

THE EXCERPT

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communicating
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Science in the street



“Let me entertain you!”

Not the usual words we expect from a scientist, but if CER 2005 has proven anything, it is that people should be allowed to change their spots. Scientists can be entertaining, and science can be fun. Trained journalists can communicate science with gusto and not jeopardise scientific integrity. EU policy-makers do understand the science and society schism. This, we can all take home from the event.

One could easily measure success on numbers alone – over 2 500 through the conference turnstiles at Heysel, some 250 exhibits covering 9 000 m², over 50 countries represented, etc. – but this would be too easy. The true measure of success is whether people learned anything. Evidence on the ground and in *The Excerpt* suggests they did.

Hordes of journalists from daily newspapers, TV stations and industry journals sat cheek by jowl with scientists, research policy-makers, and the growing branch of specialist science mediators. But has putting all the stakeholders under one roof achieved anything? Do we know a bit more about the importance of European research and the Framework Programmes?

Achilleas Mitsos, Director-General of the Commission's Research DG, thinks events like CER 2005 put research on the political map. “We've put research on to the main political agenda and discourse,” he stated during his closing speech. He said we should insist on making research a priority in the context of the knowledge triangle to create, transmit and use knowledge, through research, education and training, and innovation.

He spoke passionately about what it will take to shape a European knowledge fortress and achieve the EU's Lisbon Strategy of fostering strong economic growth and creating more and better jobs.

But Mr Mitsos was also rather candid about where Europe is flabby and where work is still

needed, especially in its documented shortage of researchers and low R&D intensity (spending on R&D as a percentage of GDP) compared to the USA and Japan.

'Flab-busting' schemes

Of course, the EU's Framework Programmes are helping to work off the flabby areas by stimulating more co-operative research and networks. The numbers seem to back this up: for example, spending €1 on research at European level has a €4-7 long-term yield. EU-funded research can help reduce commercial risk and boost innovation, especially among SMEs. What's more, European project participants are prolific publishers of scientific findings and tend to develop strong industry links with a view to rolling out their research.

Mr Mitsos explained what the EU plans for the Seventh Framework Programme (see page 5). With the proposed increase in the research budget for FP7, it aims to put the Lisbon Strategy into overdrive, boost the European Research Area, and raise Europe's competitiveness and sustainable development credentials.

He said FP7 will be simpler, with the emphasis on researchers, industry R&D, and on getting the European Research Council up and running in time for the FP7 launch.

Best of the best

The Excerpt has covered the forums, briefings, presentations and a great many of the exhibits during the two-day event. And it has unearthed some excellent orators, exhibitors and communicators; from veritable 'scientist entertain-

ers' to outreach schemes hosted by EU-funded projects.

To acknowledge these talented individuals and organisations, CER 2005 held a small competition for the best communicators at the conference. The three winners (see below) were announced by Mr Mitsos during his closing remarks.

Traditional panel sessions at the event tackled big issues like science at school, the future of science journalism, and the perils of communicating tricky science subjects. More intimate forum sessions addressed everything from 'Europe in space' to practical tips for press officers. Meanwhile, in the 'How to...?' sessions, delegates learned, among other things, the pitfalls of science journalism and communications in a crisis.



Journalists divided their time between the general sessions, exhibition space and the dedicated press briefings which showcased a host of EU-funded research projects in diverse fields; from new therapeutic approaches to localised tumours (ESOPE) to using renewable fuel in train transport (RENEW).

Can all this be topped next year? We will just have to wait and see. ■

“We've put research on to the main political agenda and discourse”

And this year's winners are

The CER 2005 would not be complete without a prize for the 'best in show'. Three Communication Prizewinners were announced at the closing session of the event. The Best Forum award went to 'Talking nano', the Best Stand was ITER's and the Best Speaker during the event was Lars-Peter Linke. (See page 6.)



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Coping with radio and TV

Teaching science the hard way: on a bed of nails!

A physicist strips off his shirt and lies on a bed of nails, then one of his colleagues loads his chest up with concrete blocks and hits them with a large hammer. The physicist emerges, completely unhurt, picks up his microphone and continues his demonstration. This is not some crazy ritual, but a scientific demonstration of the concept of mass. It is also one of the techniques used to bring science to the public in the street, as demonstrated by the European Science Events Association or EUSCEA on the final morning of the CER conference.

EUSCEA are specialists in bringing science to those who do not normally have access to it through science events. Their domain covers unusual venues: the supermarket or the railway station. In these 'non-traditional' spaces, they use their 'real scientists' to deliver micro-lectures to people who would not normally go and see a science event in a museum or science fair. It is a successful formula.

During this informative and interesting session, Carolyn Gale, of Stanford University in the US, explained how she tries to get scientists to think carefully about presenting themselves to the public. As part of their training, they have to imagine they are stuck in an elevator with a non-scientist who asks them what they do, giving them only 30 to 60 seconds to explain their area of science. Through this simple method, scientists learn the importance of not over-

estimating the public's ability to grasp complex science, and of jargon-free English.

The art of science

The session also featured a presentation of another successful science happening, the Genova Science Festival. Fresh from the most recent festival in 2005, Manuela Arata described how it continues to go from strength to strength, with increased participation by schools, scientists and the media. The most recent festival presented 250 events in 77 locations and used over 250 speakers. There were also more than 500 young scientists explaining science. The events were often multidisciplinary, interweaving science and the performing arts.

