

SCIRAB: SCIENCE IN RADIO BROADCASTING

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Abstract

SCIRAB (Science in radio broadcasting) was born as a one year EU funded-project aimed at constructing a network of journalists, scientists and researchers in order to exchange knowledge and experiences and set up a benchmarking process to evaluate the role of the radio in the challenge of the public engagement in science and technology. SCIRAB has surveyed science radio programs broadcasted throughout Europe, made contacts with producers, and constructed a website devoted to communication within practitioners. A high quality, on going communication between these programs will help sharing best ideas and best practices, and developing an international dimension of science communication through the radio. Through a survey of science radio programs and three meetings, SCIRAB has provided guidelines to evaluate different approaches on how to deal with science and technology on the radio and assess their impact on public perception of science.

SCIRAB aims at giving a contribution to the literature specifically discussing the role of the radio in science communication, through the study of the potential of radio in stimulating the dialogue between scientists and society at large. In radio programs, scientists have the opportunity of directly presenting their work, in a much less structured framework than TV; listener often have the opportunity of directly pose questions to the scientists; the deep concerns, hopes and motivations of both have a great chance to emerge, beyond the mere transfer of scientific information: the radio provides a unique opportunity to breed familiarity between scientists and public.

Quantitative and qualitative results of the radio survey conducted in 2004 are presented, along with some comments on the way editorial choices reflect views and assumptions on the role given to science communication.

Keywords: Science communication, radio broadcasting

1. Introduction

“The science communicator’s role is set to explode. As someone who prefers to eschew whining, I’d like to see the explosion as that of a supernova, supplying new elements, higher ones, to a waiting Universe.” Robyn Williams of ABC - Australia, one of the most influential radio broadcaster committed to science communication, was expressing this wish back in 1993 [1]. The “whining” he was referring to was the common attitude of seeing science as a neglected topic in the media and scientists as a badly treated character and science journalism as an ill practice that needed to be corrected in order to achieve a good relationship between science and the public.

We might be too optimistic, but we have the impression that things have changed, and the explosion of the science communication supernova is slowly happening. Science communication to the public is still striving to be recognized as a crucial component of science itself, but more and more scholars, researchers and practitioners are starting to recognize that their role is more far reaching than a simple transmission belt from the scientific to the “non-scientific” (whatever this could mean) community. As science communicators, we play a crucial role in the way science is embedded in society. And this implies far higher responsibilities than the ones of the translator.

This awareness, which has gained recognition in recent years, is not new. As the Italian writer Italo Calvino once said, “un classico è un libro che non ha mai finito di dire ciò che ha da dire” (A ‘classic’ is a book that has never stopped saying what it has to say). In this sense, Walter Benjamin is a classic [2]:

Before radio we didn’t know any form of diffusion which would correspond to highly popular goals (...) The old style popularisation was based upon a well established and experimented scientific heritage, and it would explain it as scientific research itself had produced it, leaving out the hardest reasonings. The essential focus in this type of vulgarisation was the removal (...). The much broader, and more intense, popularity

sought for by the radio cannot be content with this method. It requires a complete transformation and a different assembling of any information (...) It is not sufficient, thus, to attract the interest with any sort of current news (...) It is instead required that the listener will feel that his personal interest has a substantial value with regard to the discussed matter and that his questions, even when are not spoken out loudly at the microphone, will require new scientific assessments. (...) it is no longer a popularisation which moves science toward the public, but also the public toward science (...) transforming the object of science and acting on science itself.

This was written in 1932. Many researchers in science communication will recognize most of the topics presently under discussion in the debates on public understanding of science, dialogue models, lay knowledge models, etc. [3].

In Benjamin thinking, the radio was the key actor in this process of “moving public toward science” and in the recognition that the public’s “personal interest has a substantial value with regard to the discussed matter and that his questions will require new scientific assessments”. One may think that during this 70 years television has taken up this role. We believe this has not happened. And we believe that radio, as a media for science communication, has not finished to say what it has to say.

