must have of the sources of information, essential to interpreting the facts from a researcher's perspective. In

this kind of information, professional rigour is the best method to avoid speculation. Consequently, a journalist must know the peculiarities of scientific production to understand that the significance of research findings being published in the journal *Nature* or *Science* is, transferred to journalism, the same as a news item being published by the BBC, CNN or *The New York Times* (ELÍAS, C. 2008, 89). Obviously, having a good agenda of good quality contacts enhances the quality of the subjects presented and their credibility.

Far from describing the curriculums of those in charge of the radio programmes described, an interesting relationship can be observed between their training and the kind of programme they direct.⁷ From this perspective, the categories of "science and technology" and "radio and technology" have professionals that, apart from their extensive careers as scientific popularisers, also have university degrees related to this field, as graduates in physics or technical engineers in telecommunications.⁸ With regard to the "internet", apart from an almost exclusive dedication to this subject as journalists, creators and managers of portals have also been found.⁹ In the case of the "environment", specialisation comes basically from continued journalistic work in this area.

Although the training of journalists is important, a connection with the scientific and technological world is a factor that must be taken into account when managing content. An analysis of the 2006-2007 season shows the presence of institutions and entities related to science and/or technology that have established various lines of collaboration with some of the broadcasters involved. These agreements naturally facilitate the production of the programmes as, on the one hand, they have provided their

⁶ *L'altra ràdio* started in the 1982-1983 season, broadcast by Ràdio 4. In season 2006-2007, the Catalan Federation of Telecom Installation Companies (FECEMINTE) gave it an award for having popularised the subject. For more information, visit <<http://www.altraradio.cat/>>.

⁷ These data come basically from the information provided by the broadcasters' websites.

⁸ Ángel Rodríguez (*El sueño de Arquímedes* on Radio 1) is a physicist, as well as a scientific populariser. Cinto Niqui (*L'altra ràdio* on Ràdio 4) is a technical engineer in telecommunications, specialising in image and sound.

⁹ Mònica Lòpez (*Digitals* on COMRàdio) is in charge of the section of the same name for the e-zine www.laMalla.net. Vicent Partal (*L'internauta* on Catalunya Ràdio) created in 1994 the first news system on the internet entitled *El Temps Online* and is currently director of *Vilaweb*.

own themes and, on the other, they have ensured the participation of involved and hyper-specialised sources of information.

In some cases, these contributions are made due to the desire of the institutions and centres to disseminate the projects and activities they are carrying out. The most paradigmatic case is that of *L'altra ràdio*, which enjoys, thanks to this formula, a significant and broad range of permanent collaborators closely related to radio broadcasting, such as the Catalan Association of Distance Learning, Xenomedia, the Association of Radio Listeners of Barcelona, among others. With regard to the programme *L'observatori*, participation has been achieved via an agreement with Barcelona University (UB). An analysis of the programme shows the UB's participation in most of the issues covered: projects, congresses, seminars, etc. as, logically, the sources of information in general come from the university itself. Another model is the programme *Ser curiosos*, which has signed an agreement with the CSIC (Higher Centre of Scientific Research) for its communication department to produce a section summarising the week's activities and looking into some of them by interviewing a researcher involved.¹⁰ Another form of collaboration is that represented by *La Malla Ràdio*, a radio version of the "Digitals" section of the online newspaper www.lamalla.net, via Xarxa Audiovisual Local (XAL), a public body created by the authority for the province of Barcelona. With this strategy, the broadcaster places its facilities at the disposal of a production team, while the electronic publication is responsible for managing the content.

Profitability in audience terms: new ways of consuming radio

Spanish and Catalan generalist radio are still building their programming grids based on two or three genres structured around long-lasting programmes combining different themes. This strategy, as has been mentioned, leaves little

space free for other, more specialised types of proposal that, with an attractive treatment, might awaken interest in different kinds of target. However, analogue radio broadcasting in residual time slots limits their impact, although, due to their characteristics, congregating a large number of listeners does not figure among their main objectives.

These current circumstances on analogue radio are changing with the development of the digital environment that, among others, is altering the relationship between broadcaster and listener. The use of an *a la carte* system that enables the personalised management of reception depending on the particular interests of the audience is merely the first step. Naturally, this new form of broadcasting content broadens the radius of coverage of any product, to date limited by the broadcaster's licence and the power of radio masts. That is why an analysis of what is on offer on the radio must increasingly analyse what is also available on the internet.

With regard to the specialist content in science and technology analysed and its availability online, all can be received live or online. This characteristic is common to all the broadcasters studied. However, the offer is more limited with regard to podcasts and *a la carte* radio.

