

Where does media results

2nd part: Ways out of an obvious dilemma

by Frank Gollnick

The first part of this article, published in the last issue of the „newsletter“, demonstrated the imbalance between science coverage in the media and actually available research results. Various causes of the existing dilemma of a distorted media coverage thriving on pure sensationalism were revealed. These causes obviously are found to a large part in the mechanisms of today's media practice where speed and viewer numbers are top priority. However, the consequences of this situation on scientific research as it is presented to the public are dire. To the most part, citizens are not adequately informed about scientific issues; science-related information is characterized by a serious imbalance and incompleteness. In some respects, this leads to a distorted perception of risks and – through media coverage of research done into potential health risks of mobile communications devices – to misinformation. This article will show that this has been known for quite some time and that there is some effort made by EU bodies up to newly founded journalists' associations – to find a way out of this dilemma.

A few weeks ago it happened again: The theoretical physicist Bo Sernelius from Sweden, up to this point quite unknown even in scientific circles, published a scientific paper in a special journal of physical chemistry titled: „Possible induced enhancement of dispersion forces by cellular phones“ [1]. There he describes a theoretical mechanism of effects from electromagnetic fields – similar to those as are used for mobile radio transmission – on biological cells, e.g. blood cells. The potential enhancement of magnetic forces between particles is discussed based on a large number of formulas. Sernelius concludes that his paper shows there could be effects which previously have been ignored. However, the possible consequences of such effects on biological tissue (he refers to the theoretically calculated enhanced magnetism between two red blood cells in the human blood) would be purely speculative at this point. So the paper should not be seen as proof of harmful effects from mobile phones.

What did media make of this? 'Wissenschaft.de' wrote: *“Model predicts clumping of cells due to alternating fields.”* [2] A news of 'Presstext Austria' was titled: „Mobile phones can theoretically damage blood cells.“ [3] And the 'Rheinische Post' hastily announced: *“Researcher: Mobile phones lead to cell clumps.”* [4]

Headlines were even worse when Hungarian scientists presented preliminary data on possible reduction in sperm quality and numbers caused by frequent mobile phone use during a meeting in June in Berlin [5]. Obviously, some of the journalists were especially intrigued by the combination of sex and mobile radio. When reading the above mentioned news

coverage of research come from

items, you quickly see for yourself, that this is not what the term 'adequate information' stands for. But the mechanism behind this is clear: Sensationalistic headlines and news stories help newspapers and online articles to get the desired attention, and the respective journalist possible gets the attention of his editor. Otherwise scientific information might not be published at all and might even land in the wastebasket. This would not be desirable from the perspective of science either. New insight gained by research should be brought to the public, as comprehensibly prepared as possible. Scientific ivory towers are not what modern world needs. So, how can we find a way out of this dilemma?

The existing dilemma of risk and perception communication can be roughly characterized as follows:

- Media in Germany mostly report on risk perception of uninformed concerned people and laypersons, and less so on expert risk evaluation.
- Journalists are caught between their wish to get public attention and the need to provide reliable information, and often are not sufficiently educated. The consequence is that
- public opinion is based primarily on the subjective feelings of self-appointed experts instead of scientifically validated assessments.

However, there is thought being given to these matters in order to find solutions to the dilemma, and a number of activities is undertaken. Whether suggested approaches that are mainly theoretical will actually be effective, is an open issue. Activities done inside or outside journalistic circles to improve this situation, can be roughly characterized by the following catchwords:

More efficiency, improved media self-control, easier access to uncompromised scientific information.



“Assessments performed by unqualified persons can endanger people or at least cause undue concern.”

More efficiency

In December 2003, the German Commission on Radiation Protection (Deutsche Strahlenschutzkommission, SSK), issued a recommendation titled: **“Requirements for expert determination of exposure to electric, magnetic and electromagnetic fields.”** [6] There is a passage reading: *“Public discussion about potential health damages from electromagnetic fields repeatedly demands expert reports to determine and evaluate a specific exposure situation. The SSK is concerned about the fact that experts have been appointed by various agencies according to very different criteria. Reports prepared on this issue are characterized by considerable qualitative discrepancies. ... The problem has prompted the Commission on Radiation Protection to design a catalogue of minimum requirements allowing [the identification of] scientifically qualified experts for the determination of exposure to electric, magnetic and electromagnetic fields ... Assessments performed by unqualified persons can endanger people or at least cause undue concern. They can also lead to unnecessary expenditure. It is practically impossible for laypersons to decide whether a given assessment meets specific quality standards, or whether claimed health damages are realistic.”* Of course, the term “laypersons” does not only stand for normal citizens but also for judges, lawyers or journalists, etc., who are not specially educated. In a statement on this issue, the Austrian ‘Forum Mobilkommunikation’ (FMK) reports that also in Austria *“there are more and more self-appointed ‘electrosmog experts’ stoking up trouble.”* At least

for measurement technology, there are now official attempts to act against sham experts. It is certainly necessary too – or even more so – to take action regarding the assessment of biomedical or health-related research results. A corresponding recommendation is still lacking.

