

# Science Journalism in Europe

- Beware of breakthroughs!
- What's real?  
Science goes visual  
between truth and fraud
- Czech Republic: The big  
mess of missile defense



Who's  
fooling  
whom?

# SCIENCE JOURNALISM IN EUROPE

## The idea of launching a European Magazine

Do we need a European magazine reflecting on science journalism? The answer of the initiators of this issue is yes! The objectives of a

cal and practical aspects of science journalism. The idea was triggered by a comparable and successful exercise at the national level in Germany, the wpk Quarterly and the Chair of Science Journalism at Dortmund University. The idea is further linked to the observation, that development of an identity within science

mulates and substantiates this process intellectually. At the moment, in most of the European countries there is no such forum.

In view of this, it is perfectly realistic to take on a vital need of science journalism to promote and differentiate it as a specialised area within journalism and, in so doing, take account of its growing importance within journalism. By means of its thematic approach such a journal might exert an accordingly great influence on this process.

To discuss the idea and to prepare this issue, 19 academics and science journalists from 10 countries met at the Erich-Brost-Institute for International Journalism in Dortmund on the initiative of WPK, the German Science Journalists' Association, and the Chair of Science Journalism in Dortmund. One of the outcomes of this meeting is this issue, which can be seen as the messenger of a new magazine. We envisage presenting the new magazine at the 6<sup>th</sup> World Conference of Science Journalists in London in 2009.



magazine on science journalism would be to provide a platform for discussing general problems and standards as well as ethical, histori-

journalism is beginning to happen in Europe, but this process requires appropriate support by means of a forum, yet to be created, which sti-

# WHO IS FOOLING WHOM?

## EDITORIAL

BY MARKUS LEHMKUHL

According to current analysis mainly carried out by science sociologists, there is a growing need for science to engage with the public. The tendency within science to go public is only partly due to a norma-

ive force that perhaps can best be called "societal responsibility". Science as an institutionalised way of producing results depends upon public funding and therefore has a responsibility to make public what is done with the taxes of citizens. Unfortunately - from this normative point of view - very often nobody is interested in such efforts: Who can count on vital interest of their target group when announcing that 500,000 Euros have been spent on producing a result that cannot be clearly and convincingly linked to current or future societal needs or dinosaurs or the evolution of humans? Who can count on vital interest when announcing that the effort to produce a result failed, and that this failure has cost 500,000 Euros tax money? Every scientist may thank God that such an interest

infrastructure doesn't exist in Europe. It would really change the scientists' world if every single publicly supported outcome of their work could potentially become part of the opinion forming process. In fact, most of the scientific results that are becoming public are just used to entertain the public, nothing more, but nothing less. Does it really matter whether or not it is true that piranhas in the Amazon River are peaceful, nice, in sum just the opposite of what we always thought they were?

Apart from current normative beliefs about the importance of going public, at least two other reasons for science to engage with the public have been identified. Science is forced to go public when intending to get access to fields of inte-

rest that are legally blocked. The best known example is stem cell research. In this area it really does matter whether or not embryonic stem cells have promising abilities to cure serious diseases. Accordingly, researchers in this field have a vital interest in producing and communicating promising results, because they depend not only upon public support but also upon legal changes. Science becomes political mainly for its own sake.

Another field, where science virtually needs the public, is that of controversies about scientific questions that cannot be solved solely scientifically but need to be solved in order to reach desired societal changes. It is not by accident that climatologists enter the public sphere arguing heavily over different scientific standpoints just to convince the general public and politicians that sustainable changes have to be established in energy production and several other societal fields. Part of the argumentation is very often a catastrophic scenario, even though it is not possible for the scientific community fully to agree upon the evidence for this. The same is true when it comes to the risks of dying from passive smoking. This risk is emphasised by public health and science to legitimate and arrive at sustainable legal changes in several European countries. The scientific evidence of that risk is still away from being agreed. Also here, science becomes political, but mainly for the sake of society.

From a journalistic point of view, the areas mentioned in particular have to be observed carefully just to avoid being fooled by science. Who is fooling whom? That is one of the questions this edition deals with. We present examples where

science fooled journalism. We question whether the information provided about the radar system that is going to be installed in the Czech Republic is true. We reflect upon the tendency within journalism to fool recipients, mainly unconsciously, with spectacular and attractive science pics. And we talk to a former PR-manager who claims that journalism sometimes virtually wants to be fooled by PR.

This issue is written by science journalists for science journalists. We hope that what is collected in this issue will provide food for thought about our everyday work.



**Markus Lehmkuhl** is researcher and lecturer in the Department of Science Journalism, Free University Berlin, and editor in chief of this edition.

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# BEWARE OF BREAKTHROUGHS!

**When politics, economics and ethics come together, scientists are sometimes not more credible than politicians: one example of "polit-science" from stem cell research**

BY HOLGER WORMER

The term "breakthrough" should be put on a black list for science journalists. Scientific institutions, however, do not seem to adhere to this rule. In the information service "Informationsdienst "Wissenschaft" (idw), a distributor of research news from scientific institutions in Germany, Austria and Switzerland, "breakthrough" has been used in about 900 entries in the course of the last ten years. The European service Alphagalileo counts more than 1000 "breakthrough" news items in the same time period. In their annual Christmas edition, a scientific magazine like *Science* even announces several "breakthroughs of the year" at once. It is almost like in sports: if your competitors are in poor shape, you may take the prize even with an average performance.

In most scientific fields, breakthroughs today must obviously adhere to certain schedules. The more scientists depend on funding periods as well as on political, social and ethical restraints, the greater the need to present a suitable scientific "breakthrough" at the right time. That is why the follow-up question of "What has become of it?" is so important, especially for journalists. One example: An announcement of a supposed breakthrough some four years ago still affected the political debate about the revision of the German stem cell law as recently as spring 2008.

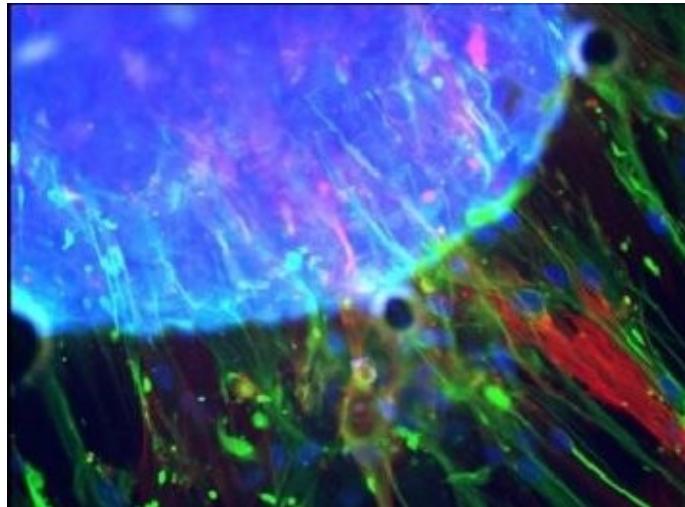
On 28 May 2004, two important German dailies had a stem cell story on their front page: The yellow press paper *BILD* (circulation 3.3 million) titled "Breakthrough in stem cell research"; the serious broadsheet *Frankfurter Allgemeine Zeitung* (FAZ) reported "New source for adult stem cells discovered" – derived from the pancreas of a 74-old human and from a rat pancreas.

To realise what these announcements meant for other media, we have to understand that already prior to 2004, Germany had experienced a remarkable political and media debate on the legal and eth-

ical questions relating to stem cell research. As a consequence, the attitude of news and science editors towards these issues was characterised by the fear to miss out on important pertinent news. Thus, when two important dailies – albeit for very different reasons – put the story of a breakthrough in this field on the front page, the pressure for journalists working in other media would be enormous. In such cases editors-in-chief usually ask one of the questions most feared by the average journalist: "Why didn't we get this story?" Furthermore, the chief editors then often tend towards presenting that same story in a much bigger way on the next day.

One highly recommended strategy to deal with such frightening questions is to find an answer to the simple question: "Is it true?" At first sight, there were at least some indicators that in this particular case, the answer could have been a kind of "yes": The articles as well as the wire news (which were the basis of the two front page stories) mentioned several prestigious institutions, namely the University of Luebeck, the Fraunhofer Institute for Biomedical Engineering, and two Max-Planck-Institutes (MPI). Furthermore, the researchers were able

to confirm another critical question, namely that they had already published their results. However, after a closer investigation there were some contrary indicators: Some interviewed researchers at the MPI did not know anything of a substantial cooperation with the University of Luebeck. Moreover, the scientific journal where the publication had appeared was not exactly the most brilliant venue for stem cell research: *Applied Physics A* specialises more on materials science. Also, the time between receipt and acceptance of the paper was exactly one day – not very much time for a profound peer review.



*Illustration included in the press announcement of the University of Luebeck: postulated "organoid tissues", derived from adult stem cells.*

Nevertheless, the announcements in the press releases were hymnic: New adult stem cell lines from "nearly all vertebrae as well as from humans" would be available very soon. And just because of the "outstanding significance" of the results, Germany would "obtain a key position in the research with adult stem cells." The cooperation between the University of Luebeck, the Fraunhofer Institute in St. Ingbert and the other partners were indeed proof of the "efficiency and great flexibility of the German

research tools." Between the lines the reader could conclude that there obviously was the need for a follow-up financing of the research group in Luebeck.

