Science Across Television –
A European Perspective for the next Decade

EARTHWAKE

Project no: 030204
Project acronym: EARTHWAKE
Project title: European Television: a workshop to prepare a new agenda for science communication
Instrument: SAS6
Thematic Priority: Structuring the European Research Area

Final Activity Report

(Conclusions and Recommendations)

Period covered: from 1st January 2007 to 30th November 2007
Start date of project: 1st of January
Duration: 11 month
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Project Objectives

This report sets out the conclusions and recommendations from the EARTHWAKE forum held in Strasbourg on 8th and 9th November 2007. The intention of the forum was to prepare a strategy (aimed particularly those responsible for the further shaping of FP7 and policy at European level relating to Science in Society issues) to harness the appeal of popular strands of TV to create a new awareness and interest in science. It brought together leading European TV executives, scientists, science communicators, TV writers and producers, the general public, advertisers and web designers. The report proposes a series of 16 recommendations for action. These cover a wide spectrum of issues but may be encapsulated in the following general conclusions that represent a synthesis of the discussions that took place over the two weeks:

Science and scientific culture can occupy a much larger part of the totality of broadcast content and to facilitate this would be valuable as a means to embedding better scientific culture into popular culture The broadcasting community are insufficiently aware of the opportunities for them that are inherent in scientific content and have limited knowledge of the role and realities of science or of how to find out more about the area The science community understand that there is a need to enhance public awareness of the role of Science in Society and the potential impact of broadcasting to this end. But they are not sufficiently aware of or connected to, the mechanisms and networks that could make this happen and do not have a broad understanding of the variety of genres that offer opportunities for science strands in broadcasting.

Consequently there exists a fundamental need for a large scale programme of bridge building and facilitation between these two communities. This would include mechanisms to offer support and contacts to writers and producers so that they could access science stories and supporting science advice and likewise for science communicators and scientists to improve their interface with the broadcasting community. Ideas on ways to do this include

1. the sponsoring of high profile festivals that showcase best practice and offer a prestigious forum and prizes that reward the considerable efforts required of writers, producers and their scientific collaborators to bring scientific culture to popular notice (these should go beyond the focus on scientific documentaries to promote a more pervasive presence of science on television).
2. the establishment and support of networks amongst the various actors spreading broadly across Europe, that could provide an infrastructure for the effort, in particular:

    - The sponsoring (or support) of events bringing Science and Technology in a user friendly way to Writers, Producers and Broadcasters (as for example the event in this project or those developed by PAWS/EuroPAWS)
    - Support, at the ideas stage i.e. early in programme development, for new productions potentially involving science and technology, notably in TV genres not rooted in science such as drama and general magazine formats

Work Performed

This report is written by the EARTHWAKE consortium and provides an overview of the discussions at the EARTHWAKE forum held on 8th and 9th November 2007 at the International Space University (ISU) in Strasbourg (there was also a session open to the general public that was held at the Ecole Nationale d'Administration also in Strasbourg) The forum was funded by the Research Directorate of the Commission of the EU under the Science and Society work programme of Framework Programme 6.

The project sought to prepare a strategy to harness the appeal of popular strands of TV to create a new awareness and interest in science. It brought together in a two day event reported here leading European TV executives, scientists, science communicators, TV writers and producers. The general public, advertisers and web designers were also involved. The event focused on how the aim of bringing science into popular European TV could be furthered in the context of Framework Programme 7. Models were explored for how best practice could be spread and how targeted money could act as a catalyst. The goal was to produce an agenda for the coming years and a set of outline project proposals for FP7 that were feasible and imaginative, and to present these in a report for all actors but particularly those responsible for the further shaping of FP7 and policy at European level relating to Science in Society issues.

The EARTHWAKE consortium was made up of the following organisations;

- Euroscience – project co-ordinator, a European level organisation focused on science and technology communication and promotion.
- OMNI Communications Ltd – a London based audio visual and event production company specialising in public awareness of science activities and representing the EuroPAWS consortium of organisations promoting a European approach to public awareness of science issues
- Systemics Network International (SNI) - a Brussels based space and telecommunications consultancy
- The European Physical Society (EPS) – based in Mulhouse, a membership organisation made up of the national professional physics associations in European countries.

Approach taken in this report

This document offers reportage; it does not attempt to record verbatim proceedings but rather to give the reader the impression of what it was like to attend the forum and to record key points at issue and key views expressed. In particular, as set out above, the purpose of this report is to draw conclusions that may prove helpful to policy makers in the field of Science in Society in relation to the role of TV broadcasting.

Accordingly the reader will find below a description of the discussions held in each session including some of the conclusions that those present sought to draw within the context of each session. These are followed by the drawing of overall conclusions (that took place in workshop session 6) and the development of recommendations for action.

In order to aid the reader a brief outline of the workshops sessions is given here;

1. Opening Session - The Challenge
This will set out the aims of the EARTHWAKE Project

2. Science in TV drama - Beyond 'cops and docs': are there more roles for scientists on television?
Considering how to harness the potentials of science for drama and of drama for science communication, drawing on the enormous recent success of science based TV series?

3. Programmes Sans Frontières
Focusing specifically on the representation of space in popular European TV...

4. Your Chance to Shape European TV - A public session on the growing role of science
Following two sessions geared to the professionals, this session will explore what the public likes now in terms of science on television.

5. Fascination of the Natural and Reported Worlds
Having taken TV Drama as a specific area, this session will focus on science in other TV outlets including the web...

6. The Way Forward
The Chairs of each session will present a summary of what conclusions and recommendations have emerged from their session...

Conclusions

In general the conclusions arrived at in the two days of discussions at the EARTHWAKE forum might be summarised as follows:

1. Science and scientific culture can occupy a much larger part of the totality of broadcast content and to facilitate this would be valuable as a means to embedding better scientific culture into popular culture

2. The broadcasting community are insufficiently aware of the opportunities for them that are inherent in scientific content and have limited knowledge of the role and realities of science or of how to find out more about the area

3. The science community understands that there is a need to enhance public awareness of the role of Science in Society and the potential impact of broadcasting to this end. But they are not sufficiently aware of or connected to, the mechanisms and networks that could make this happen and do not have a broad understanding of the variety of genres that offer opportunities for science strands in broadcasting.