Science Days, another event presented at the session by Joachim Lerch, was set up next to a popular theme park in Germany, and managed to pull in a crowd of 20 000 mostly young people

(mainly children) during three days to participate in experiments and get involved in science.

'Science in the street' or the use of science events to get the message out of the laboratory and into the public imagination is clearly one innovative and successful possibility. At the end of this entertaining session, Mikkel Bohm, EUSCEA President, presented the White Book, "Science Communication Events in Europe", the result of a three-year study, funded by the European Commission.



Putting the science in society

Mikkel Bohm is a man who passionately believes in bringing science on to the street. As Director of Danish Science Communication, he has been responsible for organising the Danish Science Festival since 1997 and is currently the President of the European Science Events Association (EUSCEA – pronounced "you see"). It has some 50 member organisations running science events in almost every country in Europe.

Bohm is a great believer in organisation. "It is very important to take your public seriously and to make sure your science event, whatever it is, is done as professionally as possible," he insists. "This means both in terms of organisation and marketing. You need to know who you are trying to reach – who your audience is." As examples, he explains that the "interested public" might be interested in an 'open doors' event at a university, but if you really want to reach the "man or woman in the street" you need to take your science to them "in the shopping centre, or literally on the street, or into schools".

Dialogue with science

Bohm sees a change in the strategy for the EUSCEA partners. "The movement is from 'public understanding of science' – where science experts talk 'at' the public – to new concepts of engaging the public in real dialogue. The different events organised by EUSCEA members offer a variety of



forums for engagement with the public," Bohm continues. "This type of engagement is all about taking science to the public – effectively bringing science to the people." He identifies a fundamental difference between what EUSCEA does and what happens in Science Centres. "We go to the people and we bring them real, working scientists. Not all scientists are able to engage effectively with the public, but those who can really enjoy the experience and usually want to do more – once they try it they love it! The scientists really get something valuable out of the experience," says Bohm. Overall, EUSCEA sees 85% of scientists coming back for more – and it seems to be infectious.

"We should really talk about 'science in society', not science and society," he concludes. "Science is a very a big part of modern society – in fact we could say 'no science – no society'."

Opening the big White Book

The 'Science in the Streets' session at CER saw the launch of EUSCEA's new White Book on how to run science events. This publication could become the 'bible' for organising, funding and evaluating Science Communication Events (SCE) across Europe.

"Science Communication Events in Europe" is the result of four years of hard work. In spring 2001, a group of like-minded people who organise events such as science festivals and science weeks met in Gothenburg, Sweden. They decided that it was time to put down on paper some ideas, guidelines and recommendations on how to organise SCEs.

With the help of EC funding, the work began and the resulting

'White Book' – hot off the press – assesses the state of the art for SCEs in Europe, summarises strategies to initiate new SCEs, and recommends ideas to improve existing ones. In essence, the book collects and captures the very 'best practice' and innovative ideas that can enhance and enlarge the SCE community in Europe.

Pro communicators

The book is mainly focused on the professional event organiser,

but will also be useful to other science communicators such as teachers, journalists, scientists and the general public. In fact, it will help anyone who wants to improve the "public awareness and understanding of science, technology and the humanities".

"Science festivals and other events are relatively new ways of communicating science and have not been studied in an organised way," says Mikkel Bohm, president of the EUSCEA. "The White Book represents the very best examples of science communication in Europe and can

serve to help event organisers both new and old."

The book covers the whole gamut of events from week-long national science festivals through events such as the Polish science picnic to science cafés and mass experiments. All aspects of event organisation are included, such as venues, presenters, finance and marketing, with copious examples to illustrate the best of the best.

A very useful cross-reference table highlights the 'pros and cons' of various events. "Evaluation of events is particularly

important," says Bohm. "And evaluation needs to be integrated into the event planning right from the start." The book begins with the fundamental question: 'Why do such an event?'. Understanding the purpose of a proposed event sets a sound foundation for carrying it out.

All attendees at the 'Science in the Streets' session received a copy of the White Book, and it will be widely distributed via EUSCEA's 50 member organisation in 25 countries. Contact EUSCEA for your copy now: www.euscea.org/

It must be true because I heard it on the radio

Until recently, radio was an underestimated medium for publicising science, but broadcasters and scientists have woken up to its many advantages. Listeners appreciate its immediacy and the way it is developing formats which put it ahead of other media.



Jan-Olov Johansson (Swedish Radio): "Science is an essential part of society".

According to numerous surveys, the radio is Europe's most trusted medium, and more people listen to the radio than watch television – apparently, all European households have three radio sets apiece. At the same time, contrary to general belief,

the public would welcome more programmes about science. A packed auditorium at Tuesday's session on science broadcasting heard about innovative science programming in the Netherlands, the United Kingdom, Sweden, France and Italy.

The panel agreed that one of radio's strengths was that it valued the 'voice' of the scientist, and brought science in direct contact with the listener. "We feel that the scientist is the best person to describe his/her findings," said Elisabetta Tola from RAI-Radio 3 in Italy. Laura Durnford from Netherlands Radio's *The Research File* agreed: "We encourage scientists to explain their research as they can bring it alive. Radio is about telling stories, and a scientist can convey the enthusiasm of scientific discoveries. Scientific television programmes can't provide that direct contact between the scientist and the audience."