When scientists announce a breakthrough in a highly controversial field like stem cell research, politicians who will pick up on the scientific sensation are never far away. In the days following, the newswires contained countless statements of politicians (and churchmen) who saw a solution to all the ethical conflicts caused by embryonic stem cell research which

could now be replaced by research with adult stem cells. Some politicians merely repeated the perfect promotion statements

coming from the scientific institutions themselves, others added some high-sounding metaphors such as "moment of glory in the history of science." The needed follow-up financing

for the project was ensured. However, the scientific evidence was humble, especially for the described human pancreatic stem cell line – and it has remained so until today. For example, the potential of the described human pancreatic stem cell line has never been proved and published by another scientific group.

Four years later the pretended breakthrough was still part of the recent political debate about the revision of the German stem cell law

in spring 2008 (e.g., [www.bundestag.de/ausschuesse/a18/anhuerungen/stammzellgesetz/wortprotokoll.pdf](http://www.bundestag.de/ausschuesse/a18/anhuerungen/stammzellgesetz/wortprotokoll.pdf)). During the hearing in the German Parliament, Hans Schoeler, Director of the Max Planck Institute for Molecular Medicine in Muenster, suggested a partial comparison of such political announcements from scientists with the historical case of Trofim Lyssenko, Stalin's chief biologist. As the existence of genes was not considered compatible with crude Marxist philosophy, his scientific findings were forced into conformity with the political demands.

For the sake of completeness, we have to add that Schoeler has been a strong supporter of the research with human *embryonic* stem cells. And we also must add that this type of political announcement of a breakthrough is of course not limited to research in the field of *adult* stem cells. There are similar examples concerning embryonic stem cell research. But in general, stem cell research is a very striking example of how an interesting mixture of politics, science, society and religion leads to a special kind of politically biased presentation of scientific results; "polit-science" might be a very adequate expression for this phenomenon.

But what does this all mean for science journalists? First of all we have to admit that journalists, too, are human beings who tend to believe what they want to believe: When researchers announce that chocolate is good for your health we tend to send a warm welcome to that piece of news (as our readers and spectator surely also will). In our example it was maybe not by accident that the "breakthrough in adult stem cell research" was initi-

ally spread on the front page of a newspaper like the rather conservative FAZ: For many of their readers, such a success story would have been particularly good news as it would avoid a series of ethical conflicts of the research with human embryonic stem cells. (Nevertheless like many other media, the FAZ criticised the announcements later as dubious or even as "Pentecostal miracle").

Maybe a special version of "W-questions" for science journalism could help us to come to terms with the problem of "breakthroughs" from the (growing?) community of polit-science. Obviously we have always to ask ourselves: "Who announces a breakthrough, Why and When?" Also regarding the recent stem cell debate in the UK and other countries, this key question may be true not only for Germany (and of course, not limited to stem cell research). So, please, science journalists all around Europe: Beware of breakthroughs!

P.S.: Do you know similar examples from other European countries which may be interesting also for the education of science journalists? Please, mail to  
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## SO – WHAT'S REAL?

**Somewhere between plain truth and pretty fraud. Between documentation and illustration. It's where science goes visual – and some viewers get lost.**

BY VOLKER STEGER

A very popular and strong SEM micrograph is one that shows an egg being fertilized by a sperm or even many sperms. It's not easy to take such a picture, because there are, besides technical problems, ethical issues: If it is a human egg. There are fewer problems with hamsters and their eggs. There is also smart image processing software that will join sperms and an egg taken separately. Other 3D image software may create this "iconic" image from scratch. Often, some of this is even hinted or stated outright in the captions provided by the source of the image. Still, a typical magazine caption might read: "Sperm fertilizing egg". It's a highly

symbolic opening picture, the readers will recognize it, the graphic designer thinks it's cool, and there really is no alternative. Anything wrong here?

A lot has been written on how much reality is distorted in regular press photography, and a few of the notorious images instantly come to mind. But science photography might deserve a closer look as well. The images are typically sourced from scientists, PR departments of scientific institutions or corporations. Or from photo libraries. It's worth bearing in mind that everybody who gives away pictures to the media for free probably has an agenda. Creating striking science imagery involves cost, effort and quite a bit of technical skill. This will influence what the pictures look like. Smart scientists and good PR departments will try to hand out great pictures that promote their research. If they hand out poor images, that is most probably because they lack skill or resources or both – as often is the case.

Photo libraries or science photographers who sell images to the media have a much more straightforward interest, obviously. They try to produce "saleable" images, the kind of material editors will like – and buy. So, they try to guess what the media wants. They even try to anticipate what the media will probably want in the future – which is quite a task.

*"A good science image represents an idea or even an entire field of research in a way that is instantly recognized"*

The cost for producing science-related images is hefty: think of SEM micrographs, travel expenses to far-away labs etc. At the same time, publishing houses are no longer willing or able to pay these costs. Science photographers and photo libraries in the field have to deal with this economic challenge, and they do so by trying to sell multiple reproduction licences and by offering pictures to markets more lucrative than journalism, for example advertising. So, it's the markets' "invisible hand" that determines what pops up on the screens of photo editors. This creates a tendency towards symbolic or even iconic images. A good science image represents an idea or even an entire field of research in a

way that is instantly recognized. And it does so in various contexts: In a science magazine in Denmark with editions in Norway and the US, in a British daily, in an advertising campaign in Spain.

This does not necessarily mean that these images are "bland": it merely means that they are tailored to more than one usage. Journalists from the writing end of the business tend to overlook the fact that the market for images is truly European, if not global. There is stiff competition and opportunity in a marketplace that is much broader than a typical European print market, which tends to be confined to one language-area. Add the internet and its ability to provide images in the form of digital content all over the place, and you end up with something that resembles the software business. It is no coincidence that Bill Gates is one of the big players in photo libraries.

So, the market for science images is big and a German science photographer may have French competitors in a way that writers just don't. Still, the size of this market also permits the existence of market niches that are big enough to support even slightly exotic projects, which explains why not all is bleak on the screens of photo editors.

The tricky part starts when scientists or science photographers (and also photo libraries) try to cut corners to get more attention or revenue. This might seem obvious. But it is not that straightforward since the mechanisms involved are subtle and it's not always so clear who benefits from collaborating.

In fact, most editors and readers want to be fooled by pictures. And there is a big market with many actors who try hard to fool editors and readers the way they like to be fooled.

*In fact, most editors and readers want to be fooled by pictures*

We just like these colourful exploding galaxies, the three-dimensional SEM's and all the other visual goodies, right?

This is not about fraud, that's something outright bad, and journalists don't do evil things...

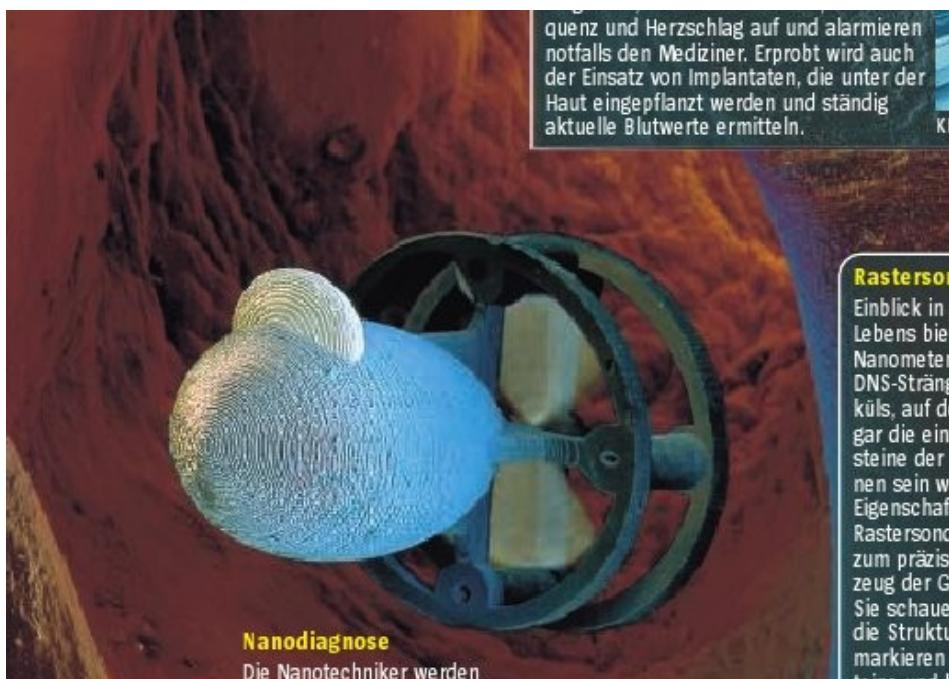
It's trickier.

It seems that editors and readers of magazines are more willing to accept altered and somewhat "fishy" images if these come from a sphere outside of the scale or spectrum we live our daily lives in. We are probably so awed by seeing something of these strange worlds that we don't apply too much scepticism. An example of which is the well-publicized micrograph of a miniature submarine cruising through an artery. This image was clearly intended as an illustration of a concept, not as a documentary photograph, which is of course completely legitimate. But the picture got published as "a prototype" of a miniature submarine in

an artery. Anyone familiar with arteries might wonder where the blood with its erythrocytes is, and, if there is no blood, how the thing floats. The colours are also quite magical and who knows how the light got there – not to mention the electron beam of the SEM-microscope. This all said: It's a great picture. The readers love it, the graphic designer loves it, it's a cool shot! And it even won a prize in the World Press Photo Award contest, which gives awards to outstanding (documentary!) press photographs. Confused?

about every wavelength of the spectrum, not just the narrow part we see. This is data that is turned into images by experts whose job is creating impressive pictures. The data is "translated" and there is probably a colour scale somewhere that lets viewers find out that the red light at the heart of a galaxy really denotes X-rays. But is the same colour in the next picture representing the same wavelength? Does NASA use the same colour-coding as ESO? Does this matter?