4. Consequently there exists a fundamental need for a large scale programme of bridge building and facilitation between these two communities. This would include mechanisms to offer support and contacts to writers and producers so that they could access science stories and supporting science advice and likewise for science communicators and scientists to improve their interface with the broadcasting community.

5. Ideas on ways to do this include
    - the sponsoring of high profile festivals that showcase best practice and offer a prestigious forum and prizes that reward the considerable efforts required of writers, producers and their scientific collaborators to bring scientific culture to popular notice
    - The establishment and support of networks amongst the various actors spreading broadly across Europe, which could provide an infrastructure for the effort.

Summary of Recommendations

Recommendation 1

Promote opportunities for contacts and exchanges among the professionals involved in the making of TV drama (scientists, writers, producers, broadcasters, etc.) No external intervention can influence the way in which a broadcaster recruits its personnel in order to have more directors with scientific interests. However, occasions to stimulate and enrich contacts among the various actors are always welcomed by all sides. Due to time constraints, schemes like "science evenings" would be more successful than long and demanding conferences. This will slowly but more effectively help to overcome difficulties of communication among all actors of the process.

Recommendation 2

Promote schemes that bypass market constraints, and allow authors to do proper research. Difficulties have been identified in the research and development phases of the script. Intervention in the pre-market phases could therefore be effective; for example through the attribution of grants for research and development, and support in the research phase, and by providing contacts with relevant and interested scientists. The success of the EuroWistdom initiative was repeatedly pointed out as a demonstration of this, as it led many writers to turn toward science stories, which they felt as interesting but on which they could not previously embark.

Recommendation 3

Provide cross-training schemes for all the professionals involved in creating a TV drama with significant science role model impact. A significant number of scientists, writers and producers are willing to engage in the experience of developing science TV drama, both for cultural and professional aims. Workshops specifically directed at those people would be highly beneficial, and help to transform a desire into real TV programmes. A multidirectional transfer of knowledge and experiences (within the quadrilateral scientists-writers-producers-broadcasters) is advised. Again the success of the EuroWistdom project has established this point.

Recommendation 4

It would be useful to measure the impact on the audience of science and technology pieces in non-science TV programmes.

Recommendation 5

It would encourage further such pieces to reward the producers and broadcasters of successful programmes. Voting procedures as used at EARTHWAKE provide an interesting way both of gaining a winner and of finding out more on audience perceptions.

Recommendation 6

Programme makers across television are increasingly aware of the potential of science and technology elements for their genre, but many more opportunities would be opened up by helping programme makers to know more about how science and technology affects their output area.

Recommendations: New Media

Recommendation 7

Good use of the latest AV techniques can enhance important messages, and provide access to new worlds including science and technology, and for new audiences. New communication technologies often develop faster than the content they are supposed to convey. This calls for a proactive and innovative approach on the side of the scientific community, that have now the chance to take a lead in providing valuable content to new media .

Recommendation 8

As in the other category, rewarding success in New Media productions in as high a profile way as possible is valuable at several levels; firstly for participating producers, then with influential juries or voters in bringing home the value of the techniques and audience catchment, and then for a wider public in engaging the process and message at any level.

Recommendation 9

Find more mechanisms to engage the public with science and technology in ways that relate to their daily lives. Use current examples of TV and AV output to highlight the issues, as in this seminar.

Recommendation 10

A project, supported by EC funding, to promote science strands within existing TV formats could be productive. Areas like Sport and General Magazine programmes could be encouraged via well crafted proposals for science items supported by appropriate funding.

Recommendation 11

At the same time, there is a need to ensure that there is a variety of types of TV and AV programming on offer so that those motivated to understand more science and technology can find good documentaries and factually based drama to meet their demands. In other words,

whilst reaching new, wider audiences with science and technology is a priority, this shouldn't be seen as an alternative to dedicated science programming, but an addition caused by the greater profile of science in today's issues.

Recommendation 12

New initiatives are needed to bridge the arts/science divide, particularly at the level of TV management. Many TV managers recognise intellectually that they need more developed science output, but haven't engaged the issues emotionally. Specific activities should include events at which scientists and TV managers participate together, such as at this seminar. Also there could be more direct lobbying, including with influential groups like EuroMPs and national MPs.

Recommendation 13

Targeted financial and intellectual support could help programme makers take on science themes more broadly. The screenings of good existing TV and AV examples from across Europe clearly opened up a vision of new opportunities to those present, and could have a similar effect more broadly; so measures such as a regular high profile festival for such output, perhaps with significant rewards for excellence, could help engage more broadcasters and producers.

Recommendation 14

The time may now be right for big European level TV initiatives in science and technology, to mirror those already existing in Sport and Music. The Environment initiative by the EBU is an excellent example of how to use entertainment formulae to convey important messages. The Europe-wide TV competition envisages broadcasts in 2009 in which streets (or similar level groups) from different countries will compete for the most carbon friendly designs, using a "jeux sans frontières" spirit of programme. The idea is to make environmental projects fun, and at the same time inform vast swathes of Europe's population of the need to act in the face of climate change; Avenues should be explored to take this type of initiative further, with other areas of science and technology and different formats. Friendly and constructive international challenges within Europe offer a prime opportunity for raising awareness of science and technology issues, and require a Europe-level driver.

Recommendation 15

There could now be an identifiable need for a European Science Communication agency, with remits to include the use of European level TV and AV projects to raise interest in science issues. It is considered important that such TV projects should not necessarily be "serious television", and that entertainment formats of all kinds should be considered. Constructive competition within Europe can be a great unifier and informer, as in the Champions League (football) or in Music.

Recommendation 16

Some of these targets have been explored as specific items in TV production, but in particular the two last ones of the above have not been enough explored (as the work shop has shown in the case of Space). And specific attention to these topics by way of further projects would be useful. As an example of this the EBU "GREEN TV" project which is fully in line with the 'environment policy' of the European Union would benefit greatly from explicit support.

Workshop Discussion Report

Workshop session 1

Opening Session - The Challenge

The opening session set out the agenda for the Seminar.

Speakers for the seminar came from six European countries and included professionals from Television production, Audio-visual departments, Writing, Science, Technology, Science Communications, Advertising and European Organisations. Three European Organisations were represented: The European Broadcasting Union (EBU), The European Particle Physics Laboratory (CERN), and the European Space Agency (ESA).