2. The role of the radio in science communication

We fully agree with the four “As” proposed by the Commonwealth of Learning, according to which radio is so effective because it is:

- Attractive: most people enjoy listening to radio, particularly if it is well produced and presented. It is generally regarded as a personal, friendly and reliable medium.
- Available: local and community radio services are common throughout the world. Where they are not available, it is relatively easy and not prohibitively expensive to set them up.
- Accessible: most people, even in the poorest rural areas, have access to radio receivers. Radio can speak to people directly and in their own language - even to those without the benefit of literacy.
- Affordable: radio programs are relatively cheap to produce and transmit. The costs are dramatically less than those for television or video, and usually lower than print or face-to-face teaching and learning costs

But is radio effective also in science communication?

The debate on most current controversial issues, from climate change to biotechnology to nanotechnology, “cannot really avoid developing in conformity to the principles of the social environment, rather than those of the scientific world where it was conceived” [4]. The dialogue between science and society, which is advocated in a variety of institutional documents, needs opportunities to be experimented in practice, in forms that can provide beneficial outcome for science, for society and for the media, taken alone or in their mutual interactions. Indeed, radio appears as the media space where science, in its current evolution toward a post-academic era [5,6], can best find an opportunity to meet the public.

The capability of upstreaming controversies (that is, to encourage a dialogue “at an early stage in the process of new developments, when possibilities, problems, ethical issues and risks are being projected rather than at a point when public anxieties have become polarized” [7] is presently a major challenge of science communication. We wish, and we believe, that radio will be able to meet this challenge, but we will need to clarify what its limitations and opportunities are, starting from the role that the expert can assume in a science radio program. By being present with their own voice, and at the same time not being obliged by technical constraints to follow a strict script, scientists on the radio can be both accountable and express themselves clearly: in other words, they can find on air the path through which to renovate their pact with society at large.

As several studies have recently pointed out, today’s challenge for science communication is promoting public participation and developing an informed, constructive and democratic criticism of scientific research. Radio can be of great utility and play a key role in this process.

Compared to other media, radio can easily establish contact between the listener’s personal experience (both practical and cultural) and the world of scientific knowledge. Unlike written media, radio allows the audience to hear the voice of the protagonists, thus creating a more intimate connection with the world of science and it is able to show the motivations behind the scientists’ work. Compared to television, radio is a lighter medium, with a more relaxed and reflective tempo, and the barrier separating the listener from journalists and scientists is less impenetrable. The stereotyped and standardized roles so frequent on television could not work on radio: we create our own opinion of the scientist we are listening to, basing it on his/ her style and on what he/she is saying. This is why people trust radio so much: scientists who are being interviewed are personally responsible for their own image and can be judged by the public. They cannot hide behind their expertise and, at the same time, they can use their knowledge to convince the public of the interest, relevance and usefulness of their work.

In brief, radio is so effective in communicating science because it relies on a very familiar mode of communication: conversation.

As both a prerequisite and a consequence of this, it is important to critically address the issue of what role the journalist has in a science radio program. As stated by BBC presenter and Imperial College lecturer Gareth Mitchell [8]: “The public increasingly takes science for the indefinite, political and often messy business that it actually is. Accordingly, we in the media can no longer get away with reporting science in the naïve celebratory way we did 30 years ago”. One of the main issues is where a science journalist should place him/herself along the channel that connects the scientist and the public: the choice whether to be “close to the scientist” or “close to the listener” is determinant in the type of communication that is established, and while it can often be hidden or implicit in written journalism, it needs to be directly addressed when talking on the radio [9].

Although in the following we will concentrate on the European landscape, the above considerations appear to become particularly relevant when referring to those areas of the world whose scientific role has been growing in the latest years. In peripheral countries, radio, particularly in the form of community radio stations [10], assumes a central role in granting new forms of democratic access to scientific information, and in promoting real public participation to knowledge transfer. Being a countervailing force to globalized commercial radios, community radios in countries such as Africa, India, or rural areas of Latin America, put into practice a process of self-empowerment, where information is mostly based on and comes from local needs (i.e. prevention of deadly infections such as HIV or marsh-fever, health care improvement, women’s awareness, but also farming techniques to develop local sustainability, etc.). In peripheral countries, community radios often become the only mean to help the preservation of local knowledge and tradition, share identities on important scientific matters, and establish a contact between the scientific community and the inhabitants [11]. As stated by Joanne Carpenter in presenting the objectives of the Relay program of Panos London, “radio enables researchers to be accountable to people living in developing countries [...] whose needs and rights are ignored by society and government policy. By engaging with the feedback that radio programs can elicit, research agendas can be reinvigorated with issues that are really relevant to the majority of ordinary people” [12].