In a press release issued in early 2003, the German Volkswagen Foundation reports on a **“Scientific Journalism Qualification Program”** [7] that was initiated in cooperation with the Bertelsmann Foundation and the BASF AG. *“This projects aims to promote the education of scientific journalists and to make it easier for scientists to cooperate with media. The project partners intend to instigate a new course of study for young journalists as well as further education seminars for already established journalists; moreover, media trainings for scientists will be offered.”* This is a worthwhile approach that – as we will see later on – has already been put into action by others.

As early as in September 2002, the European Commission in Brussels published the **Action Plan “Science and Society”** [8]. This document introduces a new strategy to make science more accessible to European citizens suggesting 38 single actions to reach this goal. In a preface, Philippe Busquin, Member of the European Commission Research, Commissioner for Research, emphasizes *“... the enormous amount of progress that needs to be achieved in this connection: while scientists still enjoy the trust of Europeans, half of the Europeans interviewed said that they were interested in science and many consider themselves to be poorly informed.”* The action plan comprises various objectives, such as the *“promotion of scientific education and culture in Europe”, „science policy closer to the citizens“, and “responsible science at the heart of policy-making”.* Single actions are e.g. *bringing together representatives of science and media (action 2), creating a special award for journalists and scientists devoted to the mediation of scientific information targeting the general*

public“ (action 3), but also the launch of internet services and specially designed databases to provide media with usable information. Under paragraph 3.3 of the action plan “Use of expertise“, it is stated: *“We need experts to reassure us, to warn us and to shed light on complex and often controversial issues of the day.“* But further, *“... there is nevertheless a tendency for the process of using expertise to be contested and mistrusted. Firstly, science is often perceived as dealing with certainty and hard facts, whereas in reality this is rarely the case, particularly at the frontier of research. Scientists are naturally cautious, and the advice they provide is often wrapped in caveats. There may also be more than one school of thought, or there may be maverick voices arguing against the mainstream. There can then be a sense of frustration and despair when experts fail to provide simple answers to apparently simple questions. The conclusion: ‘Even the experts don’t know what they’re talking about!’ A more coherent interface is needed between the providers and receivers of advice, with mutual understanding and clear communication between the two.*

Secondly, policy-makers at all levels do not always find it easy to tap into the resource of knowledge provided by the diversity of scientific cultures and range of specialised centers of excellence in Europe. At worst, they are open to allegations that only ‘tame’ experts are selected, known to support pre-formed

policy decision. There needs to be a more systematic and open approach, at national and European level, to identify the best expertise at the right time.“

That’s very true – and, of course, it is true not only for policy-makers but also for media representatives as the most immediate and effective link between science and public.

Consequently, in September 2002 a **special issue of “FTE info – Magazine on European Research“** of the European Commission was devoted to the topic „Talking science“ [9]. A number of articles very competently addressed the problem from various perspectives. Besides the relation of researchers and journalists, the role of publishers and the role of visuals in science coverage, the internet was thoroughly discussed in a contribution titled “Web Utopia?“. Let us take a look at the editorial: “Sciences + media =? ... To explain this gap – which some would describe as a

“There needs to be a more systematic and open approach, at national and European level, to identify the best expertise at the right time.“



chasm – scientists often stress the fundamental incompatibility between the job of research and the practice of journalism. Whereas discipline and precision over a long period are the hallmarks of scientific research, speed, simplification and emotion are what the media are seeking.

Yet on closer inspection is the work of researchers and journalists really so different? Is not the job of the scientist to investigate the 'players' of this world and the 'stars' of the Universe to reveal their lives, their interactions and their secrets? And must not the journalist be objective, gather evidence and cross-check sources to reveal 'the whole truth'? ... Are they not both 'reconstructing' reality by means of an account which obeys certain rules and conditions? ... But we can – or should – see in this chasm one more indication of the distance which separates the 'two cultures' ... Even though, as usual, the reality is more subtle. Some scientists have become genuine media professionals, veritable stars of science, while some journalists possess a knowledge of science that is the envy of many researchers."