It would look just too bad, since the major part of science images has in some way been touched by image processing. A lot of science imagery now happens in a large grey zone somewhere between illustration and documentation. It's a colourful land made of bits and bytes, but it's treacherous territory: There are traps and no-go areas. Still, there is a lot to learn out there – about science and about how science is communicated. Keep your eyes open, look twice or more. And don't get lost!



**Volker Steger** is a freelance science photographer based in Munich.



*This image was clearly intended as an illustration of a concept, not as a documentary photograph. But the picture got published by the German magazine and several others as "a prototype" of a miniature submarine in an artery. Source: Der Spiegel, 16/2000.*

At a bigger scale, have a look at the universe with its permanently exploding stars, shining galaxies and pitch-black all-devouring black holes. It's all in colour – courtesy of NASA or ESO. They serve the public that supports them by providing striking images. These images are derived from electronic sensors attached to various kinds of telescopes. They capture signals in just

There have been suggestions to "mark" science images that were in some way "manipulated" or "enhanced", but the reaction of publishers and photo editors has been very muted. It seemed a bit like the idea of asking the food industry to "label" its products that contain GMOs with a little double-helix icon...

# "TIMELESS PICTURES ARE SELLING BEST"

Seymour Yang is the features editor of the Science Photo Library (SPL) in London. SPL produces photo features and sells individual stock images all over the world, making it the leading supplier of scientific images. Volker Steger interviewed him.

What's the colour of a virus?

Hey, is this a quiz? Viruses have no colour. They are too small for normal light waves to give them colour as we see it.

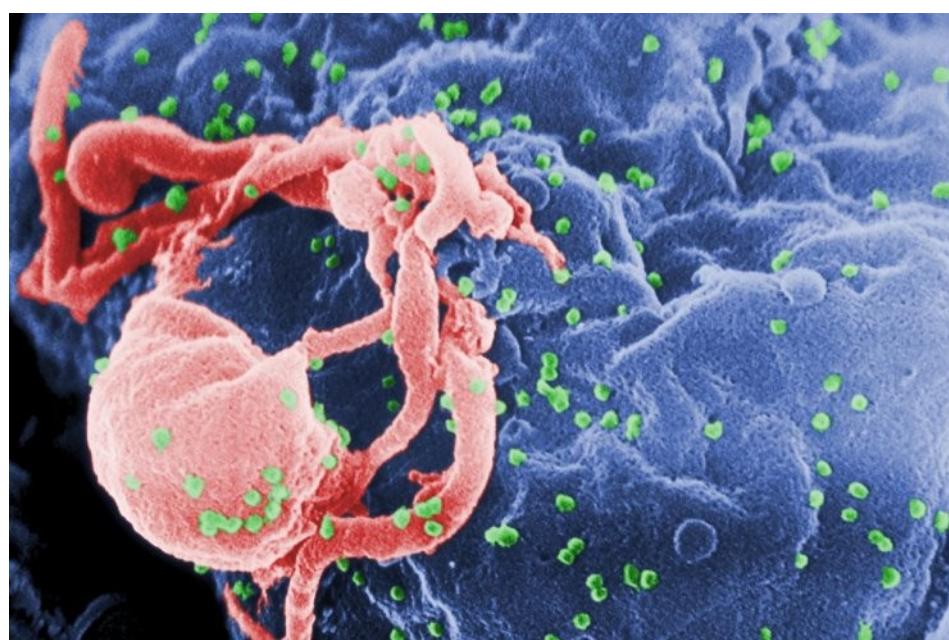
But they have colours in your photo library?

We started colouring them years ago to make them more attractive to book publishers – with the consent of the scientists. We started with black and white photo prints that were actually painted by hand!

Now, with computers, the scientists colour themselves?

Yes. In the case of viruses, they use the colours to enhance the scientific content of the images, for example the different protein groups that make up the virus. And the results are some very pretty pictures.

You are producing photo features, which is journalistic content. How do you pick them?



Scanning electron micrograph of HIV-1 budding from cultured lymphocyte (Centers for Disease Control)

We tend to avoid stories without a firm basis in science, stuff like alternative medicine. Ideally, a good feature has to be photogenic and scientifically important. Unfortunately that is not always the case. But there is a market out there for features that are basically pretty, as there is one for material that is just scientifically important.

**So, again, how do you find stories?**

We look at the academic journals and popular science media closely, be it magazines, TV, or the internet. It's there that we can find out what stories will translate well into photo features.

**What is your most published feature?**

I guess that's still the story about the large telescopes. We sent two photographers around the world to photograph these giant telescopes. The editors just loved it! The second feature that comes to mind is one of micrographs: "Everything in the House". We just did SEM's of everything in the house, from a safety pin to bits of dust. It's timeless.

**Which individual picture did best?**

Actually our best selling images now, are roughly the same best selling images from when we first started – timeless pictures of the Earth from space, or a sperm fertilising an egg, a DNA molecule – iconic science imagery.

**How many pictures do you have in your library?**

About 400 000 and growing.

**How many sources of images do you have?**

Hundreds, mostly individuals but also institutions. Many are scientists. If we sell one of their images, they get a 50 percent share.

**A final statement?**

We hope that our pretty pictures will inspire, fascinate and hopefully, educate the public about the wonders of science and technology.

**SPL is specialised in science and puts some effort into caption writing.**

Yes, we have five caption writers and everything gets double checked. The difficulty is trying to convey technical details in lay person terms without diluting the information too much.



*Seymour Yang is the features editor of the Science Photo Library (SPL) in London*

## Science Journalism on Trial

# GUILTY?

The Paris Tribunal of First Instance recently ordered the editor of *Déclic* to pay the symbolic sum of one euro in damages for slander against a biotech start-up.

BY ERIC HEILMANN AND  
ELSA POUPARDIN

The judgement went unnoticed by the French media. However, it deserves attention, because it gives an insight into the relations between researchers engaged in the innovation race and the written press.

On July 19<sup>th</sup>, 2005, IntegraGen, a start-up based in Genopole, France's first gene and biotech city outside Paris, announced the "first genetic test for autism" being launched on the market, for the beginning of 2006. The press release was based upon an article by one of its research teams, published on the same day, in *Molecular Psychiatry*. The news was taken up the following day by *Le Monde*, bringing wide public attention.

Thereafter, no new result was published by IntegraGen. The company website simply stated that the diagnostic test for autism was "under development" and that trials would take place in 2007. Over the next few months, several scientists criticised IntegraGen for scientific claim and the media strategy of IntegraGen.

The clinical trials board of INSERM (French national organisation dedicated to biological and medical research) referred the case to its Ethics Committee which published a first draft of its conclusion in May 2006<sup>1</sup>. It underlines that the advertising campaign of the company "gives the feeling of an information policy which is more concerned with possible commercial and financial repercussions rather than with rigorous scientific information and the suffering of the patients and their families".

Finally, in autumn 2006, IntegraGen filed a slander and defamation lawsuit worth 100.000 euros against *Déclic*, the magazine of the association

Handicap International, intended for parents of children with disabilities. The case subject matter, an editorial, was entitled "Who benefits the crime?"<sup>2</sup>. Sylvie Boutaudou, the chief editor, denounced in sharp terms the policy of the company: "Who will be able to measure the damages caused by this kind of false news? The person in charge in IntegraGen, the company which produces this test doesn't give a fig about it. What matters is, how much anguish there is for the parents, their suffering and their incomprehension in face of a little "oddity", who is nothing like his/her cousins, brothers and sisters. (...) Then scientists compose and present as reliable test, the product of a simple research exercise and manipulate statistics to alert public opinion to a quasi-epidemic of autism. It is necessary to run the laboratory and seduce the investors..."

On what basis did the Tribunal of First Instance of Paris return its verdict? The journalist, according to the court, did not bring reasonable evidence "to establish with certainty the veracity of the facts" directed at IntegraGen. The author showed no caution in her "turn of phrase" to denounce the behaviour of the start-up. One could discuss lengthily this decision, in particular the freedom of speech (choice of the vocabulary, style, etc) for a journalist signing an editorial or any other opinion articles. One can certainly underline that the two terms of the condemnation are quite the same as the ones the journalist used to attack the press release: uncertainty and caution. The lawsuit and the condemnation show well how differently the words of scientists and journalists are considered.

1 Inserm Actualités, n°199 :  
<http://www.inserm-actualites.com/index.php?id=506>.

2 *Déclic*, n°113, p 9.

## Is science by press release immoral?

The INSERM Ethics Committee used a third argument to criticise the IntegraGen's press campaign. In its conclusion, it considered that IntegraGen's behaviour was unethical since the start-up has not respected "the necessary chronology for an healthy transmission of scientific information" by announcing scientific results in the press without awaiting their validation by the scientific community. This argument has to be discussed in the light of changes over the last few decades in the organisation of research in Europe.

Today, besides the organisation of teams around large facilities, some "networks of flexible co-operation"<sup>1</sup> have emerged. They associate researchers originating from different subject areas, with complementary competences, belonging to universities or industry. In order to survive, they have to obtain visibility at the national or international level, to convince laboratories or companies of the pertinence of their research projects and to attract investments.

The networks made up around IntegraGen testify precisely to this new diversity. This profit-making company has financial and logistical relationships with non-profit institutions as INSERM, AFM (French Mus-

cular Dystrophy Association), FRM (Foundation for Medical Research), and Foundation against Autism. But it is also largely financed by CDC Innovation, AGF Private Equity, Bioam, SG Asset Management., DSM all venture capital firms. The IntegraGen's press release really paid off. It was not used to short-circuit the discussion with the scientific community - the publication was indeed accepted by a specialized magazine (*Molecular Psychiatry*) - but to occupy public space, to increase its network and to defend the utility of its work.