Chris Smith of *The Naked Scientist*, BBC's popular science series said that one of the highlights of his programme was the scientists answering questions live from the listeners. "Scientists like the opportunity to talk directly to the public and we believe that it shows how radio isn't talking down to people, as they decide

what should be discussed," he continued. "It also makes for good radio."

How many peas in an Ipod? Perhaps because of the need to interest the public in science, radio journalists have to innovate. They have been experimenting with new ways of reaching the public and have been putting pod-casting, the method of distributing audio programmes over the internet, to good use.

Jan-Olov Johansson, from Swedish Radio, described how science programmes were the station's most popular pod-cast downloads – *The Naked Scientist* pod-cast is downloaded by 50 000 people each week.

Learning about science, locally...

Pedro Lima, who presents a radio science programme in Marseille (France), described how people welcomed hearing scientific explanations of local occurrences. "We ask people in the street about sci-

entific topics, which brings these subjects closer to the audience. They want to know about local topics such as ocean pollution, or why we have migratory birds."

... in Europe

The afternoon session was organised by Science in Radio Broadcasting (SCIRAB). Matteo Merzagora described the thinking behind it: "Radio journalists in Europe rarely have contacts with others working in science, which is a pity as we could exchange ideas and also push for wider visibility for scientific broadcasting. We are trying to build up a network of people."

... and beyond

Radio is also a mushrooming medium in the developing world, and Laura Carpenter from RELAY described the growth in Africa, where interactive radio is very popular. RELAY is working to create pools of young journalists who want to break down the barriers between researchers and the media. ■

Universities for the people

Science centres and museums serve a well-recognised function as the face, or showcase, of all that is new and exciting in the world of science and technology. But their role is evolving from that of scientific shop front to fully fledged universities for the people.

Science exhibitions have been popular in Europe since the 19th century. However, science centres and museums began to spread in earnest in the 1970s. Today, there are hundreds – if not thousands – of them across Europe attracting millions of visitors each year.

These popular centres have evolved from simple static displays and now provide numerous interactive and 'hands-on' installations, and carry something of interest for visitors of all ages. But it is not all about 'showing' people, but also engaging them in the scientific domain. Their primary purpose is to 'edutain' the public about science.

"Science centres should be seen as universities for the people," Jorge Wagensberg, the director of Barcelona's CosmoCaixa centre, told the 'Science centres – privileged fora for communicating

European research session'. "It is not enough for people to go to museums; they need to go back to them again and again. Science museums need to be seen as a tool for social change."

And, in a society where people are growing increasingly dependent on S&T, but the gap between science and its users is growing, a change in cultural attitudes is urgently needed.

At the interface

Science centres stand at the interface between the scientific community and society at large, and this is what makes their mission so crucial. "Science centres can be inspiring, particularly for young people," explained Walter Staveloz, the executive director of ECSITE, a European

network representing some 330 centres and museums in 30 countries. "Direct contact between scientists and the public is the best way of promoting the scientific vocation."

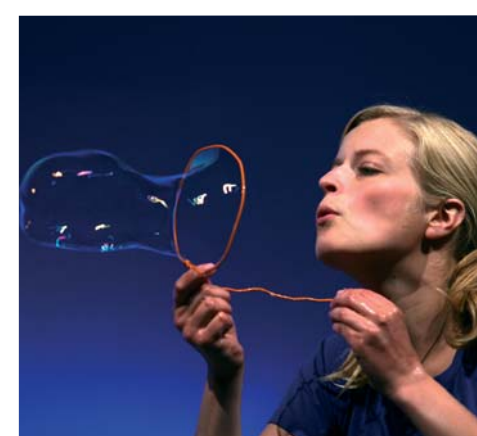
And an enormous amount of direct contact takes place at these institutes. "Science centres are cultural institutions where a lot of visitors from all walks of life take part in all kinds of science-based activities," noted Asger Høeg, director of Denmark's Experimentarium.

These include interactive scientific experiments, peer-to-peer teaching by pupils, outreach activities, teacher training courses, conferences and debates on hot topics and controversial issues, and much more.

The science of 'cool'

Science centres not only target the general public but they also address scientists. For instance, the National Museum of Emerging Science and Innovation (Miraikan) in Japan, organises special 'live talk' events in which young and upcoming scientists get a chance to talk about their work to undergraduate students.

"We try to promote the idea of 'hot' and 'cool' young researchers," observed Miraikan's Noyuri Mima. Naturally, this is done scientifically. The researchers giving the talk are chosen through a careful vetting procedure and, based on a participant survey following the debate, they are provided with feedback to help them improve their communication skills "in order to bring the wonderful world of S&T to the public".



Taking the responsibility to communicate

How can we communicate the waves of scientific research surging across society daily? Should scientists be expected to explain their work directly to the public? And in an age of ever-increasing specialisation, is their complaint of being misunderstood any more legitimate than that of other career professionals? Yes and no, says Wolfgang Heckl, who knows a thing or two about communicating science to the public.

From the lab to the museum

Born in 1958, Wolfgang Heckl studied physics at the Technical University of Munich, Germany where he was awarded a doctorate in biophysics. In 1993, he was appointed Professor of Experimental Physics at the Ludwig Maximilian University of Munich where he currently teaches nanophysics, a subject for which he expresses great passion.