Is it not so bad really, after all? No, it IS bad. There is still much amiss at least with public opinion making (through media) regarding the state-of-the-art research into health risks from mobile radio. Obviously, working conditions of journalists still compel them to ignore common sense much too often. We are faced with the demonstrated results on a daily basis. It is encouraging though that the problem is at least recognized now, even at the highest political level, and measures are planned to be implemented on a broader basis.

One of the first positive results of this discussion in Germany is the implementation of the new course of study "Science and Journalism" (bachelor and master degrees) at the University of Dortmund since October 2003. Contrary to the course of further study "Science journalism", which is available at the Free University Berlin since 1999, this is a six semesters

bachelor's degree full-time course. Contrary to previous models developed at some universities in Germany, in Dortmund the priority is not to prepare journalists to become science writers for big newspapers, but to cover many different topic areas, journalists who are consumer-oriented and have the corresponding background knowledge. We will deal with this aspect and its significance for many local newspapers further on. Besides the major, students can select among three minors – natural sciences, engineering sciences, and data analysis. During the ensuing master study course, the focus is on one single discipline. The majority of the planning commission was against a philological module. *"These skills are already taken care of in most newsrooms. But there is often a lack of expertise in natural sciences"*, Günther Rager, the director of the Institute explains.

More details on self-definition and foci of the about a dozen journalism study courses and communication studies institutes in Germany are found in the **articles of Siegfried Quandt, Ruth Reichstein and Lothar Hausmann** in [10]. According to them, Claudia Mast, Professor of Communication Studies in Stuttgart Hohenheim, has *"... taken up the cause of science transfer as our central focus"*. She holds lectures in newsrooms and writes for corporate magazines in a comprehensible way so that laypersons can understand, or journalists who only wanted to know how communication experts go about mediating between science and public. In his article, Professor Siegfried Quandt of the Seminar of Specialized Journalism and History Didactics at the University of Gießen demands to tear down the walls between the different areas in classic science journalism, and to give more attention to teamwork in the newsroom to improve the understanding of scientific issues that are of public interest: *"There are principally two reasonable ways to reorganize the newsroom: Science newsrooms as such are disbanded, and each classic area or new team includes at least one editor who is*

scientifically educated in his field (i.e. politics, economy, culture). Or there are specialized media or special programs that provide a broader scientific input; it is not sufficient – as is done by traditional science newsrooms – to draw attention to natural sciences, medicine and technology as they are; science also comprises social or cultural issues.

But a dialogic model such as this scarcely exists on both sides. Scientists lack media skills, journalists – even science journalist – lack special skills. Instead, they one-sidedly emphasize their presentation skills; scientists respond by emphasizing their special skills – and the old battle is rekindled. We should put an end on this for the sake of general interest.” [10]

Similar educational efforts are being made by journalists themselves – if only more or less sporadically –, by established journals and, increasingly so, by papers launched at university departments, such as ‘Message’, ‘PR-Forum’, ‘Journalistik-Journal’ or ‘Dimensionen’ that are quite self-critical in part. The latter is published by the above mentioned Institute of Journalism and Communication Studies at the FU Berlin. The **‘Handbook Science Journalism’** was also published there, as well as a current list of the twelve most important **associations of science journalists** in Germany, Austria and Switzerland [11] – all of them willing to contribute their share to achieving the urgently required improvement of the described situation and a better education of reporters themselves. Issue 26 of ‘Dimensionen’ of spring 2004 reports that the **Deutsche Presseagentur (dpa)** “which has been criticized quite often for its small science newsroom” has gone from two to three full-time science editors at headquarters. Thus “... dpa has responded to the increasing importance of science topics in the media,” the responsible editor says. This is a step in the right direction that should not be underestimated regarding the situation depicted in the first part of this article.

“Scientists lack media skills, journalists – even science journalist – lack special skills.”

Improved special skills on the side of scientists – regarding the handling of media, that is – shall be achieved by **media trainings for scientists** which have been increasingly offered over the past few years by different organizations. This is also part of the direct implementation of the above mentioned catalogue of measures advertised the European Commission: “*The Commission, in cooperation with the Member States, will set up a study group comprising journalists and representatives of press in order to examine the best way of ensuring effective dissemination of scientific information at European level, for example by promoting the establishment of a **European scientific press agency**, or by facilitating the creation of a network for the exchange of information by professionals destined for the general public.*” Media trainings are presently offered by the above mentioned Chair of Communication Studies in Berlin, as well as by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG), the Leibniz Society, the University of Münster and the University of Stuttgart. [12] Improving the quality of science information presented in the media – that is the goal behind the activities of the **Press Conference Health Politics** (Pressekonferenz Gesundheitspolitik) newly founded in 2003, and of the **Press Conference Science** (Wissenschafts-Pressekonferenz e.V., WPK) that was founded already 17 years ago. According to its press release of October 2003 [13], the Press Conference Health Politics – that is comparable to the Bundespressekonferenz (Federal Press Conference) and the WPK – will invite

