

Science on Television
Alternating between Elitism and Levelling

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Often enough it has been argued that natural sciences and technology lie at the basis of our modern societies. To enable a democratic society to react in an adequate manner to scientific developments, the citizens have to be informed about sciences, both about their content and their social determinants and impacts. Apart from the educational system, the most important and nearly the only source of information about sciences are the mass-media. They have a key position in determining the relations between the public and the 'subsystem' of science.

In this context it is interesting to ask how science is represented on television. Which information is transmitted to the public about science? Which (if any) criteria are given for the assessment of science and its importance for society?

In view of these and more questions we have tape-recorded about 220 'scientific programmes' during two periods (january-march 1996, march-mai 1998) with a total time of 110 hours. 80% of the programmes were telecasted between 17.45 and 23.00 and their duration ranged between 15 minutes and one hour. About 80% of the productions are periodicals, mainly magazine programmes, but there are also historical, highly topical or entertainment programmes. 60% of the presentations deal with several subject matters. The contents are mainly technical, medical and environmental subjects. Often a qualifying attribute such as 'sociological', 'political', 'socio-economical', 'socio-psychological' is applicable, too.

During about 10-15% of the broadcasting time physics subjects were treated, partly in short films (a few minutes) in magazine programmes, partly in monothematic emissions. It are these physics productions on which we concentrate. Drawing a first conclusion we found that physics appears to be suitable for television owing to spectacular entertaining properties as well as to its history (which is reduced to the history of 'ingenious researchers'). Telegenic topics which occurred repeatedly times are chaos, astrophysics, research on ice, nanosystems and comets, for instance.

We have investigated in more detail several presentations (chaos, nanotechnology, astrophysical questions, 'dangerous comets') and compared them with each other. Regarding fundamental dimensions we refer to the work of Baerbel Freud, Dietrich Meutsch (1), Didier Dufresnoy (2) and others. No papers regarding the physical didactical specifications were available to us.

In view of 'picture discussions', performed within the frame of a pilot study on popular scientific pictures (3), we have attempted to register the impressions on different semantic and expression levels (sound and picture levels with respective sublevels - spoken texts, music, discussion, live or off sound, or studio broadcast, report, total or close-up etc.).

For the sake of illustration we report exemplary and very briefly some observations how scientists (in our context physicists) are presented in television. It is well known that there are more male

than female physicists, but astonishingly enough, in TV there seem to be only male ones, at least in our sample. These scientists are shown as individuals, responsible for the progress of science (quotation: 'Professor xy conquers the leading position in nanotechnology worldwide'). Even if this is not the case, their work is presented as top-research, as highly important and as brand-new; the researchers share the same qualities, of course. The context can be rather sensational: scenes before, after or in background show exploding volcanos, parts of spectacular movies or scenes from real-life accidents. In addition, the music can produce relations and meanings which go far beyond the spoken contribution. The camera comes quite often from below which results in a special authoritarian position of the shown person.

In our sample, scientists don't seem to be interested in thinking about and using a most simple mode of expression, in general. They seem to take knowledge of technical terms ('the universe decouples in one with a electromagnetic force and so on', 'as close as ten to minus forty-three seconds') for granted; nobody will explain or improve these expressions, neither the scientist nor the journalist. The authority of scientists seems to extend beyond the limits of their subject or their knowledge: Physicists are asked questions in politics, religion, economics, psychology and so on. In a word, scientists in TV are mostly presented as authorities (in the visual and the auditive dimension) which are not called in question or criticized. Their work is highly important, but in most cases so complicated that one cannot explain what is really going on and what it means for the public. Of course, these remarks refer to a kind of mean of the productions in our sample and are accurate for many, but not for all of them; there are exceptions and diversions from this coarse grain picture.

Our preliminary analysis leads to some tentative conclusions which we present in the following in concise form. There are several possible 'models' of scientific communication such as diffusion, translation, social education, 'ersatz'-knowledge, interpretation of nature and so on (cf for instance 5). We concentrate in the following on the two roles of the journalist as popularizer and as independent observer.

1. Popularizing science is traditionally seen as one of the predominant aims of scientific transmissions. But examples which succeed in this are very rare birds, at least in our sample. Where the possibilities of 'interactive learning' are considerably restricted, the 'comprehensibility' of the presentation should be given special attention from a didactical view. Instead, the journalists and the interviewed scientists often content themselves with false analogies or apodictic statements when faced with complex physical facts; in order to simplify, 'big mistakes' are accepted. The mere fact that didactically constructive productions in several parts are hardly broadcasted at all, means that the support of consideration and understanding which is typical of science, falls prey to mere 'information' and to a typical audiovisual consumption. The facts presented in scientific programmes are basically dependent on conventions and concepts and on the professionalism of the producers and their surroundings.