Consequently, the call for media attention appears a legitimate step for this organisational mode of research. That being said, from the moment such networks mobilise the media to get public attention, they should be subjected to the same rules as any other social actors to guarantee freedom of speech. They must agree to being exposed to criticism; to have dialogue with all the people directly or indirectly concerned by its work (families, patients, journalists...). This dialogue excludes neither the laymen nor the scientists outside the field. However, we should remember: it is not in court that such debates must begin!

At last the defensive reaction of IntegraGen against Déclic indicated how much researchers want to ignore the way media operate, and more generally the social actors with whom they have to work and have dialogue. As Jean-Marc Lévy-Leblond<sup>2</sup>, physicist and writer, underlined: "One often calls upon the need for the laymen to acquire the essential scientific knowledge to be able to discuss and solve technoscientific problems regarding

energy, health, defence, etc; but it is much less frequent to hear demand for an opposing need for the technoscientific experts (researchers, engineers) to acquire sociological, economic and political knowledge essential for understanding the nature of their own work and their discoveries. Finally, don't we ask more of the laymen than of the experts?"

We answer this question affirmatively. In the IntegraGen case, for example, the researchers-entrepreneurs should not be unaware of the consequences of putting on the market a genetic diagnosis test for autism which, in absence of curative treatment, poses innumerable problems. Failing this, such ignorance - genuine or not- will only serve to nourish lasting mistrust of society against the scientific world - which works, until proven otherwise, in the public interest and with the interests of the community. Mistrust that the media will echo in all legitimacy.

The authors are Lecturer at Louis-Pasteur University, Strasbourg.

<sup>1</sup> Cf. Callon M. (1989), *La science et ses réseaux. Genèse et circulation des faits scientifiques*, La Découverte.

<sup>2</sup> Lévy-Leblond J.-M. (2006), « Le partage de l'ignorance », in *La vitesse de l'ombre*, Seuil, p. 173.

# "EASY GAMES"

**How technology stories make it into the media – and why "successful PR" can mean "failing journalism"**

BY ANNETTE LESSMÖLLMANN

In the media, certain PR strategies are treated rather like doping in sport: It is done, everybody knows it, but nobody is officially talking about it. Only a few influences of PR on journalism are well known and discussed: If any company sponsors an expensive trip for you – will you feel you should report only positively on the trip afterwards? Some fields like travel or motor journalism are well aware of PR strategies. But what about our field, the field of science and technology?

And what about the rumours that some journalists working officially as freelancers are – at the same time – listed on the payrolls of companies who pay them to "place the product in the media"? We talked to an IT-journalist based in Munich, Germany who for a long time worked as a freelance PR person in the

field of semi conductors and observed carefully the flow of information between firms and journalists and does not want to read his name in this issue. He points out the Janus-like function of public relations; informing on the one hand and controlling the information on the other, which makes thorough journalistic research necessary. Unfortunately, in some fields, time and willingness to invest in this seem to be rare.

**How did you conceive of your role as a PR-person?**

I saw myself as a counsellor. I have not been "placing a product in the media", but giving advice to journalists, who do not know much about the field.

**This sounds like a neutral, merely informing role. Is that true?**

At first glance - yes. An example: I informed journalists in quite an objective way. So they felt "looked after", they did not have the feeling that I am just one of those PR persons who want to place products.

So they put more stuff in their newspaper than they would without my interference.

**So they had the feeling of being neutrally informed, and this feeling is your success?**

I took a lot of time explaining stuff. But then, when people started to be interested, it would be good if they also wrote about the firm I am working for. Interestingly, it was not difficult to achieve this goal. Journalists were not forced and were happy to get acquainted with difficult technical topics when somebody else did the hard work for them. If they think they understand it, then also their readers understand it, and this seems to be sufficient for many of the journalists.

**An example?**

I can describe one: my firm is producing high performance processors, it developed an architecture for parallel processing etc. – nobody is interested in this, because they are not able to put it into the right context and to judge what it means. But I tell them that in biology you can use it for gene analysis, where you need a powerful number cruncher, and without affordable computers of high capacity Craig Venter would never have been successful.

**So you were placing not only firm names – which was your job - but stories?**

Yes, kind of. And it also turned out that some journalists tended to

accept everything I said and just wrote it down. I found it sometimes quite frightening when I opened the newspaper, read the article and found my words in it. I mean, they could have counter-checked, couldn't they? But it seemed that they totally relied on me.

### Where did this happen?

In my case it was very often the economics section of daily newspapers or an economics magazine. There seemed to be great uncertainty concerning technical stuff. Journalists felt insecure and therefore relied on the PR person. This is good for PR, but precarious for journalism. Especially because firms want to make it into the economics pages of major newspapers – they do not want to be present only in specialist technical magazines.

### Did you have the feeling that you were dealing with journalists who took their job seriously?

Well, one can always do more research if one has the time. But when I look at the results, I get the feeling that they didn't do much research and trusted only one source, a PR source.

### So it was an easy game?

Yes. Once they were interested in IT topics – which was difficult, because it is a complicated field – then it was an easy game. The problem is the lack of knowledge, especially with economics journalists, about IT topics. I understand it,

because there is a lack of time for everybody.

### Did you also place articles on your own?

Yes. I wrote articles and they were printed in the technical press. My name appeared below, or the name of my client, so – the information was neatly declared as coming from a firm.

### Always?

Well, there were these cases where a journalist wanted to make an interview, that is, writing something by himself. So I gave him the interview and invested a lot of time in it. I noticed that he did not make any notes. At the end, he said: You know this stuff better – please write the article for me.

### Did you do it?

I was in my clients debt. If I am investing an hour, I have to justify that. It is not okay for me if there is no resulting echo to my work in the media. So I did sit down and write the article, and the journalist put his name under it and published it.

### Did the magazine pay you for this?

No, I did not go so far as to bill them for this. The magazine would not pay for an article it expects its editor to write.

### In what kind of media do such things happen?

In my case, it happened with technical press in the IT sector.

### How often, would you guess, did journalists ask you to work like this?

I would say that it was 20 percent of my work.

### Do you know of journalists who place articles under their name, billing the magazine while being paid by firms?

I would not say so... but I know the case of an editor who asked firms to pay him, when he wrote about them in his magazine. And I know that some freelancers work both as PR persons for firms and as freelance journalists working for magazines etc. Some journalists draw a clear line between topics they are dealing with in Public Relations and topics they write about as journalists. In other cases, there may be overlap between the areas. Not everybody is separating the topics neatly.



Questions by  
**Annette Leßmöllmann**, Professor of Science Journalism at the University of Applied Sciences, Darmstadt, Germany.

**Standpoint**

# POTENTIAL BRIBERS MISUNDERSTAND THE EDITORIAL MECHANISMS

BY ANNA NOLAN

As science journalists, we all know that our first obligation is to the truth, and that we must seek to avoid bias and distortion. And we all know that as a consequence of this, we should never accept payment from anyone other than the newspaper, magazine or publisher that has commissioned us, and that we should never accept a bribe.

This important concept is enshrined in the codes of conduct or ethics of many journalists' organisations around the world, as shown by the following tiny sample:

The Hong Kong Journalist's Association Code of Ethics states that a journalist must not accept bribes or allow other inducements to influence the performance of his/her professional duties, and that a journalists must not be party to the distortion or suppression of the truth because of advertising or other considerations.

The Code of Journalists of the

Republic of Slovenia says that it is irreconcilable with the journalistic code to accept a bribe to publish information to serve the benefit of an external society, and that a journalist's fundamental obligation is to provide the public with authentic and true information.

The Canadian Association of Journalists/L'Association Canadienne des Journalistes says that journalists must not use their positions to obtain any benefit or advantage not available to the general public.

The Malaysian Canon of Journalism says that journalists must avoid the acceptance of a bribe in any form.

The National Union of Journalists (UK and Ireland), of which I am a member, says that journalists must resist threats or any other inducements to influence, distort or suppress information. And the Irish Science & Technology Journalists' Association, of which I am also a member, in 1990 adopted the full NUJ Code of Conduct as its own, with the addition that where the journalist travels as a guest of a company or institution this should be stated in the article and the host bodies named.

Sadly, despite this wide scale banning of bribery, some companies or organisations still seek favourable coverage by offering payment or inducements. As a freelance science and technology journalist I have been offered gadgets to keep provided that I wrote favourably about them, and even a holiday for my family if I wrote about science and technology in a certain geographic area. The extraordinary thing is that in all cases the would-be briber professed not to understand why I refused.

Why do some organisations seek to bribe journalists to write favourably about them? Is it because these bodies are intrinsically corrupt? I doubt it. Is it because they think that some journalists are corruptible? I doubt this too, though maybe some of them have a poor view of us. Or is it because they genuinely misunderstand the editorial mechanisms by which it is decided that coverage will be given? In my view, this is the most likely explanation, because in some countries a gradual blurring of boundaries between public relations, advertising and independent reporting has taken place.

Just look at the different ways in which an article about a research organisation or company may

appear in a print newspaper or magazine:

(a) it may be there purely for its intrinsic interest and relevance to the reader, as the result of independent reporting;

(b) it may be in a special supplement on some particular area of scientific research, and still be written independently and chosen because it is of interest to the readership, though the supplement has been conceived to attract additional advertisement revenue for the paper;

(c) it may be in a special supplement, as above, but included because this was promised if an advertisement was taken;

(d) it may be a 'commercial business profile', written by a journalist on behalf of the publication, but with the article checked, altered and approved by the scientific organisation, and paid for by that organisation as an advertisement.