“The all-clear was never given. If at all, it is published somewhere in the back of newspapers, and almost never on TV.”

selected experts to attend symposiums. *“Health politics and the current social debate – this was agreed upon by the founding members, Berlin journalists who write on these issues –reflect the state of society in general: a lack of transparency, daily controversies, uncertainty and misunderstandings – all this is also typical for media work resulting in citizens being increasingly disoriented. This is also true of opinion makers and multipliers. The Press Conference Health Politics shall help to improve the quality of journalistic work in this area by striving for an improved quality of information and closer observation of ongoing processes.”*

The WPK is an organization of 170 active German science journalists, about 60 supporters, and a committee of 30 renowned personalities from important science organizations and institutions. The **online magazine ‘WPK Quarterly’** is worth mentioning due to its ambitious content (in the sense of our topic): Even the first issue (no. IV/2003) contained various articles (above all, “Fernsehen: Mythos Wissenschaft“ and „Warnen ja, aber wo bleibt die Entwarnung?“ – “Television: The Myth of Science“, and „Warnings are good – but why are we never given the all-clear?“) providing critical insight into the daily work of journalists, resp. their working conditions – a smart analysis of the dilemma that is addressed here [14]. Read this sample (on genetics debate): *“... Not one word with regard to the devastating appraisals done by several independent scientific institutions on the research of the Scottish scientist revealing considerable methodological and technical mistakes.*

There have been quite a few of such horror stories over the last 15 years of genetics debate. In fact, every single one of them made the headlines. The all-clear was never given. If at all, it is published somewhere in the back of newspapers, and almost never on TV. So, after many years of intense debate, it should be allowed to discuss – for example with regard to plant biotechnology – whether media really should make opinions or should only reflect them. Journalists have to cover many topics in parallel, and fast. It seems to be impossible to think much about the past under such conditions. But my hypothesis is that it is the lack of reflection on the past that propels us forward into a future more and more constrained.”

One can only hope that such critical voices from among the members of Germany’s largest association of science journalists will be increasingly listened to and – since they come from their own ranks – will be taken seriously by journalists. Supported by the Robert Bosch Stiftung, the purpose of this organization in any case is *“to implement a communication platform which will be permanently extended and become the central agency for ‘networking’ in its best sense“* via the internet platform of the WPK.

Improved media self-control

The previous paragraphs already hinted at demands being made concerning the compliance with ethical standards and an improved journalistic self-control. This is explicitly addressed by the authors of the **concept paper “Guidelines for a respectable journalism – an ethical code for media“** that is mandatory for all those being part of the journalists’ association “Netzwerk Recherche e.V.“ [15]. The press release asks: *“Do media still function as a tool for disseminating information, and are there standards that could prevent excessiveness? Or is balanced press coverage overpowered by gossip magazines, yellow press and service journalism? ... The most important goal*



is to create a code of ethics for journalism in general as a positive orientation, and to extend the existing press code in three essential aspects: the importance of journalistic research and the duty of public authorities to provide information must be emphasized; the strict separation of public relations or advertising and editorial content has to be standardized, and the legal protection of informants has to be ensured.

The 'Netzwerk Recherche' moreover recommends a reform of the German Press Council – the only body that would be able to establish standards for the press. The authors demand more publicity and transparency, more pluralism within the council, and intensified efforts to fulfill its tasks of media control.“ [16] The goals addressed in this paper all point convincingly into the direction of improving the relations between science and media. “A code of ethics is a tool for self-regulation of media professionals. An ethics code for journalists allows the self-control of media system players. If a model such as this works, it guarantees that future attempts by the State to regulate press can be fended off and that the sphere of social communications will remain autonomous.“ It is a legitimate concern that the State would intervene when the decrease in quality of media coverage is permanent. Curiously, one of the four signatories of the concept paper and President of the 'Netzwerk Recherche' is Dr. Thomas Leif, chief reporter television at the SWR regional channel in Mainz. It was this channel that produced a documentary program on mobile radio last summer which, according to experts, was in no way “well-researched“ or “objective“. In spite of protests, it even was rerun several times. Well, in the end it's a long way from ethical standards to practice.

Besides the above mentioned goals, the internet pages of 'Netzwerk Recherche e.V.' [17] show that the organization also focuses on the freedom of information in Germany.