A dynamic speaker whose informal and friendly mannerisms immediately strike a chord with listeners, Heckl quickly gained a reputation in the early nineties for his clear and direct explanations, via television documentaries, of human DNA. His efforts to promote a better understanding of science to people of all ages led to his winning the EU's Descartes Communication prize in December 2004.

As Director General of the Deutsches Museum in Munich, Heckl is in the ideal place to observe the general public's understanding or mistrust of science and technology. "We hear a lot of talk in Europe about the public's lack of enthusiasm for science. But I can assure you, I don't see any evidence of this, at least not at my museum," he reveals. "More than half of the visitors to the Deutsches Museum are under 20 years of age and their excitement for what they see is infectious. We reach out to school-children and teachers and they respond in great numbers. More than 1 000 school buses from Italy arrive at our front door every year. If that's not an interest in science and technology, then I don't know what is!"

A recipient of the EU's 2004 Descartes Communication Prize, Heckl is a natural communicator: relaxed, informal, with a ready smile and, most important, a passion for science. It is a passion he communicates clearly when explaining complicated ideas, such as the structure of human DNA or the infinitesimal innovations of nanotechnology research.

Because so much of science is abstract for the general public, the risk of misperception and fear is high... risks that must be addressed early on and averted, says Heckl, who teaches experimental physics at Munich's Ludwig Maximilian University and is director general of the city's Deutsches Museum of science and technology.

Moving with the times

"Ours is the first generation where the results of science are being felt immediately. At no point in history have science and research moved as fast from the laboratory into society and the market place as today. That's a fantastic development but it also means that people have no time to deal with it, to understand what is hitting them," he explains.

The ongoing, and hotly contested, debate over genetically modified organisms (GMOs) in Europe is a good example, according to Heckl. As is nanotechnology, one of his favourite subjects, although he does not expect this debate to reach the same fever pitch.

"Five years ago I would have argued for a very proactive stance on the science community's part to avert public fears about nanotechnologies. But it's been handled in a way since then that has not stirred up concerns. Also, the benefits of nanotechnology, particularly in the field of human medicine, are visibly improving society and that has helped demonstrate the technology's force for doing good," he says, adding that "new, groundbreaking technologies are potentially frightening for the public, especially when they are difficult to understand".



Wolfgang Heckl

"It is unrealistic to think that most scientists can become effective communicators of the research they do."

Yet understand them the public must – or at least make an effort to grasp the more important scientific developments of the day, he insists.

No excuse for ignorance

"If you expect to be part of a democratic society, you must be able to follow the most important decisions of the day which affect your life. Politicians are being called upon to deal with more and more issues today that are pervaded by science."

The feedback between an informed citizenry and its scientific establishment is also critical to the underpinnings of empirical enquiry. It is here that Heckl, who has obviously given the subject great thought, turns philosophical.

"There's a very good reason, among others, why we in the West are as rich as we are. Science has led us down the path of prosperity, but it is a science based on empirical enquiry free from religious or state interference," he observes. "Our secular choice – the separation of science from state and religion – is the West's great strength. I have no doubts that the spirit of enquiry and the benefits it produces will always triumph over other regions of the world that

do not share that view. And here I am thinking of the theocracies of our world where terrorism, conflict and wars are such a problem."

Renaissance speakers?

That view is easier stated than enacted, however, given that science today now raises so many ethical-cum-religious issues in areas such as stem cell research, creationism vs. Darwinism, or even the technologies that are able to keep a brain-dead body alive indefinitely.

Heckl has no sympathy for researchers who fail to engage with the public yet complain of being overlooked or misunderstood. "If they're ignored, that's their fault," he says. But he also acknowledges that not every scientist is skilled or motivated to communicate publicly.

"It is unrealistic to think that most scientists can become effective communicators of the research they do," he says. "Indeed, most are not. They are focused on their work and many don't explain it well to a lay audience. But that's okay, as long as we have a few 'renaissance scientists' – those with a grasp of the intersection between science and the humanities, between technology and society

at large – who can explain the concepts and put them into a wider perspective for the public. I'm thinking of several Carl Sagans!" he exclaims, referring to the late US astronomer who had a popular global following. "We only need a few such individuals around Europe. But they would do the job."

Meanwhile, back at the museum...

In the meantime, Heckl is focused on taking his museum in a new direction and on preparing for the next EuroScience Open Forum (ESOF), scheduled to take place in Munich in July 2006. Building on its first successful gathering in Stockholm last year, ESOF "is a platform for public debate across all scientific disciplines and is the sort of forum I firmly support," explains Heckl, who will chair the event.

His other priority is to expand the Munich museum's focus beyond the display and explanation of technology. "My dream is to turn part of the Deutsches Museum into an experimental centre for advanced science and research," he confides.

Given his engaging powers of persuasion, Heckl will probably see that dream realised. ■

FP7 to boost research

The Seventh Framework Programme (FP7) is set to run from 2007 to 2013. The proposed budget, still to be approved, represents a doubling of research funding per year as compared to FP6, from about €5 billion to around €10 billion.