Introductions were given by Raymond Seltz on behalf of Euroscience, as co-ordinators of the EARTHWAKE Project, and by Andrew Millington on behalf of EuroPAWS whose work in developing science based TV drama pointed the way for the EARTHWAKE agenda. They set out the aims of the seminar to be firstly to explore how the growing importance of science and technology could be reflected in a new and wider range of television and audio-visual programming, bringing science to new audiences across Europe. Secondly to formulate specific actions that could help this process over a ten year time frame, including ways in which the European Commission in particular could catalyse change.

Major themes addressed included the cultural divide, where TV decision makers are still largely arts and humanities educated as are indeed most writers. Actions needed included how one might change that Arts & Humanities bias, and how one might better manage the existing interface between Arts TV executives and science issues and potential science-based programme material.

Examples of projects which successfully bridged this divide were presented. Successes also by European level organisations were presented, with media coverage of great experiments and voyages from CERN and ESA being cited. The EBU offered insights into a new European level TV project designed to bring global warming and carbon emissions to the person in the street – literally. Streets and precincts would compete across Europe in an entertaining TV competition to be the most green friendly. With similarities to the Eurovision Music Contests and Jeux sans Frontières, this new format TV competition was seen as just the sort of innovation in broadcasting – at a European level – that the seminar was particularly addressing.

The EBU presentation was intended mainly for the session on Fascination of the Natural and Reported Worlds, but was brought forward because of the time constraints on the EBU speaker, Bettina Brinkmann. Recommendations will be included in the proceedings of the intended session.

She gave some background to the EBU's operations. The organisation has sports; news and production network and also conduct training and development. In particular they run the Eurovision Young Musician competition and the Eurovision Song Contest. They also cover fiction (drama), entertainment, science and education.

In a survey the EBU had found that 72% of people think that the future will be tougher than present and that climate change is at least one of the causes for this. They are trying (and succeeding) to address this by getting a new "GREEN TV" series off the ground that uses the Eurovision competition template. The series will look at green issues and have a community spirit. Streets will compete with each other in an attempt to reduce carbon emissions. They would have satellite links to the streets and it will have an international appeal. They want it to be as stylish as 'Next top Model' and an open competition; 16 countries are already on-board.

EBU feel there could be two levels of audience:

i) core audience
ii) peripheral audience who are usually unengaged.

This was the first time that a major science based competition across Europe had been attempted, based on an entertainment format. It is an innovation that seems to be capturing the imagination of Europe's broadcasters, and offers a chance to bring the science and engineering issues in global warming to the person in the street.

Workshop session 2

Science in TV drama - Beyond 'cops and docs': are there more roles for scientists on television?

After the enormous success of scientists on TV with the series C.S.I. and E.R., that have been broadcasted or replicated in national versions all over the world, this session addressed the thought that it may be time to broaden the spectrum of characters for the scientists on screen, beyond scientific policemen and medical doctors. Could the scientists in tomorrow's TV series be neuroscientists, geneticists, nanotechnologists, climatologists, environmental scientists, etc.? These people deal with some of the greatest challenges of tomorrow's world from the economic, political, ethical, and psychological points of view: but can television seize the opportunity to build compelling stories around these challenges?

The speakers on the panel were:

Matteo Merzagora - Science journalist, Europaws (Chairman)

Pierre Henri Gouyon - Professor, Muséum National d'Histoire Naturelle

Lisa Osborne – Former Head of Development, BBC Drama

Katharina Uppenbrink - Managing director of the German Screen Writer's Guild

The idea behind the selection of the speakers was to cover the path from the scientific content (the scientist, PH Gouyon) and through the development of a story (the writer, K. Uppenbrink) and finally to become a TV production (the producer broadcaster, L. Osborne). They were asked to bring their personal point of view, based on their own experience, but also to report as far as possible the point of view of the "category" they were asked to represent.

The main points that arose in the session were

- There is a very strong "drama" element in the way of working of scientists. A thought experiment is in itself a process of fictionalising a concept. Science is often "knowledge in a state of change": a very dramatic subject. However, scientists themselves are often not aware of this potential. As a consequence, they neglect fiction as a useful format for communicating their achievements.

- There is a general idea that what scientists do is not interesting for the wide public. Actually, a lot of science talks about sex and death, about our origins and our place in this world, about our bodies and our minds, etc. These are obviously interesting topics. Rather than science being uninteresting, it is therefore the way in which it is chosen to present it to the wider public that makes it uninteresting

for a large section of the population. Pushing forward “unexpected” formats for science, and above all TV drama, would be a way to reach to new audiences, and thereby to revitalize the dynamics of science in society relationships.

- Scientists love to be contacted by writers and filmmakers, and will generally react very positively to a request for help or collaboration. However time constraints actually limit the possibilities for a single scientist to help writers and filmmakers in developing their stories. But the number of high quality scientists is very high, and many of them are very willing to communicate, and often have good personal gifts for doing this. It is therefore important to stimulate and help the authors to go and look for more scientists and scientific stories.

- The search for truth is a common goal for scientists and storyteller: it should be exploited more deeply in story development.

- There can be seen to be a problem of reliability in terms of the quality of contents when science becomes the topic of a work of fiction. A point that was raised, indicated however, that the main dangers might not come from pure drama (where as soon as the content becomes not credible, the public knows how to correctly interpret it as a work of fantasy) but from docu-fictions, in which the boundaries between what is fact and what is fiction are purposely blurred.

- A lack of mutual knowledge is observed among the different actors of the field. Scientists, writers, producers, have very few occasions to meet and know each other. Indeed, for many of the participants the EARTHWAKE forum was a first occasion for this encounter to happen.

- Writers love to be stimulated: they are always ready to react to inputs. It is therefore important that either scientists themselves, or external agents such as national or European agencies, EU funded projects such as EARTHWAKE itself, prizes, development grants, etc promote occasions, both in terms of ideas and funding opportunities, to recall to writers the potentials of science related topics.