Similar goals regarding self-control, including the reform of the German Press Council, are also claimed by the '**Organization for the promotion of journalistic self-control**' (Verein zur Förderung der publizistischen Selbstkontrolle) that was founded in February 2004. It is represented by Dr. Horst Pöttker, Professor of Journalism at the University of Dortmund, who is its president. The fact that first reactions of “... the unionist organizations Deutscher Journalistenverband (German Journalists' Association) and Verdi Fachverband Medien, dju (Verdi Association Media), which - together with the Publishers' Association – are part of the Press Council, were very critical and defensive“ [15] shows the resistance the organization is confronted with in its own ranks.

Easier access to uncompromised scientific information

But even improved journalistic self-control is not a patent remedy to eliminate the existing dilemma in risk and science communication. There is the impression that journalists lack fast and easy access to uncompromised information on the background of mobile radio debate. In fact, it is still very difficult to distinguish between biased information that is influenced by particular interests and objective, mostly undistorted information. The first part of this article already demonstrated that uncompromised scientific information actually is found only in special journals validated by scientists, so-called “peer-reviewed“ journals. Oral statements of scientists can be influenced by particular interests, too. The thorough reading of original publications is scarcely possible, due to the lack of time – even less to compare different positions. Comprehensive surveys, as objectively written as possible, as well as specialized databases can help.

In recent years, a few **book publications** stood out from the mass of biased publications. Most recommendable would be the book written by Prof. Rein-



hold Berz: “Krank durch Mobilfunk?” (“Getting ill from mobile radio?”), published in 2003 [18]. From the perspective of a physician educated in occupational medicine and natural medicine, Berz deals with the controversial topic in all its aspects and generally paints a comprehensive picture. Numerous references, illustrations, graphics, cross-references and internet links make this book a useful basic textbook that every (science) journalist who wished to competently deal with mobile radio should read. Almost as useful, albeit not as well-researched, are two books written by the physicist Prof. Ulrich Leute: „Was ist dran am Elektrosmog?“ (“What is electrosmog about?”) [19], and „Wie gefährlich ist Mobilfunk“

(“How dangerous is mobile radio?”) [20]. He puts the emphasis on comprehensibility, also for laypersons who do not know much about technology. The book of Prof. Norbert Leitgeb titled: “Machen elektromagnetische Felder krank?” (“Do electromagnetic fields make us ill?”), also offers a quite comprehensive survey of the topic but requires a little bit more basic scientific knowledge [21].

Scientific **databases** containing information on special literature there are many, but only few are freely accessible and organized as to make information usable by non-experts without compromising it. Although the freely accessible literature database **PubMed** [22] of the American ‘National Institutes of Health’ (NIH) comprises practically all original publications that are relevant to the issue of mobile radio including titles, authors and summaries (abstracts), it does not offer any further help. Thus it is a valuable tool for specialists, but is scarcely usable by laypersons since the (English-language) information is not accordingly prepared or structured, or made more comprehensible (however, at least it is neither compromised). The commercial American **EMF Database** of Information Ventures [23] contains more than 33,000 ‘peer-reviewed’ and non-‘peer-reviewed’ entries (state: 2003) from specialist publications and meeting contributions (lectures, posters) covering the whole spectrum of research into biological effects from electromagnetic fields (low-frequency and radiofrequency). Approximately one-third refer to the radiofrequency spectrum associated with mobile radio. Partially, also foreign-language contributions (e.g. Russian, Japanese) are offered as English-language abstracts, and these short summaries in part come with further information taken from the respective publications. For journalists who do not exclusively deal with these matters, this database is off-limits too, due to the high cost. Moreover, by the extensions made by a scientific team it is theoretically in danger of compromising information.



There are many other freely accessible or commercial services, databases and websites presenting the topic “Research into electromagnetic fields and mobile radio“ that are more or less independent and of different quality and quantity. But this makes it rather more difficult for individual searchers to find a particular information. Bundling and better channeling would be appropriate here. There should be a neutral board steering users to where they can find a specific information according to content properties. Objective information has to be made identifiable for users; we need more clarity for non-insiders and persons only occasionally dealing with these issues! A first step toward this goal is made by the above mentioned books.