3. A survey of European science radio programs

With this in mind, we will present here some of the results of a survey conducted in 2004/05 on European radio, in the hope that a work extending this enquire at international level, with particular attention to peripheral and emerging countries, will soon be performed, in collaboration with specific expert in science communication in those countries. Indeed, the many different format and styles of presenting science on the radio which we encountered in our survey mirrors different ways of interpreting the role of science communication. A more detailed and structured analysis of these results can be found in the book written by the authors of this paper, *Science in radio broadcasting - the role of the radio in science communication* [9], available in open access at www.polimettrica.it (we invite institutions to buy the paper copy of the book to support the choice of publishing it in open access).

3.1 Methods

Among the activities of the SCIRAB project (see 5. Appendix below), we conducted a survey on science radio programs in European radio stations. The questionnaire was filled in on-line by the journalists or the producers running the programs. Results were collected on 40 different radio programs from 32 radio stations in 16 different European countries. Although this is far from being complete, it does represent a good sample of programs specifically focusing on scientific issues, and it is the most extended survey on science in radio broadcasting performed to date. In order to increase the reliability and the relevance of the research, the results of the questionnaires were than paralleled by a survey of science radio programs done through the radio’s web sites, and by a series of interviews with science radio journalists. Further details on the methodology and detailed results on the latter aspects can be found in ref. [9].

3.2 Results

3.2.1 How often? For how long?

Table 1. Scheduling

<i>Monthly</i>	1
<i>Weekly</i>	16
<i>twice a week</i>	2
<i>Daily</i>	18
<i>non fixed schedule</i>	3

Table 2. Duration

<i>90 minutes</i>	1
<i>60 minutes</i>	5
<i>45 minutes</i>	6
<i>30 minutes</i>	13
<i>20 minutes</i>	5
<i>10 minutes</i>	5
<i>3 minutes or less</i>	5

The vast majority of radio programs are scheduled either daily or weakly (Table 1). Science programs appear to be evenly distributed between these two scheduling. This suggests that the need of constant update and the need of in depth, contextual analysis are both considered important elements of science communication.

30 minutes is the most common length (32%, Table 2). This is indeed typical of most thematic radio programs. It has to be noted that this data show a strong national dependence. For example, the average length is higher in French programs, where it is common to find 1 hour or even 1h30m long programs devoted to science [13].

3.2.2 Which type of programs?

Table 3. Live / Recorded

<i>Live programs</i>	18
<i>Recorded programs</i>	21
<i>n. d.</i>	1

Table 4. Age of the program

<i>1 year</i>	5
<i>2-4 years</i>	10
<i>5-10 years</i>	19
<i>+10 years</i>	6

As shown in table 3, European radio programs in our sample are evenly distributed between “live” and “recorded”. Elements behind this choice reflect of course the radio station’s style, but they also reflect the idea that a certain topic needs to be treated as debatable and “on the making” (better achieved in live programs), or as requiring clear and deep understanding (better achieved in recorder, edited programs). Science appears in both categories.

An interesting data is the number of years since science programs have been on air. More than 60% in our sample are more than 5 years old (*The research file*, for instance, is one of the longer lasting programs at BBC). This means that science programs contribute to the fidelization of the listeners, and in some cases to the definition of the identity of the stations. In the opinion of the producers, they are programs directly chosen by the listeners, rather than encountered during a frequency hopping or accepted as one of many proposition of the listeners’ preferred radio station. This is confirmed by the experience of Swedish Radio: when the station opened to podcasting, *Science news* was right away the most downloaded program [14]. Indeed, one of the main features of podcasting is the possibility for the listeners to look for its own preferred programs rather than waiting for the station to broadcast it.

3.2.3 Debates and reportages

Table 5. Debates

<i>Often</i>	5
<i>Never</i>	11
<i>Sometimes</i>	23
<i>n. d.</i>	1

Table 6. Correspondence from events/conferences

<i>Often</i>	19
<i>Never</i>	5
<i>Sometimes</i>	15
<i>n. d.</i>	1

Of the many elements that build up a radio program (interviews, documentaries, editorials,...) two are of particular interest for us here: the inclusion of debates, and the correspondences from scientific conferences.