- European writers also need money: the European market heavily penalises writers that wish to engage on innovative or not mainstream subjects. A striking figure is the following: in the USA the ratio of developed to broadcast projects is 20:1. In Europe this figure drops to about 3:1! This means that the space for innovation is being severely limited by market processes. Script development is therefore to be considered the weakest point of the chain. It is important that the research part of a writer’s work is well valued, which means that it should be explicitly recognised and paid for if there is a wish for a more innovative approach.

- Schemes which bypassed the constraints of the market would be therefore welcomed by writers. The example of the FP6 funded Eurowistdom project was mentioned by writers in the audience. A development grant offered by the project allowed writers to carry on proper research, spend time with scientists, identify and develop stories based on current research to enhance the quality of their work and the chance to be produced and broadcasted. Indeed, writers need time to speak with scientists, observe them, dialogue with them.

- Also, workshops and training schemes for writers, like those previously organised in Germany and the UK within the Eurowistdom project and the UKPAWS project, are welcomed by writers, who need occasions to establish direct contacts with the scientific community. Internships, where writers are allowed to spend some time in a research lab, were also suggested as a potentially fruitful action (indeed, writers need to know the scientific facts, but also the human sides of the research work, in order to draw appealing portraits of scientists).

- A need of platforms to be built that could maintain this ease of exchange beyond specific projects is advocated.

- No one denies the relevance of science in contemporary world. But for example, in the BBC drama unit no one has scientific background, only 3 have A level (qualification taken at age 17 or 18) in science, all the other stopped studying science at the age of 14. This fact, confirmed in most drama units of European broadcasting companies, generates a vicious circle, as it is unlikely that producers would invest in a subject about which they felt handicapped, even when they recognised its importance.
  Indeed, the striking success of American series such us *ER*, *CSI*, *House MD*, *Grey's Anatomy*, etc. (the weekly viewers of just these four series sum up to 110 million in Europe) and the striking fact that in USA since 1995, at least one of the top 3 most viewed series has a science related plot or characters has not been replicated in European productions (with few exceptions in the UK, and in Italy with the *RIS* series).

- "Cops and docs" works well on TV because it places the characters in extreme situations. Other scientific characters could actually work on TV, but the public needs to identify with them, and needs to struggle with them in these extreme situations. This implies that not every scientific idea can become a good story for TV, despite of its importance for science.

- In terms of content, the efforts of sticking as close as possible to real science as a starting point on which fictional stories can be based and from which they can depart to follow the drama creativity are highly desirable. Such efforts have a positive impact on the success of the drama. On the other hand, TV drama cannot reproduce the way of speaking of scientists. Language needs to be adapted, as most of the scientific discourse is full of implicit assumptions, which need to be clearly spelled out in order to make the struggles of the characters understood to the wider public.

- The use of urgency, enlightenment, passion as dramatic strategies works well. These are elements that can transform a scientific story into a highly engaging drama; an example that clearly demonstrates this is BBC's *Steven Hawking.*

The discussion gave rise to suggestions for a number of practical ways forward

Recommendation 1

Promote opportunities for contacts and exchanges among the professionals involved in the

making of TV drama (scientists, writers, producers, broadcasters, etc.) No external intervention can influence the way in which a broadcaster recruits its personnel in order to have more directors with scientific interests. However, occasions to stimulate and enrich contacts among the various actors are always welcomed by all sides. Due to time constraints, schemes like “science evenings” would be more successful than long and demanding conferences. This will slowly but more effectively help to overcome difficulties of communication among all actors of the process.

Recommendation 2

Promote schemes that bypass market constraints, and allow authors to do proper research. Difficulties have been identified in the research and development phases of the script. Intervention in the pre-competitive phases could therefore be effective; for example through the attribution of grants for research and development, and support in the research phase, and by providing contacts with relevant and interested scientists. The success of the EuroWistdom initiative was repeatedly pointed out as a demonstration of this, as it led many writers to turn toward science stories, which they felt as interesting but on which they could not previously embark.

Recommendation 3

Provide cross-training schemes for all the professionals involved in creating a TV drama with significant science role model impact. A significant number of scientists, writers and producers are willing to engage in the experience of developing science TV drama, both for cultural and professional aims. Workshops specifically directed at those people would be highly beneficial, and help to transform a wish into real TV programmes. A multidirectional transfer of knowledge and experiences (within the quadrilateral scientists-writers-producers-broadcasters) is advised. Again the success of the EuroWistdom project has established this point.

Workshop session 3

Space – Programmes sans frontières

The aim of this session was to take an example from science and technology TV output which featured across many genres of television. The reasons why Space provided successful programming in all these areas would be examined. Another issue was how to improve the image of European Space Research and Activities which often lagged behind perceptions of US endeavours. At the same time, it would be explored if the coverage of Space offered an avenue to broader recruitment to science and technology, and also gave clues to how other sciences could penetrate further the corridors of TV production.

The speakers represented different professional interests relating to Space.

The Chair, Kevin Madders (SNI), saw the central issue here as to how Space can engage more with the public, by presenting its endeavours in terms to which the person in the street can relate. In parallel, Space needed to have appeal for the European Commission, and the session would aim to point up features of the presentation of Space activities that could help meet these objectives. Space is a good metaphor for science and technology more broadly as it reflects many aspects of what is happening in society.

Dr David Southwood, Science Director at ESA, laid out four key elements he believed were at the root of communicating science. The four "E"s as he called them.

Empathy,

Extremes – feeling safe but being on the edge of science

Empowerment – triumph over odds to solve scientific problems

Epiphany – the existence of defining moments

He also identified some negatives in communicating science that people should be conscious of.

Science as pathological, or morbid

Science creating magical solutions

Science as something you worship without understanding why – the High Priest phenomenon

Katy Haswell, Journalist and Broadcaster said there had been a change in how we consume media. In 1969 space science achieved a momentous first at the same time as colour TV came in and so people were watching the moon landings on a brand new and still exciting, medium.

In the future we can see regular milestones in Space.

- 2007 sees a new era of space exploration.

- By 2025, we are thinking in terms of colonising the moon and on to Mars.
- There is Space tourism with for example Virgin Galactic – sub-orbital space planes.

Equally there is also a revolution in the media and the way we make films. Cutting edge media again offers a way of accessing new audiences. The old media are passive, but the new are much more active. An example is Joost – a new IPTV platform. We are in an era where we can increasingly easily and relatively cheaply create new channels and programmes.