A highly remarkable approach was made also by the Research Center for Electromagnetic Environmental Compatibility (femu) at the University Clinics of the RWTH Aachen. The new EMF portal developed there over several years of work is in its trial phase and shall soon be opened to the public. Besides providing comprehensibly prepared basic information on electromagnetic fields and a comprehensive glossary, the focus is on a comprehensible, structured and clear presentation of the contents of scientific, ‘peer-reviewed’ literature by way of different search levels. Adapted to the informational needs of the users, it is able to identify cross-references, to search by content percentages, to perform fast searches, etc., enabling the user to deal with the complicated scientific literature without much previous knowledge and to make his own assessment of issues. The focus is on the unbiased extraction of core information from specialist publications. For the nearer future, the evaluation of 7000 presently included peer-reviewed publications is planned, more than 2000 of which refer to the radiofrequency spectrum. After being opened to the public, the EMF portal thus will help immensely to gain easier access to uncompromised first-hand information from the publications of researchers them-

“Scientific publications not only serve to disseminate research results, they also constitute a tool for evaluating the quality of research teams.“

selves. Another problem in this context is that media mainly take notice of new publications – a problem that cannot be resolved by databases due to the inevitable time delay. But the femu database will certainly be extremely helpful when examining issues in depth.

Another organisational or financial problem is the access to special publications. Mostly, they are published in pricey journals which are too expensive nowadays even for many libraries, due to increased subscription fees. Therefore, less and less special journals are found there, and you have to pay dearly for access. At present, only a small part of scientific articles is published in online journals, partially due to their (still) lacking reputation. So also the European Commission with the European Commissioner for Research Philippe Busquin is worrying about a more efficient access to scientific publications. On July 15, 2004, the commissioning of a study on the economic and technical development of the scientific publishing market in Europe was announced in a press release [24]: *“The study will deal with the main topics of the current public debate, such as the future of printed scientific reviews, the risks associated with increases in the price of publications in terms of access to information for researchers, open access to research findings for all and the need to reconcile authors’ rights with the economic interests of publishers. ... Scientific publications not only serve to disseminate research results, they also constitute a*

“Obviously, media find it difficult to take a look behind the scenes, so to speak, and to reveal the background of scientific knowledge.”

tool for evaluating the quality of research teams. Our objective of establishing a genuine European Research Area and our aim to raise the profile of European research mean that we have to examine the scientific publishing system. ... The future of scientific publishing has been at the center of discussions for a number of years, leading to the adoption, in October 2003, of the Berlin Declaration calling for open access to knowledge. The number of scientific periodicals throughout the world exceeds 20,000. Every year about 1,5 million scientific articles are published worldwide. ... Today, one in five publications is accessible online and more than 1000 titles are listed in the 'Directory of Open Access Journals'. Over the last ten years, however, the average annual increase in the prices of scientific reviews has approached 10 %.

Of course, 'online' does not mean 'free', as even online journals often make about 30 US\$ per downloaded original article for non-subscribers. The more important is a database like the one of 'femu' in Aachen that tries to make the whole range of relevant literature generally accessible.

First conclusions


First conclusions could be the following:

1. Existing difficulties have been known for quite some time, even in journalist circles, and often are addressed accurately and self-critically.

2. The countermeasures taken – and there are more by the day – are still ineffective, but gaining ground. A tendency of improving the situation, to find a way out of the dilemma, can be seen. It is primarily the increased special knowledge on both sides, of journalists as well as scientists, that makes a difference here. A good example of the new hope that is on the horizon could recently be observed: Besides a mass of one-sided contributions, there was also some objective press coverage of the initially mentioned study on sperm quality and numbers [5]. The exceptionally well-researched article published in the newspaper 'Die Welt' on June 29, 2004 [25] shows that things can really be improved.
3. Unfortunately, the contradicting unwritten laws and interests of both media and scientific world are still an obstacle to an improved objective dialogue.
4. Research tools for media AND for every interested person have to be further improved.

Those who think that such considerations are way to theoretical and scarcely relevant for 'real' journalistic practice – and even less so for local editors – it's true, many of the described ambitious attempts to find a way out of the dilemma probably seem totally irrelevant or to be the well-meaning advice of an outsider who 'never had to hold his own' there. It is certainly a long way from the plans of the European Commission to the desk of an individual overworked local editor.

And according to a study already published in 1988, it's just the daily press that holds the key to the way in which a purported or actual environmental problem is perceived in the public – a short "high" is followed by an ebbing away of attention; or a veritable "media career" up to being labelled the "toxin of the year" with measures being taken at the highest level [26]. In contrast, the local press partakes in this only at the peak of general media resonance, when the public is already fully sensibilized – as was the case with



the 'electrosmog' debate in Germany.