For the Union, research remains key to achieving the stated goal of becoming the world's most dynamic and competitive knowledge-based economy. Science and technology contribute to economic growth, job creation, environmental protection and improving social conditions, including fighting poverty and improving human health and quality of life.

Four Specific Programmes under FP7:

Co-operation (€44.4 billion)

Promoting research co-operation both within the EU and beyond its borders. This Programme is further divided into nine themes (see below).

Ideas (€11.9 billion)

An autonomous European Research Council will administer funding for groundbreaking research, focusing on promising concepts and ideas.

Capacities (€7.5 billion)

Promoting regional co-operation and innovative SMEs, and bolstering Europe's research infrastructure.

'Capacities' will include a sub-programme 'Science and Society' focusing on science education and broader communication between scientists, policy-makers, the media and the public.

People (€7.1 billion)

Marie Curie Actions promote skills and career development, increasing mobility between universities and industry, and between European countries.

Two special programmes:

Joint Research Centre (JRC) (about €1.8 billion)

The JRC Directorate-General provides research support to EU policy-makers.

Euratom (€4.7 billion)

The EU's nuclear research programme.

Research themes under the Co-operation Specific Programme

1. Health (€8.3 billion)

Improving the health of Europeans while strengthening the Union's health-related industries.

2. Biotechnology, food and agriculture (€2.5 billion)

Supporting the life sciences, protecting and exploiting Europe's biological resources.

3. Information society (€12.7 billion)

Developing vital tools in many sectors.

4. Nanotechnologies, materials and production (€4.8 billion)

Transforming chemistry, medicine, material sciences, information technologies, transport and energy.

5. Energy (nearly €2.9 billion)

Searching for sustainable energy sources and improving current fossil-fuel-based technologies.

6. Environment (nearly €2.5)

Understanding climate change and promoting sustainable resource management.

7. Transport (€5.9 billion)

Developing integrated 'greener' and 'smarter' pan-European transport systems, including Galileo, the EU's satellite navigation system.

8. Socio-economic research (€800 million)

Focusing on socio-economic challenges such as growth and employment, social cohesion and sustainability.

9. Security and space (€4.0 billion)

Protecting citizens from terrorism and organised crime and promoting a European Space Programme and the Global Monitoring for Environment and Security (GMES) initiative.

For more information on FP7 and how to participate:

EU research:

<http://europa.eu.int/comm/research>

Seventh Framework Programme: http://europa.eu.int/comm/research/future/index_en.cfm

Information on research programmes

and projects: <http://www.cordis.lu/>

RTD info magazine:

<http://europa.eu.int/comm/research/rtdinfo/>

Information requests: research@cec.eu.int ■



IST research – coming to a television near you

Television continues to be the medium which, more and more, is delivering science to an increasing number of people across Europe. YourIS.com, the video portal for Information Society research offers free material for broadcasting, featuring emerging results from EU-funded Information Society Technologies (IST) projects.



YourIS.com: video portal for information society research.

The YourIS service is straightforward to use. Anyone can visit the multimedia website and select a project in the research area they are interested in, related directly to those areas funded under the IST programme.

Visitors to the portal can check preview clips about the project, using streaming technology and, if necessary, order the full video rushes (longer chunks of raw video material) about seven to eight minutes long – of broadcasting

quality. This can be used to edit into their own documentary or video product. All the information is rights-free and completely free of charge.

Teasers, rushes and much more

And, that's not all. An accompanying package of on-line articles, story sheets, and lists of video shots, suggested commentaries, web links, and custom-made news can also be found on the portal. There is even a list of transcribed sound bites from the filmed material. YourIS provides everything a production company, journalist or editor might need to make a TV programme or promotional documentary.

So what kinds of IST project results can you find on this portal? Specifically, projects where digital technology is being used to improve peoples' lives. One example is the SoDa project, under the 'health' category. Users can view a 'teaser' (a preview clip of about 30 seconds) or order the rushes about SoDa, a new server which helps oncologists track the levels of solar radiation in any area throughout a patient's lifetime. Another example is BANCA

– YourIS features a 40-second film about this project which is aiming to develop a biometric recognition system using face and voice data. It is designed to protect on-line consumers and internet bankers. More extensive video footage can be ordered on-line, with other information, too.

The benefits of a service like YourIS are many. On one level, it makes results from potentially complex research projects easily accessible through one of the most pervasive and active channels of communication in Europe – television. Non-

specialists can visit the site and see, through streaming videos, tasters of the kind of research work that is going on in Europe. On another level, it can stimulate, through the same channels, knowledge sharing within the scientific community. To put it simply, YourIS offers a complete package of information for any production house or video journalist trying to get a science message across.

Since the beginning of the project, YourIS video pieces have been broadcast nearly 100 times in 16 European countries. ■

The web is another way to promote results of IST research project.



Descartes' lessons on science communication

How to make green slime, the crazy tale of BSE, mathematics you can touch, university for children, a Mars lander named after a dog ... these are just a few of the subjects nominated for the annual Descartes Prize for Science Communication.



Today, scientific excellence is critical for Europe to succeed in the competitive environment of international research and scientific development. But is this such a new concept?

French philosopher, mathematician and scientist René Descartes understood the power of scientific communication over 350 years ago. The Descartes Prize honours not just his name but also what he stood for. His willingness to share his ideas with peers across Europe is a poignant metaphor for what the EU is trying to achieve with the Descartes Prizes.