Only a minority of programs regularly feature open ended discussion about controversial issues, but the majority of them do this at least sometimes (table 5). In countries where we could track an historical record, such as France, Italy and the UK, an increase in the number of science programs hosting debates has been observed. This is a two sided aspect: if on one hand the presence of debate reveals a tendency to interpret science communication as an activity aimed at putting science under public scrutiny, on the other hand this can result in a format-led practice aimed at conquering audiences. In other words, a tendency is observed to force controversies even on issues which are not controversial. As stated by Susan Blackmore during one of the SCIRAB meeting (London, 2004), "when you set up something as a debate, you are not necessarily being fair, or giving balance: you are implicitly telling your listeners that this is an important issue among scientists". For a more extensive discussion of this aspect, see refs. [9] and [4].

The inclusion of direct reportages from scientific conferences (also beyond the usual AAAS or ESOF) reveals the intention to closely follow the development of a scientific discipline. Being conferences one of the places where the scientific debate is taking place, “having some of the scientists at the conference speaking directly to our audience gives the listener a mechanism to enter science in its making” [15]. As discussed in ref. [9], not all radio practitioners agree on this point: for some, it means choosing a topic because there is “a conference in town” rather than for its cultural relevance and its relevance for the listeners. Data on the sample of the survey seems to confirm the coexistence of these two views, with roughly 50% of the programs regularly featuring reportage form conferences, and 50% doing so rarely or never (table 6).

3.2.4 Information, culture or education?

Table 7. Program main purpose is

<i>Informative</i>	22
<i>Cultural</i>	15
<i>Educational</i>	3

How do journalists and producers perceive the role of their program? Table 7 shows that most of them consider to respond to a need of information about science. 15 out of 40 programs consider themselves as cultural programs (this was specified in the questionnaire as “presentations of and debates on scientific issues, whether or not strictly on latest news, and the main purpose is cultural”). Only 3 describe themselves as science education (specified in the questionnaire as “explanations of scientific themes, and the main purpose is educational”). In the European context science radio journalism seems to prefer not to interfere with the educational system, giving itself the role to inform, entertain and discuss, but never to teach or educate. A quite different approach is foreseeable outside the “western world”, as clearly pointed out by Thakar [16] in the case of India.

3.2.5 Who are the main actors?

Table 8. Presenter is

<i>A general journalist</i>	13
<i>A scientific journalist</i>	26
<i>A scientist</i>	2

Table 9. Scientists participate as

<i>Presenters</i>	2
<i>Interviewed experts</i>	38
<i>Consultants</i>	10

Table 10. Production team is

<i>A dedicated group of journalists</i>	24
<i>A general information division</i>	11
<i>An independent team</i>	5

Tables 8, 9 and 10 present the results to some of the questions aimed at understanding who are radio journalists and what is the role of scientists in science radio programs. It can be seen that the majority of programs do involve specialized journalists or even a production team. It has to be pointed out that our survey might be biased in this regards, as most of the radio that answered the questionnaires are large, national networks. The situation in small local radios, and in particular in developing countries, is quite different [12].

Scientists intervene in all reviewed science radio programs as interviewed expert (and in two cases also as presenters). Ten programs declare to have scientists participating also as consultants: this varies from a structured, scientific committee, to a number of scientists that are regularly consulted by the journalists in order to identify relevant issues, give advice on best suitable experts for an interview, point out new or particularly relevant achievements.

The role of the scientist and the way they are characterized within a program is indeed one of the most interesting aspects of the radio with respect to other media. Indeed, as stated in the introduction, scientists on air speaks with their own voice, are accountable for all what they say without being trapped in the complexity of the TV production mechanism, and are bounded to speak also behind their expertise, to convey – with their tones and conversational attitudes – the motivations, expectations, dreams and doubts that drive their enterprise. Three main axis on which to characterize the role of the scientists in science radio programs have been identified in [9], that is a) the emphasis given on their personality (from the competence without the person to the person without competence); b) the degree of conversation occurring on-air (from pure lecture to open debate); c) the level of involvement with the matter under scrutiny (from the non-involved commentator to the author of the research).

