Unmasking the Net

When Technology Communication Turns to the Public

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The story of how Internet is communicated in order to promote particular individual and societal priorities leads to a re-evaluation of science and technology communication.[1] Producers and consumers of new technological knowledge take part in complex and constantly changing relationships with one another. Their relationships have important social and cultural undertones. Here, with my starting point in the traditional media's communication of the Internet, I shall therefore focus on two interrelated research questions: (1) How do the traditional media and the public interact to understand new media technology and (2) How do we understand this type of interaction in science and technology communication?

Traditionally a lot of science and technology communication has been understood by more or less linear communication models. To answer the second question we therefore need models that explain complex situations. As part of such model building I shall here argue that science and technology communication takes place in accordance with three different communication routes: (1) *the direct route*, (2) *the middleman-route* and (3) *the bazaar-route*. The direct route is associated with a clear definition of who is the sender and who is the public. It is the expert who popularises the scientific and technological knowledge for the general public. The middleman-route is associated with a notion that the expert does not understand the media's possibilities and limitations, or does not have time, or does not see the news value of the research material. Professional communicators therefore become necessary. The bazaar-route is an expression for a complex communication situation. What is relevant knowledge and how this is understood by different actors, is the object of a dialogue. This dialogue is of special significance in what Callon calls hot situations (Callon 1998:260-262). In cold situations it is easy to identify actors, interests, preferences and responsibilities. One can therefore call in the experts and their laboratories. In hot situations most things are the subject of controversy, and those who are laymen want to have their say. These controversies are an expression of the fact that one does not have a stable basis of common knowledge and insight that one can agree on. Therefore technology producers, politicians and the media all see it as important to open up the way for feedback from the public in the diffusion process. Furthermore, an interplay with the public will make it easier to apply the new technology and thereby promote social change.

The basis of common knowledge and insight that people formerly agreed on is constantly undergoing more frequent change. The establishing of common frames of reference is therefore a complicated process, particularly in hot situations. In such situations the way is also opened up for what Callon calls overflow. Overflow is an expression for

the fact that complete framing is in many ways impossible. The degree of overflow is therefore an indication of how stable the frames are. Callon intimates two different ways of understanding the relationship between frames and overflow. In the first case establishing frames is the normal thing and overflow is leaks. In the second case overflow is the normal thing and the constituting of frames has high costs and will always be deficient. All the three communication routes are in this connection important for enrolling the public and users in specific, yet changing, understandings of frames.

Three Principles in Science and Technology Communication

I have earlier described the three faces of the net by means of the media package model (Hetland 2001). The media package model stems from William A. Gamson and his studies of political themes such as social welfare policy, affirmative action, nuclear policy, the Palestinian conflict and industrial crisis (Gamson and Lash 1983, Gamson and Modigliani 1987, Gamson and Modigliani 1989, Gamson 1992). In connection with such themes, a particular use of concepts is established. From a large inventory of possible reference frames, expressions, metaphors, paradoxes and so forth, a smaller repertoire is picked out. This repertoire is picked out in a process in which construction and weighting are central. The purpose of the model is to enable the systematic description of how this repertoire is used to describe particular aspects of a phenomenon. It is usual to say that the media packages consist of two main constituents: frames and positions. According to Gamson and Lasch, metaphors, exemplars, catch-phrases, depictions, and visual images are framing devices. While roots, consequences and appeals to principle are reasoning devices for a more general position (Gamson and Lasch 1983).