At the same time technical developments in electronics are bringing about a convergence amongst all the different communications tools we use. In the past we had 'time shifting' of audio-visual output, now we are 'place shifting'. We are taking the media we watch TV on about with us as part of our mobile communications. Another example of convergence is Xbox, which is not just a games machine but an entire media centre. We are combining all our audio visual tools into a single piece of equipment that is TV/PC/phone/game console etc.

In overview it might be concluded that Space activities, because of wide appeal, can provide a good test-bed for the science in society use of new communication technologies. In the world of Space there is a continuing flow of exciting stories, for instance:

- Rosetta – landing on a comet
- Venus express – orbiting Venus
- Searching for extra terrestrial life
- Mars landing in 2040

There are many areas which could and should be capitalised on.

Gianni Haver, Institut de Sociologie des Communications de Masse (ISCM) in Lausanne, reinforced the view that the popularity of Space and the many facets of its appearance on TV programmes opened the door to some science in society opportunities.

There is a possibility of fictionalising (dramatising) space current affairs. This could bring space stories and developments home to a wide public in a new way. There was a professional sociological interest in studying further the role of Drama (TV and film) in society, and in Space the history of science fiction made the transition to factual based drama an intriguing area to explore. The work of the sociologist could be important in assessing better which elements of Space work people related to, and with what impact.

Kathleen Van Damme, Senior Communications Consultant explained her work on a project called 'Athena Web' – which is a scientific audio/visual portal, 100% funded by the European Commission (described as the 'YouTube' for science professionals). Science producers from all over Europe are contributing to this, both with visual material and transcripts.

Walter Peeters, Professor at the International Space University (ISU)

During Apollo 11, 538 million viewers were watching, he said. This was probably an under-estimate with the likely figure more in the order of 1 billion. But more people were watching Apollo 13 than Apollo 11 because of the drama. So viewing figures for space TV can be very large.

He felt that the popularity of a film generally increased with its scientific accuracy but also that the human element was important. Human spaceflight has proved very attractive to the public he said. Following this point it could be seen that the Mars Beagle project had offered their story in terms of the people involved and this had helped the publicity a great deal.

It could be criticised that ESA have to support the media better, for example ESA could have a few days education course for journalists. Discussion then focused on the image of ESA in Europe, which was felt to lag well behind NASA in the public mind and a view was expressed that the time was right to re-brand the European Space Effort and ESA.

Conclusions

Space offered huge opportunities for European television in promoting science and technology more generally, and issues like attracting women into science and engineering. Because there are so many dimensions to Space activities and its role on television, it was a challenge to pick out some salient areas for change. But among the most compelling points were:

- The re-branding of European Space work is probably overdue, to give it a higher and more positive profile with respect to the US space effort. This includes the image of ESA. This needed a European level initiative.

- Space research and activities which straddle so many areas of life now need to be brought closer to the person in the street.

- The use of new TV and audio-visual techniques in communicating about Space should be considered, including dramatised current affairs presentations and new media outlets. These could include a fresh look at web TV channels and ensuring and continuing early use of the developing technology.

- Many areas of science and technology contribute to Space Missions and Research. There is room for much more bleed across of charisma from Space into other sciences, and TV and Audio-visual communication have a potentially major role in this across many genres of output. This could have an important impact on recruitment of young people to science and engineering general.

Workshop session 4

Public Session

The activities in the public session were intended first to increase awareness of the opportunities and challenges of bringing science and technology into new programming, TV and AV, and second to develop by consulting a general public, suggestions and viewpoints on shaping a new agenda in Europe in this domain. The audience was drawn from the local community in Strasbourg as well as from people attending the EARTHWAKE forum.

Samples from TV programmes across Europe were presented all of which had interesting aspects of science or technology embedded into non-science formats. This was followed by examples of science and technology conveyed by a variety of audio-visual means, including webcasts, podcasts, high tech video designs and innovative museum pieces. To heighten interest, the audience was asked to vote in the two categories for the best presentation according to two criteria:

a) Which programme appealed to you most, personally and subjectively, in other words, which would you personally like to see more of in the future
b) Which programme do you think was the most innovative or best made

The two categories chosen were, Science in General TV Programming and New Media. It was decided that for this purpose TV drama was a well known genre, although its potential for science and technology could of course be explored further. To do this, a leading member of BBC TV's Drama Department was invited to be on the panel.

The programmes screened were:

(a) Science in General Programming

1. " Newsnight" - Current Affairs Programme from BBC 2, UK; "Culture Correspondent takes up Physics"

2. "Galileo"- General Knowledge Magazine, ProSieben, Germany; A piece on "The Ways of Water?"

3. "Turisti per Caso" – Italian Travel Programme. Episode on; "Accidental Evolution; in the footsteps of Darwin.

4. "The One Show" - Daily primetime general Magazine, BBC 1, UK; Science item on "walking versus running for losing weight"

5. "Phenomenal" - Primetime entertainment programme, TF1 France; Piece on understanding how an Octopus opens a jar

6. "Big Brother" - Endomol and Channel 4 UK"; A laboratory is introduced into the big brother house.

7. "Chroniques d'en Haut : Le Magazine de la Montagne" - France 3 Rhône Alpes/Auvergne and Mecanos ; Episode on a Mountain of Energy

(b) Science in NEW MEDIA Category

1. "ESOC the ESA Operations Centre Profile" - iPod Production from the European Space Agency (ESA)
2. "Unsung Heroes" - A high tech DVD on importance of engineering; A Crows Nest Production for the IET, UK.
3. "Virtual Aquarium" - Museum piece with designed fish in a virtual aquarium; 2d3D Animation, France
4. "Tomorrow's Climate Today's Challenge" - Environment Information DVD from DEFRA, UK Government Department
5. "Virtual Tour of the ATLAS Experiment at CERN" - A Production from CERN
6. "A Holographic Museum Presentation" - From the Deutsches Museum, Munich

Feedback from the screenings.

The votes varied significantly between the subjective view (criteria a) and objective view (criteria b), suggesting that the audience had engaged the issues raised. In other words they recognised that there were many types of programmes which appealed to people other than themselves, and that these genres were all capable of embracing science and technology subjects and themes well. At the same time, there was a clear winner in each category, namely "Chroniques de la Montagne" for the General TV category and "Tomorrow's Climate Today's Challenge" in the New Media Category.