However, the picture painted in Swiss media can be fully different. A project report published in January 2003 by the research cooperation "Sustained mobile radio" of the ETH Zurich, says: "During the search for press articles one got the distinct impression that mobile radio health risks were not the 'big' journalistic issue of the nineties. Mobile radio health risks were not as 'sexy' in media coverage as the 'misuse' of reproductive medicine, genetics or nutrition." [27] And there is another basic aspect we did not mention so far, addressed under the headline "Press coverage construes media reality": *"The study also showed that the reality of press coverage is a separate one – media reality. In line with the findings of communication studies on risk communication, it was made obvious that scientific evidence sometimes is secondary. In fact, we could even say that research results are turned on their heads. The finding that mobile phoning while driving is a substantial risk for example was mentioned rather fleetingly in press coverage. Press coverage did not succeed in uncovering the limits of present scientific knowledge. The case of the coverage on 'Waldsterben' (the dying of the trees) was similar. Press coverage then neither succeeded in denouncing the limited scientific knowledge. Obviously, media find it difficult to take a look behind the scenes, so to speak, and to reveal the background of scientific knowledge."*

So should we stop too to take the addressed dilemma too seriously? No way. It is taken seriously by many, since there are practical ways to improve the situation. There are media trainings attended by scientist; network operators, authorities, foundations, and associations seek to instigate a dialogue with media and scientists equally, and, in school, children and young people increasingly deal with mobile radio and the science that is behind it. Comprehensibly prepared science gets more coverage in media. However, it is difficult to measure the success of these

efforts in public perception. New ways of mediating scientific issues are multifarious in Europe, but still experimental in part, even if very promising sometimes. The mobile radio debate in Germany – which is stuck at the moment – can only gain from such approaches.

Future outlook or actual reality? Science marathon, science cafés, and 'Research goes public'

Over the last three years (until the end of 2003), the project "**Research goes public**" ("Science goes to the broader public") [28] promoted by the Federal Ministry of Education and Research dealt with new ways of science mediation, as well as marketing and research communication. Two book documentations published by the 'Cologne International School of Design' at the FH Cologne on this [29, 30] had different authors writing on the marketing of research that becomes increasingly important in international competition, but also on current possibilities to present research results sensibly and efficiently to the public for an improved perception – a valuable basis for all those who want to deal more thoroughly with the practice of science mediating.

Last but not least, the magazine 'FTE Info' of the European Commission once again addressed the issue of mediating science to the public reviewing various new activities in Europe [31]: *"Who is the target audience? How can people be attracted? How to find the balance between scientific rigour and entertainment? The questions science museums have to deal with have been investigated during a meeting at the German Museum in Munich under the umbrella of the European network Ecsite. In workshops, over six hundred experts have taken a closer look at the present situation and, above all, at the future of institutions."* There is another example of a way out of the dilemma: *"... Madrid's Museo Nacional de Ciencia y Tecnologia which organizes 'conversations with research-*

“For the price of a cup of coffee or a glass of wine, anyone can explore the latest developments in science and technology.”

ers’ for children aged between 8 and 14 years. But the most surprising initiative, which has proved a great success, is the six-hour ‘science marathon’ held eight times a year. Amparo Sebastian, director of the museum, reports: ‘Spanish scientists, the best in their field, each speak for about twenty minutes on their chosen subject, followed by time for questions from the audience. The 120 seats in the hall are always taken right away so we have had to start putting up a screen in the lobby. Our initial idea was for members of the public to wander in and out for the various presentations, but we have found that people generally stay from start to finish. We cover everything from nanotechnologies to life in extreme conditions. They have all been very successful.’

This move towards a combination of rigour and conviviality seems to be evident just about everywhere. ‘We are moving away from pure popularization,’ concludes Ecsite’s Melanie Quin concludes. ‘The museum is becoming a place of dialogue, an interface between science and society. People already have some scientific knowledge and a certain scientific culture. They contribute their ideas and their questions. The museum’s role is perhaps gradually becoming that of a forum.’“

So why not organize similar events examining the state-of-the-art of scientific knowledge about mobile radio, e.g. at the Museum for Communications in Berlin?

Science cafés is another way to mediate science to the interested public reported on in ‘FTE info’: “They are springing up everywhere in the United Kingdom and France, and are beginning to appear elsewhere in Europe. Generally, you will find them in bars and pubs, but also in libraries, theaters or fast-food restaurants. ... A topic is announced in advance of these evening get-togethers. A couple of invited guests then kick off the discussion, in simple, jargon-free language, before answering the audience’s questions. The organizers start from the principle that no question presented is too stupid to be disregarded. A chair is on hand to summarize interventions, decide whose turn it is to speak, and generally mediate the discussion. ... ‘For the price of a cup of coffee or a glass of wine, anyone can explore the latest developments in science and technology,’ say the British organizers of these ‘free speech zones’.

In France, similar discussions are taking place in certain grammar school cafeterias, where, ‘cafés scientifiques’ informal discussions and meetings with scientists become school activities.