The Descartes Science Communication Prize was launched two years ago to reward outstanding achievements in the public understanding of science.

"Showcasing remarkable success stories across Europe, [it] fosters interest in science, demonstrates the benefits of research for society, challenges scientists and science communication professionals to communicate more effectively, and encourages young people to engage in scientific careers," notes a Commission statement.

The 23 projects nominated for the 2005 Descartes Science Communication Prize span a variety of areas which include books, documentaries, interactive events, multimedia products, and newspaper columns. The common factor is their ability to communicate complex issues to a wide public.

Conveying the thrill of research, the excitement of discovery and the charisma of outstanding personalities, they spark interest in research and research careers, especially among youngsters.

The competition is open to winners of similar national science communication prizes. Prize-giving bodies submit their nominees for Descartes under several categories: professional scientists engaged in public science communication; popularising science through the written word; popularising science through audio-visual and electronic media; innovative activities in science communication; and editorial policy promoting science.

A panel of leading scientists, media and science communication professionals whittled down this year's 23 nominees from 65 top-class submissions – up 30% on last year. The five laureates will receive 50 000 each and the five finalists 5 000 each.

The Prize complements the Descartes Prize for Research, launched in 2000, which recog-

nises teams of EU researchers achieving excellent scientific and technological results through transnational research. The win-

ners of both Prizes will be honoured at a special award ceremony at the Royal Society in London, on 1-2 December 2005. ■

The 23 nominees:

- 'A Short History of Everything' by Bill Bryson
- Dr Robert Arlinghaus
- 'Ediak – Educational Interactive Animations for Kids' by Alain Hubert
- 'Flicoma – First Flight' by Steve Nicholls and Alfred Vendl
- 'Fokus Schwei' by Roland Blaser
- 'Folle Histoire (Archimède)' by Raphaël Girardot
- 'L'aluminium: un si Léger Métal' by Yvan Grinberg
- 'Le Sacrifice' by Emanuela Andreoli and Wladimir Tchertkoff
- 'Les Origines du Sida' by Catherine Peix and Peter Chappell
- 'Masterclasses' by Professor Michael Kobel
- Mr Jorge Candan
- 'Overleven' by Jos Van Hemelrijck
- Professor Frances Balkwill
- Professor Albrecht Beutelspacher
- Professor Thorsteinn Vilhjamsson
- 'Really Rotten Experiments' by Nick Arnold and illustrator Tony De Saulles
- 'Sac-Outreach' by Professor Colin Pillinger
- 'Science in Motion' by Dr Carl Johan Sundberg
- 'Stardust' by Dr Anja C Andersen
- Swiss Academy of Sciences Prix Media 2003 George Szpiro
- 'Tübinger Kinder-Uni' by Michael Seifert
- 'The Science Forum Finland' and Jan Rydman
- 'Voyage dans le Monde des Quanta' by Etienne Klein

Let your hair down, scientifically

People of the opinion that science is dull and dry have obviously never attended any of the hundreds of science festivals held across Europe every year. They include the EU's very own European Science Week, where scientific knowledge is brought to life in a fun and engaging fashion.

Reflecting the importance of science in every aspect of contemporary life, regional authorities, Member States and the European Union organise numerous science festivals every year. At these events, European science sheds its lab coat, lets down its scientific hair and invites European citizens to celebrate knowledge.

Through thought-provoking activities, their mission is to cast science in a new light. They bring out the fun in science and seek not only to 'edutain' (educate and entertain), but also to inspire.

Organised by the Slovenian Science Foundation, Forum Session 9 explored a number of crucial issues related to these popular events, including how to choose interesting results to showcase, how to simplify complicated science, and how to train scientists to become better communicators.



Participants pick their prizewinners

So, you attended CER 2005, picked up your conference bag, and collected brochures and a handful of business cards to take home with you. A great many of you also took part in the Best Communicators Awards by submitting your nominations under the three categories: Best Forum, Best Speaker and Best Stand. For this, the organisers are very grateful.

'Leading by example' is the main idea behind the CER awards, according to a European Commission official involved in the prize-giving. "We wanted to create an open and fair system for electing the winners, so we didn't lay down any criteria, *per se*, for how people should choose from the lists on the ballot form. In the end, the most original and stimulating speakers, forums and exhibits were elected democratically by the delegates at the event," she added.

Participants filled in the voting slips and deposited them in the ballot box. CER 2005 organisers then, literally, did a count-off at the end of the final sessions to come up with the three winners in time for the Research DG's Director-General Achilleas Mitsos' closing speech (see page 1).

The three CER Communication Prizewinners have clearly demonstrated their understanding of these basic tenets: that the audience comes first, and being able to gauge and use feedback to improve communication is vital to becoming truly great 'science' communicators, in particular.

'Talking nano' answered the question 'What makes nanotechnology so special?'; ITER is the experimental step between today's plasma physics research and tomorrow's electricity producing fusion power plants. Dr Lars-Peter Linke of Cognos AG, unites private education groups in Germany. ■



Best Forum: Talking nano



Best stand: ITER



Best speaker: Lars-Peter Linke

Competition to be heard is growing

Project managers are increasingly being called upon to be experts not just in their scientific fields, but also in communication. In a 90-minute session focusing on building the skills needed to tackle radio and TV interviews, Dr Lars-Peter Linke introduced his audience to some of the key steps to follow if you want to ensure that you get your message across.