The publication may use labels such as 'Commercial Supplement', 'Advertising Supplement' or 'Commercial Profile' to distinguish material that is directly or indirectly paid for, but how well is this message understood? And should science journalists be doing more to ensure that their codes of ethics are better known?



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## PERPETUAL EMOTION

BY NICOLE HEISSMANN

One of the challenges of journalism on physics is that it is very easy to get fascinated by new findings although you don't fully understand them. Even more so, if the new insights are completely defying the "nasty" physical laws you never really grasped in school. For example, the fundamental law that you can neither create nor destroy energy in a system.

The idea of producing energy from nothing is the "evergreen" of science. After all it could probably solve a big part of the world's energy problems. Numerous "perpetual motion machines" and "generators" have been invented so far and the idea has inspired both science fiction and the media.

Some examples of the latter can be found in the weblog of The Guardian columnist Ben Goldacre. On his website [www.badscience.net](http://www.badscience.net) he dissects current hypes, fakes and "breaking news" from medicine, nutrition, physics and technology. For example the invention of *Orbo*, a machine allegedly producing free

energy and developed by the Dublin based company Steorn.

The story started in summer of 2006 when Steorn booked a whole page ad in *The Economist* showing a quote of George Bernard Shaw: "All good truths begin as blasphemies." Below this self-conscious line the small technology enterprise Steorn announced they had developed "a technology that produces free, clean and constant energy". The device was said to have been validated by experts "behind closed doors" and "off the record" – a more or less unusual procedure in the scientific community. Steorn was looking for more independent experts to judge the *Orbo* generator.

Following that announcement – and even more after the 2007 public presentation of that machine in the London Kinetica museum of technology and art – there was a lot of media coverage: *The Observer*, BBC, *The Irish Times*, *The Toronto Star*, ABC News and many blogs reported on the new source of free energy. Some reports were sceptical and cited critical scientists like Eric Ash, electrical engineer and former rector of Imperial College London or Graham Farmelo from Northeastern University in Boston

who commented on BBC 4 that the chance that Orbo could work "is so close to zero that it makes no difference." Nevertheless Steorn received a lot of attention for its machine.

The first public presentation at the Kinetica Museum appeared to be a failure. Steorn's CEO Sean McCarthy and his colleagues installed their machine made of perspex and containing several magnets that were said to produce a magnetic field to move a rotor of the machine. But - unfortunately - the machine didn't work.

Afterwards McCarthy apologised for that in an extensive speech (<http://www.badscience.net/?p=447>) and explained that this breakdown was due to some unforeseen damage to the ball-bearings of his device. Unfortunately they were not able to replace the bearings and so the demonstration had to be deferred indefinitely. Orbo – a hoax or a publicity stunt? At least one form of energy was surely set free by the apparatus: a great amount of activity among TV-stations and editorial offices to make stories out of that miraculous invention.

And more of them are coming soon: Some months ago, Mr. Paul Calver appeared in a BBC morning show, presenting a white thing (<http://www.badscience.net/?cat=83>) that looked a bit like the U-bend pipe under your kitchen sink. "Ecowatts" was presented by two newsreaders as a innovative heating element that "appears to produce energy from virtually nothing" by electrolysis of some chemicals in a cell. It allegedly could soon serve to "slash the heating bills" of British citizens. For this year (2008) a prototype was announced to go into its

testing phase to produce a commercial product. So let's carefully check the news for it.



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works for Stern magazine, Hamburg.

# THE BIG MESS OF MISSILE DEFENSE

Radar in the Czech Republic

BY ŠÁRKA SPEVÁKOVÁ

missile defence system is, or soon can be, totally reliable and effective against the threat of ballistic missiles. However, there has been no proof of this claim.

The essential starting point is the document "Proposed U.S. Missile Defense Assets in Europe", published by the Missile Defense Agency (MDA), part of the U.S. Department of Defence. The publication concisely describes the missile defence system as seen by the American side. In other words, it says how the system should ideally function within roughly five years, if research and development permit. But wishful thinking is confused with reality. An impression is created that the

The radar base was also described in a special issue of A Report magazine, published by the Armed Forces of the Czech Republic, in a fairly detailed, comprehensible manner, including illustration and graphics. However, the description is very one-sided. It is based on data supplied by the Americans and states that in 2011, a GBR-P (Ground Based Radar – Prototype) testing radar that is currently being used at the American Pacific base at an isolated Kwajalein Atoll in the Marshall Islands will be transferred

to the Czech Republic. The radar station is going to use an X-band radar (i.e. a band of 8-12 GHz, wavelength 3cm - similar microwaves are used in microwave ovens). It will focus a narrow radar beam on flying hostile ballistic missiles in mid-trajectory. It will obtain tracking information from early-warning satellites and other sea- and land-based sensors, e.g. forward-based radars placed closer to the potential source of threat.

The radar, however, has to have a capability whose absence would render the whole system useless – it must discriminate between real warheads and decoys, and resist jamming. This is the Achilles' heel of the missile defence in general and of the planned missile defense system in Europe in particular, says Philip E. Coyle, former Assistant Secretary of Defense and Director, Operational Test and Evaluation, in the US Department of Defense, and currently senior advisor to the Center for Defense Information (CDI).

After it was announced that the radar should stand in Brdy Military Region (80 kilometres south of Prague), protests were raised by inhabitants living in villages close to the Military Region. The Czech Republic has a high population density (130 inhabitants per square kilometre), so that the concerns about possible health risks can be considered legitimate. Eyes and the central nervous system, both in humans and in animals, can be endangered.

A report of the American MDA states, nevertheless, that radiation of a radar that does not work permanently does not endanger human health and is never directed towards ground level. At Kwajalein the radar has already been used for 10 years,

without any negative effect on the health of the population. Even so the Czech side had to react to the growing concerns. In August 2007, the Ministry of Defense of the Czech

cultures, the results differed. They also pointed out that the methodology of calculation is not stated, influence of meteorological conditions is not included, the earth's



*Radome of the XBR-P radar at Kwajalein*

Republic published a document "Preliminary assessment of the influence of the EBR radar station on health of the population in the neighbourhood of Brdy Military Region". The report was signed by representatives of the Faculty of Military Health Sciences in Hradec Králové, Ministry of Defence of the Czech Republic, Central Military Health Institute in Prague and the National Reference Laboratory for non-ionising radiation and claimed that there cannot be any exposure of the population or risk to its health. The report was approved by the Chief Health Officer of the Armed Forces of the Czech Republic.

However, according to experts from the Technical University in Brno, Jiří Šebesta and Zbyněk Raida, the report has a number of serious defects. The input data are not sufficient. But if they themselves used the same data in their own cal-

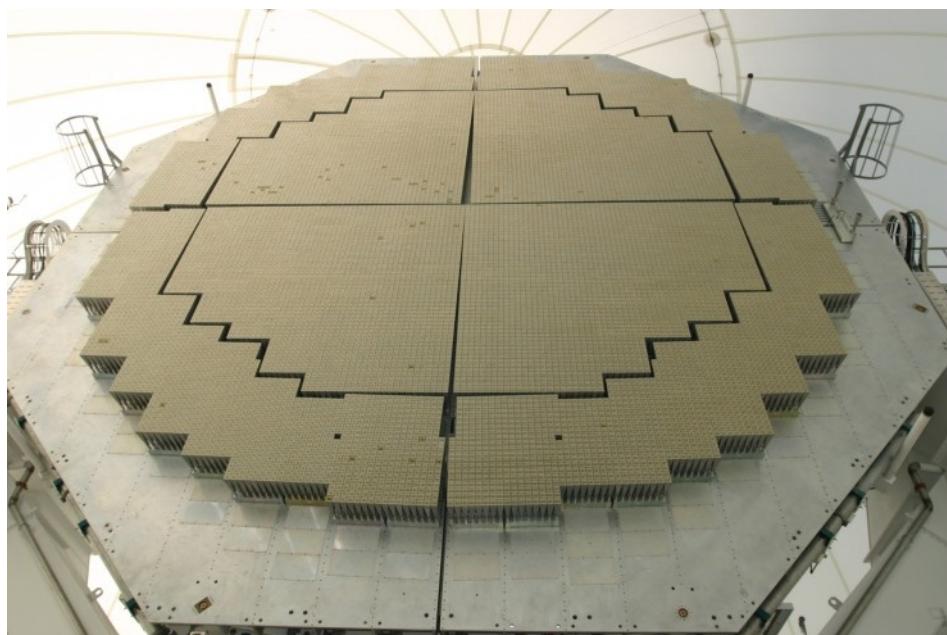
curvature is not considered, and the same goes for the possibility of diffraction, electromagnetic wave reflection and scattering, or the real radiating characteristics of the antenna. Incorrect units are used. The authors sum up: "As a whole, the work done in the study can be considered very deficient and superficial. If presented by a university student of radio engineering as his diploma work, there is an almost 100 per cent probability that he would not pass."

According to the Ministry of Defence, however, the input data are classified: "Therefore some of the facts that have appeared in the assessment published by the staff of the Technical College in Brno cannot be clarified." No counterarguments. No seminar or a conference where the issue, serious as it is, could be discussed.

In late September 2007, a group of 7 experts of the Ministry of Defence of the Czech Republic and two academic observers left for Kwajalein to carry out measurements of the electromagnetic field of

However, the very presumption that the same radar would be transported to the Czech Republic is questionable (see article "Which radar is going to be installed?"), and thus the predictive value of the

should therefore be twice as large. The biggest shortcoming of the government document, however, consists in the fact that it ignores the highly negative effect of the pulse operation of the EBR radar. It is not taken into account by the authors of the official report that at any exposure to radiation, no matter how short - be it a microsecond - there is already a risk of a serious damage to human health. Brdský published this information on *Britské listy*, an internet daily that – as it declares itself – writes on everything that is not much spoken about in the Czech Republic.