When it comes to the communication of the Internet, I have identified *three global media packages*. To describe and analyse the three global media packages I have made use of three metaphors: the Internet as (1) *a prosthesis*, (2) *the wilds of nature* or (3) *a Trojan horse*. Narratives that take their point of departure in the prosthesis metaphor regard technology as an extension of the human body; we create new action space and new possibilities for action. These stories are the ones that come closest to what we often call utopias. I have therefore called this global media package Net utopias. The narratives that take their point of departure in the metaphor of the wilds regard the Internet as wild nature that it is necessary to domesticate in order that media technology shall serve the best interests of the community. I have therefore called this global media package Net wilds. Narratives that take their point of departure in the metaphor of the Internet as a Trojan horse do not distinguish between the Internet and the context into which the Internet fits. In these stories the Internet is presented as a technology that penetrates so deeply into the social fabric that it is a threat to central cultural values. These narratives are the ones that come closest to what we often call dystopias. I have therefore called this global media package Net dystopias.

The three global media packages are accompanied by three positions at large that constitute the moral of the stories. These three positions have been concretised in three principles (1) *the pro-innovation principle*, (2) *the domestication principle* and (3) *the anti-diffusion principle*. The pro-innovation principle implies that an innovation ought to be diffused and adopted by all the members of a social system. Often this new benefit ought to be diffused more rapidly than is already the case. In contrast to the pro-innovation principle we find the anti-diffusion principle. This principle takes its point of departure in the fact that there is an innovation (or invention), but says that for different

reasons this innovation (or invention) ought *not* to be either diffused or taken into use by particular user groups or by society in general. The principle in between I shall call the domestication principle. This principle is a variant of the pro-innovation principle. That is to say that one does not reject the innovation, but takes as a starting point the idea that new technology entails great and important problems that must be solved before the media technology is taken into use in full. In other words the technology must be domesticated. Table 1 summarises the three global media packages with respect to frames and principles. If one restricts oneself to one of the three global media packages, Net utopias include 69% of the articles, Net wilds 29% of the articles and Net dystopias 2% of the articles.

Table 1.   Three Global Media Packages

Global media package	Frames	Principles
Net utopias	Internet as a prosthesis	The pro-innovation principle
Net wilds	Internet as the wilds of nature	The domestication principle
Net dystopias	Internet as a Trojan horse	The anti-diffusion principle

The three principles: 1) the pro-innovation principle, 2) the domestication principle and 3) the anti-diffusion principle, are probably central in all science and technology communication. In his book *Technoromanticism* Richard Coyne takes us on a thorough exploration of how information and communication technology has been understood by both central ideologists and the Arts and Natural Sciences (Coyne 1999). He attempts to draw a family tree between the different understandings with the theme of *holism and fragmentation* as the connecting link. What distinguishes his project from mine, is that while Coyne takes his point of departure in ideologies and explanatory models, I take my starting point in the more popular interpretations. This difference is at least of great empirical significance, since the popular discourse weights the problematic issues differently from what is the case in the more ideological and academic discourse. Both the scientific and the popular interpretations meet in a rich supply of utopian descriptions. It is true that the utopian descriptions are never far from the dystopian descriptions. While the global media packages Net utopias and Net wilds have a wealth of empirical data in the popular discourse, the Net dystopias have a far more modest supply of empirical data. On the other hand, in the ideological and academic discourse the net dystopias have a number of prominent spokesmen.

The mass media are a meeting place for the agenda of the public, the politicians and the technology producers. Here the other agendas are both promoted and problematised. Thus there comes into being a co-construction of new understandings, new forms of expression and new structures in society with the mass media as the arena in common. This process of co-construction includes first and foremost those we perceive as the innovators when it comes to adopting the new media technology. These innovators make the Internet narratives real through their own experiences and interpretations. I shall therefore first introduce the narrators and their public before taking a closer look at their co-action.

The Narrators

In the light of the first newspaper articles one might think that the typical communicator of the Internet was a man and a technology enthusiast describing all the new possibilities in the language of a visionary. The picture is, however, somewhat more complex. In the three newspapers in the three-year period there were 1517 articles about the Internet, 44% of these were unsigned articles or pieces, 4% were contributions from experts of various kinds, while 52% were signed by one or more journalists (36% men, 14% women, 1% both men and women, while 1% was not possible to identify). Behind the signed articles there were as many as 263 journalists, which means that each journalist published on average roughly 3 articles in the newspapers in question during the period 1995-1997. A few journalists published a larger number of articles. Six of the most active journalists, distributed over the three newspapers, were selected for detailed interviews.[2] On average the six journalists interviewed had published roughly 22 articles, all in all 17% of the signed articles. Common to all six journalists was the fact that the Internet is only one of the many subject areas they cover. Even for the journalist who had written most about the Internet, the Internet represented only about 10% of his production.