3.2.6 Other issues

Together with a discussion of what are the specific roles of scientists and journalists in European radio programs, other elements were inquired, such as the means of interaction with the listeners, the knowledge of the audiences, the use of the websites [17], and the use of podcasting. These results are reported and discussed at length in ref. [9].

4. Conclusions

The overview of European science radio programmes characteristics has revealed a very diverse and creative landscape. This cannot be fully reproduced on paper, as the oral and conversational characteristics of the radio are unique and not replaceable. The potential of the web to spread audio contents, and in particular to archive them (the Latin saying according to which *verba volant, scripta manent* is no longer valid, and today *verba manent* in the digital realm) has given new opportunities to the audio medium (weather or not we can call it radio), but also to the research community that wish to understand the roles and function of the radio and its social impact: we invite the reader to explore the validity of our data – and enjoy listening to the radio - by travelling through the European programmes, all

of which are available on the web (the Scirab website, www.scienceonair.org can be a starting point). However, we can metaphorically state that the greater innovation in the radio realm is not the Internet, podcasting, or DAB, but the winding handle: this old yet innovative tool that allow to self-power radios, so that they can reach every remote corner in the world, where science communication – in particular on health or environmental issues – can have a dramatic impact [12, 23], or where there is a strong need to value local scientific production. Our hope is that the Scirab network would be able in the future to analyse and promote the role of the radio in science communication also beyond European frontiers.

5. Appendix. The SCIRAB – Science in Radio Broadcasting project

Scirab - Science in Radio Broadcasting - was a project funded in 2004 under the Science and Society program of the EU Sixth Framework Program for research (2002-2006). It was promoted to share experiences and best practices among science radio programs in Europe, and to analyze the role of the radio medium from a science communication perspective. The project involved three partners: Sissa in Italy (Innovations in the Communication of Science group), Imperial College, London, UK (Science Communication Group), and Radio Romania, the Romanian State's broadcaster. One of the main objectives was to conduct a survey and organize three international meetings.

The survey of science radio programs in Europe was carried out in 2004. A map of 75 science radio programs being broadcasted in Europe was drawn (www.scienceonair.org), and 40 programs from 16 countries provided answers to a detailed questionnaire.

This survey uncovered a much richer landscape than previously expected: by traveling through Europe, it is indeed possible to listen to a science radio program at any time of the day, any day of the week. Each of the programs shows a different approach to science and science communication, with new ideas sparking everywhere. We strongly suggest everyone interested in science radio broadcasting to take a trip along the map we have tried to draw (www.scienceonair.org: the web offers a great opportunity for this): creativity is a quality that is not lacking among science radio journalists!

About 50 science radio journalists and scientists from 16 countries actively participated in the Scirab meetings.

A first workshop was held in Bucharest on the premises of Radio Romania. It was specifically devoted to "Challenges and opportunities in Radio Science Journalism in Eastern Europe". The aim was to explore similarities and differences in the ways of conceiving science communication in the new Member States with respect to the old European countries. A second meeting was held in Trieste. More than 30 science radio journalists from 16 different countries met, together with scientists who participate in radio programs and media researchers specialized in radio studies. The meeting was devoted to "The role of the radio in science communication" [18,19,20,16]. A panorama session allowed all of us to present our programs, to discuss choices and to exchange good ideas, while a series of lectures highlighted some key points, from the relationship of the science journalists with the editors/broadcasters to the opportunities of international co-productions, from language issues to the role of the Internet.

The third meeting was held in London. It was entitled "Are scientists heard on the radio?", as it focused on the role of the expert in science radio programs. An enlightening exchange of points of view regarding challenges of science communication among scientists and journalists took place on the premises of the historical BBC Bush house.

Scirab also organized a radio session at the conference "Communicating European Research 2005" in Bruxelles [21, 12, 14, 22], and is now heading toward establishing itself as a formal network.

Details on the activities and the proceedings of the above mentioned Scirab meetings can be found on the web-site www.scienceonair.org. A complete bibliography of papers and books on science in radio broadcasting is also available on the website.

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