*T/R modules on the flat antennae of the XBR-Pradar at the Kwajalein Atoll can clearly be seen*

the GBR-P radar. This should, according to the official consideration, correspond to that of the radar to be placed in the Czech Republic. In October, the Ministry of Defence published a document entitled "Assessment report of the measuring of the EBR radar station on the Kwajalein Atoll"; shortly after that, the final report of the National Reference Laboratory called "Evaluation of possible health risks caused by electromagnetic radiation of the EBR radar" was issued too. It says: If the radar now located at the island of Kwajalein is installed with the same technical parameters in the Czech Republic, in Brdy Military Region at the elevation point 718, the inhabitants living in the neighbourhood are not going to be exposed to any radiation value that would exceed the permissible limit.

measurements is negligible. The peak power of the radar at Kwajalein, as stated by the National Reference Laboratory, is namely 170kW, as opposed to the 4.5MW initially stated in official documents. With an output like this, however, the radar would "see" to a distance of only hundreds of kilometres, while it has to be capable of discerning an object about the size of a football on a distance of 4700 kilometres.

This was pointed out by Jaroslav Brdský (pseudonym), who has worked in the field for over 35 years. He showed by calculations that the radar characteristics quoted by the government are considerably undersized and that, for example, the radiant flux density in the direction of maximum is several times higher than the data given by the government, and the protective zones

The reports on health risks were also heavily criticised by Milan Hlobil, who worked in the field of radiolocation and as a lecturer at the Defence University in Brno for over 40 years. Hlobil has calculated that the limit of power density of  $10 \text{ kW/m}^2$  in the volume of the main beam will be exceeded approximately at the distance of 8 km, which is, according to the standards of the Czech Republic, inadmissible in any time interval, no matter how short. Moreover, the main radar beam will pass only 5-10 m over the antenna of the near meteorological radar of the Air Navigation Services of the Czech Republic, where specialists work on technical maintenance at certain intervals.

He also called attention to the fact that the electromagnetic energy can reflect from meteorological formations – showers and storms have distinct cores with a higher reflectivity. Moreover, layers several tens of meters high can arise in the atmosphere due to extraordinary events, and if the radar beam enters this abnormal layer, it cannot leave it and the power goes on expanding with low loss, eventually reflecting

from the ground. This "atmospheric waveguide duct" or channel increases the range of power along the earth's surface on large distances of tens up to hundreds of kilometers, even beyond the horizon. Radar personnel meet with such waveguides relatively often; there are tens of cases like this in a year. As a result, places will emerge on the earth surface that can be uncontrollably exposed to radiation of energy with a power density exceeding the limit value. Moreover, the place where it falls cannot be estimated, nor can its intensity be established. Indeed, Hlobil says the authors of both reports unfortunately did not manage to deal with the health protection of citizens.

The only reaction to Hlobil's opposition has been the announcement of the Ministry of Defense that the author does not work at the mentioned University any more and that he retired in 2005. Apart from that, there is no reply. The authorities keep silent from the position of power.

The authors of the government report have also not at all dealt with the reflection of the electromagnetic energy of the main beam, particularly the "forward reflection" from low-flying aircraft. According to Hlobil, there is a huge increase in reflected electromagnetic energy in these cases, and there is a risk of dangerous exposure of people on the ground and penetration of excessive radiation into other aircraft cabins. Moreover, the forward reflection is inscrutable. Each passage of an aircraft in the area of a radar with the parameters of a GBR-P inside of 50 km is dangerous – accordingly, this should be a no-flight zone. The authorities, however, insist on a no-flight zone

of 8.6km that does not provide sufficient protection.

The decision to place a powerful radar in a densely populated territory of the Czech Republic with busy air traffic is therefore not the happiest one and it is inconsistent with the principles of selection of a radar station. The decision was obviously preceded by a governmental evaluation, which was, just to be sure, elaborated by a single team without participation of any respected radar experts. In matters of similar seriousness it is customary to invite three or more expert teams, and a conclusion of more general validity then emerges based on their separate evaluations and discussions. The authors of the governmental assessment report, however, shun any factual discussion.

### "The decision to place a powerful radar in a densely populated territory with busy air traffic is not the happiest one"

There is another question hovering over the radar: how will it be protected? Is there not a threat of an attack against the radar as the key element of the whole system? Are people living in its immediate surroundings going to survive such an attack?

If the radar were hit, the functionality of the missile defence system as a whole would be paralysed. The

former coordinator of the governmental communication of the missile defence program, Tomáš Klvaňa, declared: If the radar station really is going to be built in the Czech Republic, I can guarantee you that this will probably be the most secure place in the country. No terrorist will get close to the station, and after the missile defence system is launched, the place will be protected by its own system against various types of missiles or other possible attacks.

Stanislav Kaucký, a military technical analyst, graduate from the Military academy in Brno in the field of aviation electronic support, writes: "Radars have always been destroyed in the initial phase of armed conflicts with the only aim: to deprive the enemy of any possibility to control the area and use missiles for his defense against air strikes. A possible future missile war would be just like that."

Indeed, the XBR radar is very vulnerable – it will be, unlike the interceptors, on the surface, it cannot be transferred, it cannot be hidden and its location will be known with surgical precision. It gives itself away by its own radiation, so that its signal is easily "visible" from a distance of thousands of kilometres. Destruction of the radar is considered very probable. Who then will protect the radar (and with it, the Czech population)? „So far it looks more likely that NATO counts upon the USA to ensure the protection of the XBR radar, the USA counts on NATO doing it, and the Czech Republic on somebody else taking care of it, because it simply has no means to do it, Kaucký writes. The reason why the government does not speak about the defense of the XBR radar is probably concern that

this would enhance the aversion of the Czech public to deployment of yet another American weapon system with American personnel in Brdy.



**Šárka Speváková** is a freelance science writer, now mainly working for Herafilm, an independent production company, which is creating science magazine and health documentaries for Czech TV.

## WHICH RADAR SYSTEM IS GOING TO BE INSTALLED IN THE CZECH REPUBLIC?

**Announced technical parameters of the radar are inconsistent**

BY ŠÁRKA SPEVÁKOVÁ

The antennae of the XBR radars are not parabolic but flat, with an array populated with tens of thousands of high-frequency radiators (transmit/receive or T/R modules). By electronic control of the power and phase of the high-frequency wave of each individual T/R module, energy can be concentrated into a single beam whose movement can be controlled in space. Under com-

puter-assisted control it is possible within the framework of one flat array antenna to create and deflect several beams at the same time; as a result, naturally, the total power will be divided and the range will diminish.

According to official data published to date, technical information concerning XBR radar in the Czech Republic can be summed up as follows: antenna area 123m<sup>2</sup>, diameter 11,5m, average power 170 to 200kW, peak power 0.8 to 4.4 MW, height 31m and diameter 36 m, maximum range 6700km and total number of T/R modules 69 to 81 thousand. Over time, discrepancies

have repeatedly arisen in official technological and operational data of the radar.

One of the most respected experts both in the Czech Republic and abroad, Ludvík Nerad, has worked in the field of radiolocation for many years. His academic degrees are real; his name, however, is not – although his identity is known to the editorial office. Nerad published an article last autumn in the independent ATM magazine that specializes in military equipment and technologies. His analysis is based solely on open sources - documents and pictures available to the public - and on his knowledge of physical relation-

ships in radiolocation, combined with logical considerations and verification calculations.

"The credibility of the presented statements is low at the first glance," Nerad writes, "as the individual parameters are not properly defined; as for the area of the antenna, it is not specified whether it is active or geometrical area; the range is not related to the relevant effective target echoing area, the value of medium high-frequency power per T/R module is not stated ... Official and technical information on power disagree. If we consider the pulse power of 55 W per module as the most probable power output for T/R modules, we will arrive at 81,000 modules being used in the antenna array. Indeed, on one hand this corresponds with the official data; at the same time, however, it is inconsistent with the last official interpretation that it will be the GBR-P radar from Kwajalein that is going to be transported to Brdy." The active part of the antenna of the GBR-P radar located at Kwajalein has, according to National Referential Laboratory data, only 16,896 T/R modules.

Nerad also points out the fact that an essential parameter of the radar, the so-called "antenna gain", has been totally omitted. This concept means a relative increase in radiation compared to the intensity of the same antenna as it radiates in all directions. As an example we might use an analogy with the intensity of light of a bulb without a reflector and with a reflector, which will direct most of the rays into a single light beam. A radar antenna with an area  $S_A = 123 \text{ m}^2$ , which is the area of the envisaged radar in the Czech Republic, shows a gain of 1,700,000 in a 3cm band - it is a rel-

ative increase in radiation of a narrow beam compared to the intensity of the same antenna which radiates in all directions, and shows that at a certain point you can measure power hundreds of thousands of times higher than measured at the same point when using, for example, omnidirectional (airport) radar with antenna of the same size.

Nerad found further inconsistencies: He analysed a picture of a ten year old prototype of a GBR-P at Kwajalein that was published in official documents. In it, T/R modules are shown whose dimensions can easily be derived. He compared the dimensions and power of the test radar that is allegedly to be "a little bit modernised and moved to Brdy" with the specification of the XBR radar that is being prepared to be placed in Bohemia, and found that the size of its antenna will be almost twice as big: area of  $500\text{m}^2$ , diameter of 25 m, which implies a medium effective radiated output power at the beam axis 20 times bigger.