Being a good communicator is becoming increasingly important in almost all areas of work. Scientific project managers need to develop their communication skills for several reasons – whether it be obtaining funding, mobilising public support or fulfilling contractual obligations for the dissemination of results. The high attendance at this early session demonstrated that many are motivated to do so.

In at the deep end

Different media require different skills to get the message across. In the 'Media skills for project managers' session, public relations professional, Linke, addressed the particular challenges of radio and TV interviews, introducing his audience to a technique he compared to bungee jumping – delivering a compelling key message in just 30 seconds!

For TV and radio interviews, the first question is the one that captures the audience's attention and sets the scene. It is the one where the interviewee is given the most time and provides the best opportunity to get key messages across. So it is necessary to prepare it well. It has been estimated by media professionals, however, that an interviewee has approximately just 30-50 seconds (estimated at +/-75 words) to make his or her point. This means that you must be concise – so, what do you leave in and what do you leave out?

To help focus on the essential, Linke proposed a five-step plan which, he claimed, can be applied effectively to any situation: *Describe your position* – who are you and what qualifies you to talk about the issue.

State the argument in brief – "Research/experience has shown that ..."

Give an example to illustrate the argument – "This means, for example, that ..."

Draw a conclusion – "Therefore,..."

Call to action – "We must then focus more money/time/attention on ...".

"The key," Linke claimed, "is not that you get to talk but that people listen. The world is a noisy place and messages need to be concise and focused if they are to be heard." He also stressed the need to keep the target audience in mind – remembering that this is not the journalist, who is just an intermediary, or one of colleagues ...

Practice makes perfect

Like all skills, good communication takes practice and Linke gave participants an opportunity for hands-on practical experience by throwing the ball into their court, giving them ten minutes to prepare a 30-second 'statement' on a question of their choice. "The question is not important, it's the technique that counts," he stressed.

Linke also recommended that participants practice the technique regularly in all kinds of situations. "If your plane is late flying home tonight, for example, use the opportunity to develop a 30-second statement on why tired conference-goers should use reliable airlines." Joking apart, he pointed out that being able to present a concise 'story' is a valuable skill. He reminded his audience, however, that talking faster was not the solution. For the message to be heard, it must first be understood! ■



Pressroom at the CER conference.

Getting a good press

Several briefings were organised each day to enhance the communication of major European Commission projects in a variety of sectors. Below are just three examples of research projects presented to the press on Tuesday.

Outlook set fair for ITER

Recent developments in the negotiations and building of ITER – the international fusion power experiment to be constructed at Cadarache in France – were outlined during a CER press conference. The international collaboration agreement is almost complete between the six partners – the European Union, United States, China, Japan, Russia and South Korea. And, according to ITER spokesperson Bill Spears, "international collaboration appears to be snowballing" with new interest coming from countries such as India and Australia.

Licensing and regulatory issues for the ITER site are already in hand. The nominee Director-General for the project is Mr Kname Ikeda, a senior Japanese ambassador with extensive technical experience.

The construction of ITER could commence in late 2006. It will cost around €5 billion to build, and another €5 billion to operate over 20 years, but will demonstrate that fusion (the energy that powers the Sun) is a viable terrestrial energy source. It has the potential to provide a sustainable and virtually unlimited power supply.

A GEANT of a weather forecasting system

The threat from climate change has been recognised as one of the most important issues facing the world today. Whatever the cause of global warming, the outcome is increasingly felt via extreme weather events worldwide. Therefore, accurate weather forecasting, which depends on the analysis of increasingly large amounts of data, is assuming a greater importance. This raw data might be gathered in a country's own national weather centre, but sharing detailed information with and from neighbouring nations (and around the world) is crucial for effective hazard management and to provide a truly global weather-tracking and prediction service. To respond to the growing need for a Global Interactive Forecasting System (GIFS), a group of national weather centres, led by the Deutscher

Wetterdienst, are working together to share data over Europe's high-speed data network – GEANT2. This network enables collaborating researchers across Europe and beyond to share both data and computing power. The project makes use of GRID computing, with GEANT2 as the essential, underlying structure powering the research. It has connections to other global networks, such as Red Clara (Latin America) and TEIN2 (Asia), which will enable the vision of a global weather service to be realised in the next few years.

Other applications for GEANT2 include various science projects that must handle vast amounts of data, such as particle physics experiments at CERN and the interconnection of widely dispersed radio telescopes to huge 'virtual telescopes'.

The mysteries of methane

This gas, which is being produced continually in unimaginably vast quantities underneath ocean floors, offers huge commercial potential – methane is natural gas. But these same reserves are also a source of global warming, particularly the methane that escapes from the ocean floor and bubbles up to the surface.

Fortunately for our Earth, most methane is either confined or broken down by natural causes. But there is growing evidence that global warming may be disrupting that balance, leading to a self-reinforcing cycle whereby methane released into the atmosphere leads to more warming which causes sloped ocean floors to shift and release more underlying methane into the air.