More general conclusions drawn from the discussion in this part of the session were:

- The TV and AV pieces helped people identify how widely science and technology could penetrate broadcasting (in its widest sense)
- That people recognised valid and useful roles for two broad types of TV/AV communication with regard to science and technology, namely the well-designed targeted message, and the value of grafting some science and technology on to programmes that basically appeal to other non-science interests of viewers.
- It was also clear that Europe can express itself with one voice on these issues; people easily identified with the spirit of the event and looked only for quality within the criteria.
- Informal discussion suggested that some people found it harder to accept science in very popular TV genres than others, being concerned about its dilution, vulgarisation

or over-simplification. In dialogue, there was more recognition, however, that the importance of reaching new audiences with science and technology outweighed (in general) these reservations.

Recommendations: General TV Programming

Recommendation 4

It would be useful to measure the impact on the audience of science and technology pieces in non-science TV programmes.

Recommendation 5

It would encourage further such pieces to reward the producers and broadcasters of successful programmes. Voting procedures as used at EARTHWAKE provide an interesting way both of gaining a winner and of finding out more on audience perceptions.

Recommendation 6

Programme makers across television are increasingly aware of the potential of science and technology elements for their genre, but many more opportunities would be opened up by helping programme makers to know more about how science and technology affects their output area.

Recommendations: New Media

Recommendation 7

Good use of the latest AV techniques can enhance important messages, and provide access to new worlds including science and technology, and for new audiences. New communication technologies often develop faster than the content they are supposed to convey. This calls for a proactive and innovative approach on the side of the scientific community, that have now the chance to take a lead in providing valuable content to new media .

Recommendation 8

As in the other category, rewarding success in New Media productions in as high a profile way as possible is valuable at several levels; firstly for participating producers, then with influential juries or voters in bringing home the value of the techniques and audience catchment, and then for a wider public in engaging the process and message at any level. Occasions in which the effort required to experiment in new forms of communication around scientific content is rewarded as described, should be multiplied and be supported.

Panel-led Discussion

Panellists represented a variety of TV and AV disciplines:

Lisa Osborne, Head of Development BBC Drama Series

Jean-Pierre Gibrat, President of the Association Science Television France and a Documentary Producer/Director

Eleonore Boukhelifa, an Advertising Executive

Yvon le Maho, a leading biologist

The Chair was Paola Catapano from CERN and a presenter on RAI Television, Italy

Lisa Osborne underlined the essential point that for TV Drama producers what mattered was having a good story, and they were open to stories from science as from other walks of life. "Cops and Docs" were popular formats because they dealt with life and death issues; the challenge with science and technology was to find good themes that were right for drama. She cited a recent BBC drama on Stephen Hawking, illustrating also that dramatic licence was needed to bring some advances to life, illustrated with an example from the programme. Scientists need to accept that, always recognising that the science itself mustn't be distorted.

Jean-Pierre Gibrat pointed out the difficult balance between popularising science and retaining the more in depth exploration of science themes, the love of the documentary maker. He believes that in the modern world scientists must endeavour to enter the world of images just as the programme maker enters the world of science. He also feels that there is a big misconception that science is only about truths, and that part of the excitement of science comes from the doubts and uncertainties, something which could have popular appeal. He drew on the TV examples screened to underline how modern television usually demands a pacy presentation, often presenting science as a means to new technology. This tension between content and style is perhaps necessary, but one needs to be careful not to end up with a distorted view of what science is about. Science as culture must be part of the equation, he felt.

Eleonore Boukhelifa raised the role of scientists as hidden heroes in today's world. For her, the challenge was to bring scientists into the modern communications world. She felt that a wide public are more able to take on board scientific ideas than one often credits and that in her experience techniques like animation could help bring science across in a way that gives a sense of understanding. The over-riding question is whether one should pull science towards popular formats or keep it as an intellectual preserve – or how to get a good balance. Perhaps in popularising it one needn't be quite so afraid of losing people's interest by keeping in some of the real scientific issues.

Yvon le Maho told of a film he had just finished, where the message was clear that one should not see as opposed technology and protection of bio-diversity. Animals, for example, can help in the research on climate change. He is an adviser on a further film on the oceans, and he believes films can be a powerful way of harnessing public opinion. The preservation of fish types in the deep oceans is an example from the film. He pointed out that one needs bio-diversity, and that TV/film is a major way of re-enforcing the message. However, bio-diversity is further from the man in the street than Climate Change. It might seem that

science often passes a long way from daily life, and that bridges need to be built to bring it closer to society.

It was noted that the rise in importance of the environment had meant a surge of science based articles and news pieces, opening the door to more communication about science. At the same time, the growth in the means of audio-visual communication – from mobile phones to new web formats – means that messages can be packaged in new ways and that this must be done else the message would, increasingly, be overlooked..

Conclusions

There is an understandable tension between deeper communication of science and reaching a wide public. In today's world one must endeavour to reach new audiences, using all modern techniques and programme formats, but striving to keep scientific messages at different levels of sophistication. More bridges need to be build to people's daily lives, and this can happen through engaging popular TV and AV formats more effectively.

Recommendations

Recommendation 9

Find more mechanisms to engage the public with science and technology in ways that relate to their daily lives. Use current examples of TV and AV output to highlight the issues, as in this seminar.

Recommendation 10

A project, supported by EC funding, to promote science strands within existing TV formats could be productive. Areas like Sport and General Magazine programmes could be encouraged via well crafted proposals for science items supported by appropriate funding.

Recommendation 11

At the same time, there is a need to ensure that there is a variety of types of TV and AV programming on offer so that those motivated to understand more science and technology can find good documentaries and factually based drama to meet their demands. In other words, whilst reaching new, wider audiences with science and technology is a priority, this shouldn't be seen as an alternative to dedicated science programming, but an addition caused by the greater profile of science in today's issues.