Moreover, the Kwajalein radar has been operated for ten years already, so that its technologies date back almost 20 years. It must be updated – particularly the computer hardware, software for optimisation of functions and signal processing - and to allow for development of T/R modules that have become substantially more powerful today. Nerads' conclusions are also supported by the fact that Raytheon company has obtained 80 million dollars for research, development and assembly of the radar for the Czech Republic. Raytheon, based in Massachusetts, is the fifth biggest defense technologies firm in the world and a producer of aerospace systems. If it were just a matter of disassembly and assem-

bly of the same configuration, most probably there would be no need for any research and development.

After this criticism, the government coordinator for communication on the missile defense programme, Mr. Klvaňa, contacted the ATM editorial office, asking them to publish a reaction to that analysis. It was signed by Luděk Pekárek with contribution of experts, who took part in measurements of the radar at Kwajalein. In principle, however, it appeared that Pekárek was not quite sure about how Nerad arrived at the dimension of the antenna diameter. Nerad's following answer made clear that there was a total chaos in concepts used in the government report, which was the core of all the mystifications. If, however, official experts have not been able to be clear about technical concepts, how can they ever know what they are speaking about?

# HOW TO WRITE ON WHAT IS SECRET?

**News servers, blogs and chats become relevant sources which would be considered marginal under normal circumstances**

BY ŠÁRKA SPEVÁKOVÁ

One thing nobody can complain about is a lack of articles on the radar planned to be located in the Czech Republic. Since early 2006, when technical consultations took place between representatives of the Ministry of Defense of the Czech Republic and the American side, there has been a veritable explosion of pages on the topic. Most dailies have published special supplements and most news servers have assigned special sections on the radar. The majority of them are based on official materials of the Czech government and are focused on geopolitical context. Technical parameters of the radar are dealt with only by a fraction of them. No won-

der. That area is clouded in a misty haze of inaccurate information, absurd claims and references to "classified" material.

For a science writer, penetrating into so far unexplored realms of science, research and technology always means a big adventure. He or she can rely on a certain set of conventions of professional science: expert articles appear in prestigious, peer reviewed journals; concepts are accurately defined; all data are verifiable, scientists sign with their own names and knowledge is exchanged at seminars and conferences. In case of the XBR radar that is planned for Brdy on the elevation point 718.8, all these principles have been violated. To write on the radar thus means to depart from standard processes.

Officials pretend to know something that nobody else can know because it is a secret. A question arises that every science writer must ask: what and who is to be

taken as a relevant source? The official documents present contradictory data and argue that the matter is classified. Experts react by presenting their analyses, calculations and numbers. Common sense says that the experts' views should at least be taken into account and that the officially provided information is, with a probability close to certainty, unreliable (see article: The big mess of missile defence).

When surfing on the internet one cannot ignore frequent complaints about other media – people who search for reliable information on the radar in national newspapers or TV are not finding it. There are voices that the guards of democracy have turned into bodyguards of the government; that the Czech journalists are inconsistent in their views and therefore lack credibility. When asked directly, though, colleagues from science pages of the broadsheets say: Why, we have written on the radar as early as a year ago!

After you go on asking, they admit they relied on official military data. They also note: A radar is not science! This cannot be argued. To write on technical parameters of a radar that should be placed in the Czech Republic means in fact writing on something that does not exist. How can you be expected to write about something you cannot touch, you cannot go to see with your own eyes? Where large contradictions prevail? It can be only guessed which parameters such a radar must have to be able to accomplish what it is planned to do. And can one rely on independent experts? Many of them have already retired. Have they lost touch with the recent developments?

On that, Kaucký says: "To be or not to be in the center of developments of anything is relative. It is true that I have retired from the Ministry of Defence in spring 2004, but I don't feel in the least a decrease in information and limitation on possibilities of further study of all innovations, technologies, test results, or development projects. On the contrary, as a freelance journalist I have much more time to study the literature, I have incomparably better conditions both from the point of view of access to information (international exhibitions of military technologies, rapid internet I could only dream of when working for the ministry) and as an analyst. You don't get rid of precious old contacts. And of course I have no access to secret information, but an analyst is a rather special person – he gets two items of reliable data, he calculates the third, and the fourth he is able to derive from pictures."

Whether the calculations of independent experts can be relied upon or not is something the bloggers on the web beat their brains over too. On

<http://blog.aktualne.centrum.cz/blogy/tenaruv-blog.php?itemid=3266>

for instance they ask: Why do you think independent experts provide unbiased information? Perhaps the most pregnant answer may be the one given by m&m: "Because the author takes the risk and openly says everything that can be verified in public discussion. From the side of the government propagators, on the other hand, we can hear that everything is secret and unclear all the time..." Indeed, even those who publish under a pen name are taking the risk – their identity, with the limited number of experts with given knowledge in the Czech Republic, could probably be easily deduced.

As a result, news servers, blogs and chats become sources which we would consider marginal under normal circumstances. Now it is there the biggest discussions take place – even the technical ones.

On the other hand, various forms of defamation of independent critics can also be found on blogs. Often they are denounced as "red Bolsheviks": if they are not in favour of the radar, they must inevitably be in favour of Russia. The two sets of "communists" and "experts" cannot overlap. For instance Pavel Budil (alias) attacked Hlobil for having been a zealous servant of communists and a deputy of the National Assembly for the Communist Party of Czechoslovakia in 1956. This however turned out to be absurd, as at that time the little Hlobil was

attending 7<sup>th</sup> grade of elementary school.

No wonder then that the radar is a science writer's nightmare. His/her task is to provide intelligible information on a given field so that they can be understood by a reader who hasn't time enough to gather the data and classify it. Thus the science writer should define the areas where he is dealing with facts, and the areas where speculations begin. Here, however, both areas overlap. As a result, a question arises which I otherwise try hard to avoid, but which presents itself rather persistently in this area full of anomalies and paradoxes: Which side am I on? Or maybe: Who is fooling whom? The answer is plain enough. The U.S. Administration is fooling the Czech Administration and the Czech Administration is fooling its own people. Maybe the point is not the radar as such, but the possibility to place a foreign army's base on the territory of the Czech Republic. This is something, though, that the Czech public is considerably sensitive about – it still hasn't overcome the trauma of Soviet military presence, nor German occupation. Anyway, this is what the public opinion surveys have shown, too – two thirds of the population don't want the radar here.

# SCIENCE STORIES FROM OUT OF THE FOREST

Finnish science journalist Helena Telkäranta lives in the heart of the forest and works successfully. But how?

BY ULLA JÄRVI

Her small house is located in Tammela, some one hundred kilometres Northwest from Helsinki. Helena Telkäranta lives in the middle of a Finnish forest. "When I am working on a piece of writing I often go to the forest to think. That is where the story begins to take shape. As I walk, sentences come into my head gradually forming an entity. In the forest I feel alert and calm. The forest is like a workroom with space for thinking." Helena, a science journalist, recently received the Science Journalist of the Year prize in Finland.

She can literally step into her huge workroom from her doorstep. "I can walk up to ten kilometres without seeing a house, a road or a field. Forests this large are nowadays quite rare in Southern

Finland. In many other areas the forest is broken into smaller patches by farms, villages or towns", she says.

For Helena, the forest is a safe place. Ever since she was a child she has found her way in the forest and says that she rarely gets lost. Her two dogs, Pinja and Tessa follow their mistress, one close by, the other in the vicinity. "In the forest close to my house I walk without a map or a compass, but for longer walks I take a map with me. A couple of times I have been completely lost here in Tammela, but my Lapp dog Tessa has always brought me back home when I tell her to do so. She notices the insecurity in my behaviour when I am lost. If I give her the command "home" in this situation, she takes the lead and shows us the straight way to the house."

Helena is a freelance journalist, science writer and consultant with most of her customers in the capital city Helsinki. It only takes a good hour to drive from Tammela to Helsinki and she takes the trip twice a week. She tells smilingly that she

only visits Helsinki when she is forced to do so.

**Helena only goes to Helsinki when she is forced to do so**

On her laptop she has a broadband that comes to the house through the telephone line. A wireless broadband would be slower than the connection through a regular telephone line. "At first I had an eight-megabyte internet connection but I had a lot of problems with it. Then I was advised to change to a two-megabyte connection which turned out to work much better." She tells me that it is hard to notice by the speed of the internet connection whether one is in Helsinki or in Tammela.

Helena lives three kilometres from a small country village. There are some summer cottages close by, but also some permanent resid-

ents living at the edge of the forest. From her porch she can see a glimpse of the neighbouring house, the home of another freelancer, a translator.

She receives most of her work assignments electronically and hardly ever needs to travel to Helsinki, Helena laughs, almost with hint of envy in her voice. The translator's husband who is employed by the University of Technology in Espoo works partly from home. A little further off in the village live other IT professionals who also do a part of their work from their country home. Modern IT makes work from home technically as feasible as it is at the workplace. Home is becoming the workplace of an increasing number of people.

## Experienced journalist starts university studies

Helena lives alone with her two dogs. Her grown up children who live in Helsinki often visit her mother. Helena is not really afraid to live alone, but in recent times there have been more housebreaks than before also in the countryside. This is why she at least locks her car for the night. She has also made safety arrangements with the next door neighbour. "Any prospective thief will see far off that there is little to steal in my simple cottage", she says laughingly.

Helena began to write articles on nature, pets and environmental protection for periodicals in high school. She was supposed to become a biologist. "One of my friends who studied biology made

me choose chemistry after high school. My two children were born before I could get my studies properly under way. Working as a journalist I could support my family. I dropped out from university and entered worklife for years. I wrote both articles and manuscripts for television. I have also written books on animals and the environment." Helena's children are now young adults with homes of their own. At 43 years their mother has more time to herself. "In 2003 I decided that I want to study biology after all. I found out which books are required for entrance examinations and thought that I might stand a chance of getting in as I was one of the authors in two of the books."