Some cafés scientifiques like to have a common thread. Copenhagen’s ‘Videnskabscafeen’, with its diversified and strongly motivated audiences, focuses on the relationship between science and society, and on how technology affect our daily lives.” [32]

It would be a huge surprise if press, broadcasting, etc., would not be interested in such innovative forms of knowledge mediating ... And thus we come back to media and the chances of further objectification in the stagnant debate on potential threats of mobile radio technology.

Frank Gollnick, Dr. rer. nat, former staff member at the Physiological Institute II, University of Bonn; he is now scientific consultant of the FGF



References/internet links

- [1] Sernelius, B.: Possible induced enhancement of dispersion forces by cellular telephones. *Phys. Chem. Chem. Phys.* 6,1363-68 (2004)
- [2] <http://www.wissenschaft.de/sixcmsdetail.php?id=239890>
- [3] <http://www.pressetext.at/pte.mc?pte=040407009>
- [4] <http://www.rp-online.de/public/druckversion/nachrichten/wissenschaft/medizin/43041>
- [5] Fejes, I. et al.: Relationship between regular cell phone use and human semen quality. Abstract, ESHRE 2004, Tagung der European Society for Human Reproduction and Embryology (2004)
- [6] <http://www.ssk.de/2003/ssk0319e.pdf>
- [7] <http://www.berlinews.de/archiv-2003/1212.shtml>
- [8] http://www.europa.eu.int/comm/research/science-society/pdf/ss_ap_de.pdf
- [9] <http://www.europa.eu.int/comm/research/>
- [10] *Journalist 10* (2002)
- [11] <http://www.wissenschaftsjournalismus.de>, 'Handbuch, 'Berufsverbände
- [12] <http://www.wissenschaftsjournalismus.de>, 'Medien Training
- [13] http://www.mediencity.de/index.php?art_id=2778
- [14] Katzek, J.: Warnen ja, aber wo bleibt die Entwarnung? *WPK Quarterly IV/2003*, 10-12 (2003) <http://www.wissenschafts-pressekonferenz.de/cgi-bin/WebObjects/WPKCMS.woa/wa/berichtPDF?documentId=4P4010056>
- [15] *Frankfurter Rundschau* v. 21.04.04, S. 9
- [16] <http://www.netzwerkrecherche.de/html/medienkodex.htm>
- [17] <http://www.netzwerkrecherche.de>
- [18] Berz, R.: *Krank durch Mobilfunk? 1. Aufl.*, Verlag Hans Huber, Bern (2003)
- [19] Leute, U.: *Was ist dran am Elektromog? 1. Aufl.*, J. Schlembach Fachverlag, Weil der Stadt (2001)
- [20] Leute, U.: *Wie gefährlich ist Mobilfunk? 1. Aufl.*, J. Schlembach Fachverlag, Weil der Stadt (2002)
- [21] Leitgeb, N.: *Machen elektromagnetische Felder krank? 3. überarb. Aufl.*, Springer-Verlag, Wien (2000)
- [22] <http://www.infoventures.com/emf.htm>
- [23] <http://www.europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/747&format=HTML&aged=0&language=DE&guiLanguage=en>
- [24] Jänz, H.: Machen Handys ihre Nutzer unfruchtbar? in 'Die Welt' v. 29.06.2004
- [25] Steger, U.: *Umweltmanagement: Erfahrungen und Instrumente einer umweltorientierten Unternehmenspolitik*, Wiesbaden 1988, S. 189
- [26] Schanne, M., Stalder, T.: *Mobilfunk: Publizistische Medien und die Thematisierung von EMF-Risiken. Schlussbericht des Projektes im Rahmen der ETHZ-Forschungskooperation „Nachhaltiger Mobilfunk“*, Zürich (2003) http://www.mobile-research.ethz.ch/var/sb_gysel_pref5.pdf
- [27] <http://www.research-goes-public.de> ; <http://www.zefo.de>
- [28] Mager, B. (Hrsg.): *Forschungskommunikation und Design*. Köln International School of Design, Fachhochschule Köln, www.research-goes-public.de (2002)
- [29] Mager, B., Hamacher, H. (Hrsg.): *Marketing und Kommunikation von Forschung*. Köln International School of Design, Fachhochschule Köln, www.research-goes-public.de (2003)
- [30] Wenn die Wissenschaft sich ausstellt. in: FTE info Nr. 41 der Europäischen Kommission, 20-23, http://www.europa.eu.int/comm/research/rtdinfo/index_de.html (2004)
- [31] Im Blickpunkt: Das Wissenschafts-Café. in: FTE info Nr. 41 der Europäischen Kommission, 24, http://www.europa.eu.int/comm/research/rtdinfo/index_de.html (2004)