2. While more or less all programmes are characterized by a basic 'lack of scientific accuracy', there are surprisingly great differences. On the one hand we find productions (possibly with a

somewhat elitist tendency) which offer a considerably more precise presentation as usual; on the other hand there are productions which emotionalize and show a tendency to mystify the subject by suggestive close-ups, musical backgrounds and key stimuli. In agreement with the results of Didier Dufresnoy, we found this kind of differences in comparing certain French and German productions (4). One can work on the assumption that for these differences not only the producers and makers are responsible, but that they reflect social trends, too. In view of this it would be very interesting to compare scientific programmes in different countries (at this moment, a similar survey is carried out with regard to science news by Winfried Goepfert et. al.).

3. The productions investigated by us make use of partly outdated and partly rudimentary concepts of science and scientific work. The role of the scientist seems often to be given by the romantic ideal: alone, a genius, rather strange and sometimes incomprehensible like his science. Science is presented as truth, as something absolute and sure, which nevertheless incorporates elements of sorcery and magic. The impression is conveyed that science has an answer for each question, is able to get everything under control. We note that in most cases the scientists seem to help in stage-managing this picture of science; at least there is no protest. Following the politics of the Reagan era, heterodox concepts of scientific work and motivation, as presented in the 'Science Studies', have been challenged in the name of allegedly absolute standards of science ('science wars'). Television productions do generally not break a lance for differentiated views in this question. Sometimes, there are critical remarks about 'experts' and 'specialists', however, the social concepts of solving problems and of producing progress are hardly ever discussed.

4. Another model does not see science journalists primarily as bearers of scientific knowledge, but as independent observers who shouldn't act according to rules which are given by science (e.g. Matthias Kohring (6) even calls for a general uncoupling of journalistic reporting from the concept of science popularization). Accordingly, science journalism should stimulate the independent formation of public demands on science and has to deliver suitable orientations for social action. This function cannot be determined in the physics contribution in our sample. Indeed, as a rule the presentation tries to be as near to science as possible and seems to be led by the internal demands of the scientific issue. In most cases, the producers own positions do not become apparent. This meets with the impression of a uncritical attitude towards science and scientists in general, and in some discussions (e.g. when the scientist begins a sentence which the journalist friendly completes and vice versa) with a kind of silent complicity.

In summary, our preliminary analysis leads to the conclusion that the examples which we investigated convey neither adequate popularized scientific knowledge nor adequate social orientation. It is not primarily science or its social impact that is presented in the scientific programmes, but rather the medium television itself; in this sense, scientific programmes are more or less kind of public relations for science.

Admittedly, these statements are somewhat oversimplified and possibly a little bit provocative. In reality, there are many

players in the game and not only one or two which may be blamed. Nevertheless, to confine the discussion to the interaction of scientists and journalists seems to be meaningful in a first step due to its special importance.

Of course, there is no instant recipe to clear the deficits, but one may argue in two directions: 1) It is known that in general the working conditions of (science) journalists are quite stressful: there are too few journalists and a sometimes immense pressure of time etc.. These circumstances clearly may afflict the quality of productions; e.g. they don't allow for long and careful investigating about scientific topics and their impacts on society. A change in these production conditions would be necessary and very desirable, but it is not easy to see how it could be performed in the actual situation. 2) Science has to learn that it has debts in popularizing and that popularization is to a certain degree its own business (7). This point, at a first sight, should be easier to realize than the last. On the other hand, it would mean a change in the traditional picture of a scientist because popularization is not seen as a scientific task, in general, but as a quite inferior work.

The journalist who knows about science and is an independent, critical and professional observer; the scientist who knows about the history of his subject and social implications of his work and sees popularization as one of his first duties - it seems that we are far apart from this objective.

- (1) Baerbel Freund, Dietrich Meutsch (Ed.): Fernsehjournalismus und die Wissenschaften; Opladen, Westdeutscher Verlag 1990
- (2) Didier Dufresnoy: Place des émissions scientifiques à la télévision. Pourquoi sont-elles peu fréquentes en France?; DEA-Dissertation, CNAM, Paris 1994
- (3) Klaus Schlupepmann: Ausdruck gesellschaftlicher 'Verbildlichung'? Modernisierung im visuellen Material 1945-heute; Abschlussbericht, AGIS Oldenburg, 1997
- (4) Jochen Pade, Klaus Schlupepmann: Marktfoermige Wissenschaft? Physik in Wissenschaftssendungen des Fernsehens; AGIS Texte 18, Oldenburg 1997
- (5) Yves Jeanneret: Ecrire la science, Formes et enjeux de la vulgarisation; Presse Universitaires de France, Paris 1994
- (6) Matthias Kohring: Der Zeitung die Gesetze der Wissenschaft vorschreiben?; Rundfunk und Fernsehen (1998) 2-3, p.175-192
- (7) Jochen Pade: Zum Unterhaltungswert tragen wissenschaftliche Themen nicht viel bei; Physikalische Blaetter 54 (1998) Nr.1, p. 55-56

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