The doors of the university opened to Helena and she has been able to study alongside her work. She says that she now studies only for her own pleasure and not to gain academic merits. Yet she is determined to graduate.

## What will happen to the elephants in Nepal?

Helena has always protected the environment in a calm and reasonable manner. She wants to act as a messenger and a facilitator bringing together the right people. As a journalist she has built around herself networks of experts many of which have often turned out to be useful for joining a concerted action for nature.

She has participated in various environmental protection projects of

the WWF and The Finnish Association for Nature Conservation. A few years ago a WWF project took her to Nepal where she became acquainted with the hard workers of



*Walking through the forest is part of her work: "Here the story begins to take shape.", says Helena. (Photo: Vesa-Matti Väärä)*

the nature conservation parks, the elephants. The mishandled elephants won her heart immediately. "I saw how these large domesticated animals were trained with violence and repression. In the evening campfire discussions with the elephant handlers I realised that these men also suffered under the heavy load of tradition. The illiterate Nepali handler, however, had no other source of information for training the elephants apart from their ancient tradition. I knew that outside Nepal I would find know-how and modern methods for training elephants. The elephant is a huge animal and training and managing it is not an easy job. When I became convinced that the Nepalis wanted to learn new methods I started to get them together with foreign experts with

the help of the then-secretary general of the Nepali WWF."

Development work was well under way when Helena became seriously ill. Following a routine operation she developed two embolisms in one leg. Her condition became extremely serious when an embolism travelled to her lung and caused pulmonary infarction. For a while she was close to death. Further examinations revealed a hereditary risk of spontaneous embolisms. "Doctors have forbidden me to cross the continents. My own physician went pale in the face when I told of my plans on Nepal. A long flight to a developing country and living in the jungle with elephants was out of the question for a person who might get an embolism from the slightest wound." Abandoning the elephants felt impossible despite all this, she says. "I have never been content with just writing about matters but have always wanted to make a change. Now I am forced to reconsider my life's work," she says reflectively while looking at the summer forest from her red cottage porch.



**Ulla Järvi** is a Finnish medical journalist, working in Finnish Medical Journal.

Translation: Maria Kuronen

# TRAINING ON THE WEB

## Creation of the World's First Online Science Journalism Course

BY JULIE CLAYTON AND JAN  
LUBLINSKI

On a hot summer's day in Munich in July 2006, 15 science journalists sweltered in a room together as they took part in a new adventure: they were to become mentors to other journalists - in Africa and the Middle East - to assist them in developing their science reporting skills. It was the start of the peer-to-peer mentoring programme SjCOOP of the World Federation of Science Journalists (WFSJ), which linked up experienced and less experienced science journalists. The mentors

who met in Munich were themselves from all around the world – from the UK, Germany, France, Canada, Egypt, Lebanon, Morocco, Nigeria, Kenya, Cameroon, Senegal, United States, Sweden and South Africa.

But this was to be 'distance mentoring' - the people they would be mentoring were in another country, and for some, in another continent and even a different time zone. So how would mentors and mentees manage to communicate, to share ideas and aim for similar standards?

The obvious answer was via the internet, and one idea which took hold during that hot week in Munich was to create a set of teaching resources that would be available on the internet, free to access, that mentors and mentees could refer to in their work. Maybe the heat had driven us crazy, but the two of us had somehow found ourselves volunteering to be co-editors of the

world's first Online Course in Science Journalism.

As we looked into the literature on e-didactics we quickly realised that it would not suffice simply to place book chapters online. Participants of e-learning courses read less than 50 % of the material offered. They understand only a fraction what they read and their motivation level falls quickly. Indeed, we ourselves experienced that such a project can only succeed through a combination of face-to-face meetings, dedicated distance tutoring, quick and flexible IT-support, use of various virtual gadgets offered by Skype, and, last but not least, a strong rapport between the participants.

We involved people with a range of experiences - as authors, translators and members of our advisory board so as to create a sense of ownership of the project. We canvassed for suggestions on what lessons would be most useful, and chose our authors for their skills as science journalists and for their experience of working with journalists in developing countries.

Now, two years later, the results are online for all to see. There are a total of 8 lessons, covering practical and conceptual issues in science journalism, for example, how to find and research stories, exposing false claims, how to pitch to an editor, turning crisis reporting to advantage and so forth – topics that are relevant to beginners in journalism as well as more experienced reporters and editors.

All lessons are available in 3 different languages – English, French and Arabic. WFSJ also now plans to translate the course into Spanish

and Mandarin. Because many of the mentees live in places where internet connections are slow and unreliable we began with a modest web-structure with very little graphics.

Our mentees responded with enthusiasm. Kimani Chege from Kenya wrote, "The Online Course is good as it helped me sharpen my skills as a science writer. What inte-

persuade journalists to join our first "test class" it was much more difficult to maintain a working group over several months.

"The interesting thing about tutoring is that you cannot predict what will happen next", says Christina Scott who is proud to be first online tutor in the history of science journalism. She spent many early mor-



*The Online Course has become a resource for discussions among mentors and mentees of the SjCOOP-project run by the World Federation of Science Journalists. Hadi Hassan, reporter at Al Taakhi newspaper (l) and Kawthar Abdalameer Muhssan, reporter at Aswat Al Irak newspaper (r), both in Iraq.*

rested me was the issue of fraud. It makes me more careful with scientists seeking to use me to get publicity." Abiose Adelaja from Nigeria found reassurance: "It makes me feel good that I'm going about my journalism the right way." And Godefroy Chabi from Benin has recommended it to many colleagues in West Africa: "They are using it to improve their skills and particularly to choose their story ideas."

After putting initial lessons online we faced a second, crucial step: How would we teach the course? While it was comparably easy to

nings and late nights trying cope with power failures, time zone and cultural differences. "Some people behave like cuddly teddy bears and turn out to be brilliant investigative reporters. Others show enormous potential but are juggling so many projects that their attention span is hopelessly fragmented."

But even if all the journalist's problems appear solved, there are new ones: "As a tutor, you soon realise that the biggest obstacle to home grown African science journalism is .... (drumroll, please) homegrown African scientists. I swear, it's easier

to get an interview with a Hollywood movie star than with the malaria researchers in Tanzania, or the Angolan science department."

Doha in February 2008. Other mentors and mentees are now making use of the revised course.



*Award Ceremony in Doha. Online Tutors Christina Scott (South Africa) and Armand Faye (Senegal) congratulate Esther Nakkazi ("East African" newspaper, Uganda) for having participated in the weekly Skype discussions on the new Online Course in Science Journalism*

Christina Scott took turns at the job with Armand Faye (Senegal) who together with our Canadian IT-expert Augustin Denis introduced the practice of "private Skypescasts", which have proven to be very useful if there are a large number of participants in one conference call. "We even use Skypescasts to invite scientists for virtual press conferences", explains Faye, who has already hosted discussions with scientists – home grown, but well selected – about AIDS research, the disappearance of African forest, or food security. The mentees then profit from an audio-file of the whole session to prepare their articles and broadcasts.

9 members of the "test class" (out of an original 13) stayed on board. They graduated with flying colours at an award ceremony in

But what may have begun as a learning resource for a group of journalists is now freely available to anyone with an internet connection. University teachers are welcome to incorporate the material into their lesson plans. At a workshop in Hyderabad in March 2007, for example, co-funded by UNESCO and SciDev.Net, university teachers expressed their desire to make use of the online course and made useful contributions and suggestions. Tutors in South Africa, the Netherlands and Latin America have also shown an interest.

But we must be clear on what it is not – the first Online Course in Science Journalism<sup>1</sup> is not a com-

<sup>1</sup> The Indian Science Communication Society (ISCOS) offers a one-year-course in science journalism with

prehensive university-level teaching module. It does not directly fit into the model curriculum for science journalism education recently developed by UNESCO (see links below). Rather it is a practical guide aimed at working journalists who already know the basics of journalism.

So where do we go from here? We would like to encourage use of the Online Course in different settings: in workshops for professional journalists, as an adjunct to university level tutoring, and online as a distance-learning tool. Do recommend it to your colleagues!

As Christina Scott puts it: "Tutoring is interesting, because it exposes wide gaps in perspectives about what makes for exciting science journalism, and it has opened up horizons for all of us in technology, international contacts, and that indefinable but important ingredient, a heightened awareness of what we do and how we do it."

So for an idea conceived during a sweltering week in Munich – it's hot!

**Julie Clayton** is Director of the next World Conference of Science Journalists, which will take place in London next summer: <http://www.wcsj2009.org>. She lives in Bristol, UK.

**Jan Lublinski** is a freelance journalist and trainer based in Bonn, Germany.

distance learning through correspondence. Unfortunately we have not been able to view the content of this course.

## The Online Course in Science Journalism

<http://www.wfsj.org/course/>

## The UNESCO science journalism curriculum

<http://www.wfsj.org/news/news.php?id=79>

[http://www.wfsj.org/files/File/news/2007/UNESCO\\_science\\_journalism\\_curriculum.doc](http://www.wfsj.org/files/File/news/2007/UNESCO_science_journalism_curriculum.doc)

## The UNESCO Model Curricula for Journalism Education for Developing Countries and Emerging Democracies

<http://unesdoc.unesco.org/images/0015/001512/151209e.pdf>



Julie Clayton uses modern communication techniques as she introduces the first lessons of the Online Course in Science Journalism at an internet-café in Nairobi.

## ABOUT

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