Several EU research projects are investigating the complex interplay of ocean salts, sea temperatures and seabed-lying marine bacteria in maintaining the 'barrier' that prevents destabilising volumes of methane from reaching

our atmosphere. One of the most intriguing is HERMES, an Integrated Project involving 45 European partners and funded from the EU's Sixth Framework Programme.

HERMES is focused on the Black Sea and its anaerobic, or oxygen-free, character. This inland sea is riddled with numerous seepages of methane gas bubbles from the ocean floor, as well as giant mud volcanoes and carbonate 'chimneys' – "with a thick flesh of organisms that oxidise methane and prevent it from rising to the surface", explained Bo Barker Jorgensen, whose organisation, the Max Planck Institute for Marine Microbiology, is among the project's participants.

"We've discovered that the enzyme produced by the organisms to attack the methane resembles methane itself. This goes straight back to the very beginnings of chemical processes that sparked the creation of life," he said.

Boost for the Baltic
BALTER, a project from Poland, is working to improve the sustainability of the Baltic Sea. The University of Gdansk's Hel Marine Station is studying the area so as to preserve the natural environment of the Gulf of Gdansk, the Puck Bay and the area's coastal zone. Thanks to its support from FP5, the project was able to set up the only station of its kind on the southern Baltic coast, which is being developed as an internationally recognised research and education centre, on a par with other EU scientific institutions. The centre is also supporting the formation of a new generation of scientists working in the region.

As well as being educational, the centre has established a number of research groups, one of which is working to safeguard endangered species of Baltic marine mammals and to put conservation measures in place. It aims to protect small cetaceans (i.e. whales, dolphins and porpoises) in the Baltic and North Seas, focusing in particular on the Baltic Harbour Porpoise which is an endangered species.

Your genetic footprint... around your neck
During Science Week in Oslo in 2004, members of the public were invited to provide samples of their DNA from cheek cells. These were taken and made into 'necklaces' – a totally unique piece of jewellery for the wearer and a neat introduction to the world of genetics.

The DNA necklace experiment was used by the Norwegian Research Council to try and demystify genetics, which is a science topic that often scares the public, largely through ignorance. Elisabeth Andersen of FUGE (Functional Genomics), a Norwegian Research Council initiative, sees such events as having a real benefit in communicating science to the public. "Everyone can get involved and science issues are explained in a way which makes them less threatening. They are also fun; people were queuing in the street to get their necklace and our scientists took the opportunity to go and talk to them directly." That is the other half of the equation: these events are great opportunities for scientists to get out among the public and become used to talking more effectively about what they do.

Blowing in the wind
Wind is one of Europe's growing energy sources and the European Wind Energy Association was at CER to explain how it works. Wind generation has been increasing 20% each year for the last seven years. Denmark now generates 21% of its electricity from wind, and Germany and France

about 6.8%. Overall, wind is now responsible for 2% of Europe's electricity, while EWEA believes that potentially it could generate up to 30%.

This renewable energy has benefited directly from the liberalisation of Europe's electricity market, as all private wind generation is now fed straight into the electricity grid. EWEA explained that this has spawned many different initiatives – the agriculture sector in the Netherlands, Germany and Denmark is relatively advanced in wind generation, while the citizens of Copenhagen (Denmark) have shares in an offshore wind generator.

Wind generation has other plus points, too – it has already created 72 000 jobs and EWEA projects that this could reach almost 200 000 by 2020. And by cutting down on the production of greenhouse gases, it is also helping the EU towards meeting its Kyoto targets.

Growing awareness
What if plants could talk, shouting when they are thirsty or sick? The FP5 Network of Excellence project, PLANTS, is not able to actually perform that miracle but it comes pretty close by picking up the signals plants emit when distressed or in need of attention, such as food, light or water. PLANTS' four participating institutes in Greece, Ireland and the UK have concocted a sophisticated system of software-and-sensor-technologies to monitor all the things that undermine healthy plant growth in hothouses, from fungus and insect attacks to excessive heat or lack of humidity. The system consists of miniaturised weather-proof sensors embedded in the soil next to the plant, overhead infra-red cameras and wireless technology to communicate data collected to a central computer. This constantly analyses and responds to the stimuli by releasing water, changing the hothouse temperature, and so on.

A gender view of science
What is the difference between male and female scientists, and is current science research too male-oriented? The European Platform of Women Scientists (EPWS) believes that science is a male-dominated profession with too few women in the top echelons. Because of this, most scientific research lacks a gender perspective. The EPWS is coordinating networks of women scientists from across Europe to bring about changes.

One of EPWS' first priorities is to encourage more women to stay in science. As Isabel Beuter, from the Centre of Excellence, Women and Science in Germany explained: "We found that women scientists drop out after their PhDs. So, in Germany we worked with L'Oréal to give women the training and encouragement to apply for professorships in science. We had very good feedback and hope to expand this internationally."

The lack of women in science may also explain why scientific research tends to be male-oriented. "More women than men were dying of heart attacks, but because their symptoms and the causes were different they weren't being diagnosed," said Beuter. "It was only when women started to do research that they discovered the reasons for women's heart problems. This is a good example of why research priorities must change."



Have your say
Within the coming days, you will receive a questionnaire by e-mail concerning your level of satisfaction with the CER conference. We would appreciate it if you would fill it in as this is the best way to help the conference organisers improve their work in future. Should you want to send any other comments about the conference, your feedback is welcome at research@cec.eu.int



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