Although Ràdio 4 is the broadcaster with the largest range of programmes on scientific and technological subjects, it is also the least developed in terms of online dissemination. The critical situation experienced by the broadcaster throughout the 2006-2007 season has undoubtedly influenced the development of its corporate website. One year later, Ràdio 4 continues to work on improving its resources online and, at present, listeners can have a podcast of *Què està passant? Versió 4.0* and *L'altra ràdio*. For the latter, users can also access it via its own website.¹¹ The circumstances affecting *La hora del siglo XXI* are different. Although it has its own broadcasting and production team, it does not figure as a programme on the channel's grid but appears as a space within the news programme *Matinal SER* at the weekend. This connection turns it into a section of a news programme that, as such,

¹⁰ For more information see <http://www.csic.es/csic_ser.do>

¹¹ <<http://www.altraradio.cat/>>. Consulted 7/10/2008.

Table 3. Radio programmes specialising in science and technology with podcast edition. 2006-2007 season

Broadcaster	Programme	Podcast	Other information
Catalunya Ràdio	<i>L'internauta</i>	www.catràdio.com	Programme description
COMRàdio	<i>La Malla Ràdio*</i>	www.comràdio.com	Programme description
Ràdio 4	<i>L'observatori</i>	-	Programme description
Ràdio 4	<i>Què està passant? Versió 4.0</i>	-	Programme description
Ràdio 4	<i>Efectes positius</i>	-	Programme description
Ràdio 4	<i>L'altra ràdio</i>	-	Programme description
		www.altraràdio.cat	Programme description and other documentation. Has internal and external links.
Radio 1	<i>El sueño de Arquímedes</i>	www.rne.es	Programme description
Radio 1	<i>Reserva natural</i>	www.rne.es	Programme description
SER FM/OM	<i>La hora del siglo XXI</i>	-	Programme description
SER FM/OM	<i>Ser digital</i>	www.cadenaser.com	Programme description

* At www.lamalla.net you can find the subjects presented on the radio programme with a different audio treatment and complementary written information.

Source: author.

does not form part of the podcasts offered.

The rest of the programmes can be downloaded as a podcast via the corporate websites that also offer a general description of the programme's characteristics. Other types of exploitation are therefore omitted, such as complementary information for the issues dealt with in each programme, drawing up a list of external links, among others. With regard to the sections, the situation basically depends on the strategy applied by the broadcaster. For example, the special sections on Catalunya Ràdio can be downloaded independently once the radio programme they belong to has been accessed. Regarding those of the channel SER, the mechanism is different in each case, as

while *La salud en la SER* is offered as a podcast, the programme *Ser curiosos* isn't. Its section, the result of an agreement with the CSIC (Higher Centre of Scientific Research) can be downloaded from its website, which has a section called *El CSIC a la SER*.¹²

Without doubt, the possibility for listeners to get the programme or even a section and to listen to it when they want widens the radius of action of the broadcaster in many respects. Firstly, it makes available those programmes that, due to the time they are broadcast, may be inconvenient to listen to. In this respect, the corporate website should allow simple access to content with suitable indications and precise information, a situation that is not always the case.

¹² Available at <http://csic.es/csic_ser.do> Consulted 17/03/2008.

Secondly the investment in producing specialist programmes can be recovered based on the impact on the internet, although, at present, there is no homogenised system to measure audiences that can be used to evaluate the use made of *a la carte* radio on the internet. Thirdly, online radio can facilitate the inclusion of listeners who, *a priori* would not be interested in tuning in to listen, such as young people.

Some final considerations

The popularisation of science and technology must be framed within the sphere of public service, as its activities have a very direct effect on people and the planet. We should highlight the role played by Catalan public radio but we must also continue to insist on the consequences of the digital environment on media consumption habits. In this respect, public radio must apply programming strategies that not only allow the inclusion of products designed for broadcasting this kind of content but also they must be available *a la carte*.

The signing of agreements with research entities and centres obviously facilitates content production. However, even in these cases broadcasters must make sure of maximum profits. This seems difficult based on their current location on the programming grid. It is therefore necessary to demand the exploitation of podcasts, an ideal method to avoid the tyranny of timings and frequencies that make it difficult to hear these programmes. But moreover, and with the objective of training and interesting the listener, advantage must be taken of the internet's possibilities to produce complementary information in other formats.

Although it is true that the presence of programmes specialising in scientific and technological content is limited in the programmes offered by generalist radio, there is even less attention paid to human and social sciences. This consolidates the idea that only subjects related to pure and experimental science warrant the title of 'science', apart from technology. Research into aspects related to the social dimension of individuals deserves media attention via its natural inclusion in the programmes offered to popularise science and technology.

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