Workshop session 5

Fascination of the Natural and Reported Worlds

Speakers were:

Yvon le Maho

Peter Barron, Editor, BBC Newsnight

Alain Jaillet, Director, Universite Louis Pasteur Multimedia

Paola Catapano

Bettina Brinkmann (via opening session)

Peter Barron said that a major current affairs programme like BBC's Newsnight recognised the growing presence of science and technology in today's world in its remit. It responded in two ways: by creating new output to respond to the issues raised by modern science, as in the BBC series "If" looking into realistic futures. But it also needed to bring science more into its general reporting, a challenge for largely arts trained journalists. They had their science correspondent Susan Watts, but the permeation of science issues has been embodied in a specific series of items they had developed in which their culture correspondent was sent to study A-level school physics – on camera. This was used to illuminate many of the issues surrounding science today and the recruitment of new students. Peter Barron recognised that science was now creating new demands on programme makers in his area, and the use of TV drama for example to depict hypothetical situations was extremely powerful.

Yvon le Maho, who also appeared on the panel of the Public Session, re-iterated the importance of scientists working with the TV and Film media, an endeavour which he found very stimulating and necessary in reaching wider publics. Among his aims were to make important areas of science like bio-diversity appealing through well-made and visually exciting TV programmes. He had found that one could put significant messages on the back of good visual images. It was sometimes frustrating for the scientist if his or her idea is not fully taken on board by a producer, but both must seek to agree for the greater good. The Natural World, visually so compelling, was seen as a great avenue for advancing scientific ideas.

Paola Catapano told of her experiences making and presenting science stories for Italian television, sometimes with the science embedded in non-science programming. She said the aim must always be to hook the viewer through emotions, and then bring in the science when the viewer is motivated. She offered examples from travel programmes, and also described some of the outreach activities from CERN where interest in their ground-breaking experiments surfaces at many levels. It was pointed out that documentaries on an apparently abstruse subject like particle physics can attract many millions in audience, driven by the wonder of frontier research, as in the BBC programme on the discovery of the W particle.

This was some time ago and pressures for audiences are greater nowadays, but the underlying point endures.

Several further issues emerged from in discussion. One was the changing boundary between documentary and drama; many more TV areas were now seeing drama as a valuable communication genre. Another view was that it was time to awaken the self-interest of the broadcasters to a broader remit for science in TV output. It was felt that this process could be helped by more research on what viewers actually liked and wanted.

Major points were raised on the presentation of science as both an economic engine and as part of culture. It was felt that this dualism can be a positive in attracting audiences. This issue was also pertinent in changing the image of scientists, or giving them a higher profile through these two roles of science (although not everyone agreed that the image of scientists needs changing rather than just projecting better). Another way forward was to actively develop more events at which arts and science people participate together – such as at EARTHWAKE. A further issue was seen to be the role of science communicators as stake-holders, in other words recognising the need for people whose professional interests depend on the success of science communication.

To effect change, it was felt that key groups like TV managements and Select Committees in the European Parliament should be lobbied to bring increased awareness of the problems of broader science communications on TV.

A different perspective was presented by the Head of Multimedia at Strasbourg University, Alain Jaillet. He illustrated how TV networks now existed at university level, and that they offered effective means of communication to a specific audience. This was seen as a pointer to a future where channels abound, and the pressure for audiences on existing TV channels mounts. At present, traditional TV Channel still remain an important and unique means of communication for large audiences, but web-based programming increasingly needs to be seen as at least a parallel activity, with different communication strategies, particularly for a younger audience.

Recommendations

Recommendation 12

New initiatives are needed to bridge the arts/science divide, particularly at the level of TV management. Many TV managers recognise intellectually that they need more developed science output, but haven't engaged the issues emotionally. Specific activities should include events at which scientists and TV managers participate together, such as at this seminar. Also there could be more direct lobbying, including with influential groups like EuroMPs and national MPs.

Recommendation 13

Targeted financial and intellectual support could help programme makers take on science themes more broadly. The screenings of good existing TV and AV examples from across Europe clearly opened up a vision of new opportunities to those present, and could have a similar effect more broadly; so measures such as a regular high profile festival for such output, perhaps with significant rewards for excellence, could help engage more broadcasters and producers.

Recommendation 14

The time may now be right for big European level TV initiatives in science and technology, to mirror those already existing in Sport and Music. The Environment initiative by the EBU is an excellent example of how to use entertainment formulae to convey important messages. The Europe-wide TV competition envisages broadcasts in 2009 in which streets (or similar level groups) from different countries will compete for the most carbon friendly designs, using a “jeux sans frontières” spirit of programme. The idea is to make environmental projects fun, and at the same time inform vast swathes of Europe’s population of the need to act in the face of climate change, Avenues should be explored to take this type of initiative further, with other areas of science and technology and different formats. Friendly and constructive international challenges within Europe offer a prime opportunity for raising awareness of science and technology issues, and require a Europe-level driver.

Recommendation 15

There could now be an identifiable need for a European Science Communication agency, with remits to include the use of European level TV and AV projects to raise interest in science issues. It is considered important that such TV projects should not necessarily be “serious television”, and that entertainment formats of all kinds should be considered. Constructive competition within Europe can be a great unifier and informer, as in the Champions League (football) or in Music.

Workshop session 6

The Way Forward

During the sessions of the work shop it was noticed several times that to be successful the specific genre in use and the story with scientific content, should be adapted to the targeted public. The overall aim of using TV as a media for communicating science is to increase scientific culture of the public. This however includes many different targets such as:

- making S&T careers attractive to teenagers
- helping correct the gender balance (especially at executive level)
- learning by experimenting for very young children
- fighting irrational reactions against scientific progress and irrational confidence in scientific progress as a solution to all problems
- advocating national or international science policies on major issues such as environment, epidemics, biodiversity, poverty, world economy and engaging the direct involvement of the citizen in the implementation of such policies
- meeting mankind's need to explore 'extremes' such as planets, deep see, poles, deserts, high mountains..

Recommendation 16

Some of these targets have been explored as specific items in TV production, but in particular the two last ones of the above have not been enough explored (as the work shop has shown in the case of Space). And specific attention to these topics by way of further projects would be useful. As an example of this the EBU "GREEN TV" project which is fully in line with the 'environment policy' of the European Union would benefit greatly from explicit support.