Common to all six is the fact that they were active on the Internet in an early phase. They were active in order to find out what the net was and how it could be used in the context of journalism. Several of them can tell stories about early reports or projects that resulted in their being encouraged to continue with the Internet. Others rather followed their "nose" in spite of their surroundings. The latter can tell stories about how the management and colleagues "went around bawling at me when I sat here hour after hour on the Internet – they said I must get myself out into the field and do some proper journalism." Not until everybody in the newspaper got access to the net, did the Internet become fit and proper. All six keep up to date in relevant magazines and newspapers. "Wired" is the magazine that is mentioned by most of them. However, their attitudes to Wired vary from enthusiasm to critical distance. Only one of the journalists has an active homepage. There he puts out material relating to journalism and hobbies. A third of those who visit his homepage are journalists.

The Internet narratives have many sources. Not least the Internet in itself is a central source. The journalists are on the Internet every day, they check their regular web pages and are possibly members of some mailing lists and news groups, even though the news groups may be "simply babble and light-hearted Ping-Pong between net users". On the other hand a number of the journalists use news groups to find sources. Otherwise search engines, newspaper archives, news services and other archives are used regularly. It is seldom that any of them use services like Internet Relay Chat (IRC) today. Criticism of sources has been an important theme in the discussion about journalistic use of the Internet. Three questions have been central: (1) Does the material come from an authoritative source? (2) Is the material authentic? (3) Can one be sure of the identity of the source with which one is in contact? The general attitude is that the Internet does not represent anything new in principle in this connection. There is therefore no point in introducing a form of source criticism of its own for material that is taken from the Internet. On the net there are many sources with great authority, but as one of the journalists says: "… the moment you leave the main highway I must say that practically everything must be double-checked." The Internet has received a great deal of attention on account of the possibilities for manipulating identity. Everybody knows about this possibility, but use of it can be difficult to identify if the content does not give a clear sig-

nal. A story will illustrate the identity problem in an interview situation: The journalist was interviewing a source via the Internet. Suddenly the language, pace and meaning changed. The person being interviewed had handed the keyboard over to somebody else.

Most of their use of the Internet now takes place at work. This is due both to the fact that they want to protect their private lives and also to the fact that they have better and faster access at work than at home. Several say that earlier they used the Internet far more outside working hours. As veterans on the net several of them make statements in which they emphasise that it is terrible to see all those "people sitting in front of their computers messing about, clicking and tapping, scrolling and searching and … there are so many other fantastic things one could have been doing." In other words they do not look upon net activity as a lifestyle. The journalists interviewed span a wide area of material. They therefore cover very different parts of the Internet. For example, one of them had worked on covering the groups on the extreme right and criminal cases. He therefore comments on the criticism that the newspapers only wrote about "child pornography and Nazis". Those who utter this type of criticism lack a complete picture of the media coverage, according to the journalist. Another of the journalists had covered new technology and research material. He comments both on the black and white depiction that the media had a tendency to promote, and also on the fact that he himself was perhaps in the beginning "far too positive in a way. I sort of went over the top a bit in the first period." One reason that they are fascinated by the Internet is that in addition to being a part of the area of material they cover, it is also a part of their box of tools. One of the journalists puts it this way: "Many doors have been opened when it comes to the futile search for the crock of gold where the rainbow ends, the road has become much shorter because of the Internet." The Internet has therefore become important both in the task of finding sources and in interacting with the sources. On the other hand, the net is only to a limited extent replacing earlier forms of working. Several of the journalists had tried to conduct interviews via the net, but with mixed experiences. Nevertheless, it is easier to get experts to speak. They can formulate their answers in writing. Yet, texts of this kind cannot be used directly. The language is usually too difficult.