Annex – Plan for using and disseminating the knowledge

Table of Contents

SECTION 1 - Exploitable knowledge and its Use

Conclusions of the workshop

In general the conclusions arrived at in the two days of discussions at the EARTHWAKE forum might be summarised as follows:

6. Science and scientific culture can occupy a much larger part of the totality of broadcast content and to facilitate this would be valuable as a means to embedding better scientific culture into popular culture

7. The broadcasting community are insufficiently aware of the opportunities for them that are inherent in scientific content and have limited knowledge of the role and realities of science or of how to find out more about the area

8. The science community understands that there is a need to enhance public awareness of the role of Science in Society and the potential impact of broadcasting to this end. But they are not sufficiently aware of or connected to, the mechanisms and networks that could make this happen and do not have a broad understanding of the variety of genres that offer opportunities for science strands in broadcasting.

9. Consequently there exists a fundamental need for a large scale programme of bridge building and facilitation between these two communities. This would include mechanisms to offer support and contacts to writers and producers so that they could access science stories and supporting science advice and likewise for science communicators and scientists to improve their interface with the broadcasting community.

10. Ideas on ways to do this include
    - the sponsoring of high profile festivals that showcase best practice and offer a prestigious forum and prizes that reward the considerable efforts required of writers, producers and their scientific collaborators to bring scientific culture to popular notice
    - The establishment and support of networks amongst the various actors spreading broadly across Europe, which could provide an infrastructure for the effort.

SECTION 2 - Dissemination of knowledge

Dissemination of knowledge

Dates	Type	Type of audience	Countries addressed	Size of audience	Partners involved
09/02/2007 13/04/2007 05/06/2007	Meeting	Media producer, scientist	F/D/UK/AU	1000	Euroscience/0MNI/EPS
20/08/2007	Logo/Web site	General Public	All		Euroscience/OMNI/SNI
15/09/2007	Flyer (F/UK)	Media, Higher Education, General Public	EU	3000	Euroscience /OMNI
30/09/2007	Direct mailing	Euroscience members	EU	2000	Euroscience
23/10/2007	Programme Booklet	Media/ TV channels/ Scientists	EU	500	Euroscience /OMNI/SNI/ EPS
07/11/2007	Press Release	General Public	UK/F/D/CH		OMNI
15/11/2008	Final Report Recommendations (Hard copy & Web site)	Commission Stakeholders General Public	All		OMNI/ Euroscience/SNI/EPS

Communication, information and dissemination

(Before and during the workshop)

- The following items and tools were produced for the purpose of advertising the workshop:
- Creation of a specific EARTHWAKE logo
- Design and printing of a flyer in English (1000 copies) and in French (2000 copies)
- Design and printing of a detailed programme booklet in English including photo and short CV of speakers (500 copies)
- Realisation of a dedicated web site www.earthwake.eu

The dissemination of the Earthwake announcement was achieved through the following channels:

- The Euroscience web site www.euroscience.org starting February 2007 with a link to www.earthwake.eu after August 2007
- Individual mailing to members of Euroscience (2000 addresses)
- Article in ES NEWS (2500 copies)
- Dissemination of flyers : national and international TV channels, European Institutions, Universities, media producer, cultural institutions, associations, cinemas….
- Advert in the Bulletin de l'Université Louis Pasteur (4700 addresses)
- Mails to members of the network of ICONOVAL, a Strasbourg based company in image technologies.
- Meetings in: Berlin (EuroWistdom), Paris (Festival Pariscience), London (EuroPAWS day), Leoben, Austria (science teacher festival)…

Venues and language

A different venue was chosen for the workshop sessions and for the special public session. The work-shop sessions took place at the International Space University (ISU) located on the South Campus of the Louis Pasteur University. Despite its relative distance to the centre city (15 min. by Tram) it was preferred rather than closer locations because of the functionality of the auditorium and the premises. Its high quality projection and recording equipment as well as the presence of qualified house technicians were available and able to handle the various media supports. ISU has easy and quick access from the airport. In addition, there is good quality and good value accommodation nearby.

To favour dialogue and discussion we invited all participants to a lunch buffet in the premises of ISU on the first day of the workshop.

The public event was an evening session. It took place in an auditorium of the Ecole Nationale d'Administration (ENA) in the city centre of Strasbourg.

The working language of the 'professional' sessions of the work-shop was English. To make the public evening session more attractive to the local citizens, it was decided to advertise the event both in English and in French. Translation into both languages was provided during the public session.

Dissemination after the workshop

The Earthwake report has been incorporated in the on the Euroscience website <http://www.euroscience.org/> as well as the EuroPaws website <http://www.europaws.eu/>

The report has been sent:

- to all the speaker
- the European Broadcasting Union
- EuroMEI (Writers and Producers European Association)
- the new Science and Media Institute, Berlin
- European research organisations: ESRF, CERN, ESA, EMBL,
- European Science Foundation
- Members of the Euroscience Board for further dissemination (15 European countries).
- Universities: Berlin, Paris, Strasbourg

SECTION 3 - Publishable results

Summary of Recommendations

Recommendation 1

Promote opportunities for contacts and exchanges among the professionals involved in the making of TV drama (scientists, writers, producers, broadcasters, etc.) No external intervention can influence the way in which a broadcaster recruits its personnel in order to have more directors with scientific interests. However, occasions to stimulate and enrich contacts among the various actors are always welcomed by all sides. Due to time constraints, schemes like “science evenings” would be more successful than long and demanding conferences. This will slowly but more effectively help to overcome difficulties of communication among all actors of the process.

Recommendation 2

Promote schemes that bypass market constraints, and allow authors to do proper research. Difficulties have been identified in the research and development phases of the script. Intervention in the pre-market phases could therefore be effective; for example through the attribution of grants for research and development, and support in the research phase, and by providing contacts with relevant and interested scientists. The success of the EuroWistdom initiative was repeatedly pointed out as a demonstration of this, as it led many writers to turn toward science stories, which they felt as interesting but on which they could not previously embark.

Recommendation 3

Provide cross-training schemes for all the professionals involved in creating a TV drama with significant science role model impact. A significant number of scientists, writers and producers are willing to engage in the experience of developing science TV drama, both for cultural and professional aims. Workshops specifically directed at those people would be highly beneficial, and help to transform a desire into real TV programmes. A multidirectional transfer of knowledge and experiences (within the quadrilateral scientists-writers-producers-broadcasters) is advised. Again the success of the EuroWistdom project has established this point.

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It would be useful to measure the impact on the audience of science and technology pieces in non-science TV programmes.

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