To sum up, one can therefore say that even for the most active journalists in the daily press, the Internet constitutes a small part of the area of material they cover. All have an active user relationship to the net. It seems as if the first enthusiasm about the net has calmed down and given way to a more sober view of the net's possibilities and problems. On the other hand the reading public has increasingly started using the net. These people have therefore gained their own experiences of the net's possibilities and problems. This also has consequences for what sorts of stories capture the minds of the public.

The Public

Normally we use the term *the public* when we are talking about the mass media, while we have *users* as a central category when we are talking about communication media. This distinction is linked to the fact that mass media and communication media were originally perceived as being very different. Today this boundary is in the process of crumbling, something which also marks our day's different understandings of the mass media's public. Abercrombie and Longhurst have made an attempt to clarify different understandings of the public, which will be useful in our context too (Abercrombie and Longhurst 1998). They divide the understanding of the public into three paradigms. The first paradigm is strongly marked by behaviourism. Central to this is *stimulus-response*

thinking, which also put its stamp on many of the early communication models. In central approaches the focus is on effects and use/advantage. The second paradigm, also called *incorporation/resistance*, has had text in a broad sense as its focus. Stuart Hall represents a central approach with his encoding-decoding model. The sender encodes into the text a selected message, while the recipient decodes this message. If the message is to have any effect, satisfy a need or be put to any use, it is important for the recipient to understand the message as meaningful in its own context. Some writers therefore prefer the term "reader" instead of "public" in order to stress that a decoding process takes place in which the public does not constitute a homogeneous, but rather a heterogeneous group of readers (Fiske 1987). This means that texts may also be read in many ways. They have great interpretational flexibility even though attempts will be made to limit this flexibility in various ways. The third paradigm Abercrombie and Longhurst called *spectacle/performance*. The point of departure is that modern man lives in a media landscape that is used by the members of society to form and reform identity in everyday life. According to available statistics Norwegians spend on an average day between 6 and 7 hours in company with "mass" media. In addition come media that are not defined as mass media in the statistics. Here we may mention games, many forms of advertising as well as the telephone, fax, work PC and so forth. In other words we are living in a media landscape in which a constant flow of new media hybrids is extending the repertoire of mediated forms of expression. For the sake of simplicity, I shall allow the nuancing that lies in emphasising the public's active interpretational and constructional work and not least the heterogeneity of the public's composition, to remain implicit in the concept of the public. I shall therefore take a closer look at the interplay between the use of a given technology and the understanding of this technology.

The public's interpretations of the Internet are closely connected with the degree to which they themselves use the Internet. Their own practical experience of the Internet is important for the designing of interpretive repertoires (Hetland 1999). Here I shall content myself with taking a closer look at three technological repertoires we find among the public.[3] Against the background of the users' practice I have chosen to divide the public into three rough technological repertoires. Having access to a computer means that one has access to an installed base. Let us start with a dichotomy based on access to an installed base: (a) those who have access to computers at home, at work, at school or in other places, (b) those who have no such access. So far the installed base of personal computers is an expression of how many can relatively easily gain access to the Internet. This group may again be divided into two: those who use the Internet actively and those who are hesitant. Now it is not the case that new technological repertoires replace earlier technological repertoires; elements from earlier technological repertoires will as a rule be included in more recent technological repertoires. With this reservation I shall outline three technological repertoires for the management of information and communication:

PT-repertoire. The relationship to the "information society" is linked to the mass media as an information channel and well known media such as post and telephone for interpersonal long-distance communication. They do not use personal computers.

IT-repertoire. The relationship to the "information society" is linked to the mass media as an information channel and well known media such as post and telephone for interpersonal long-distance communication. The central information technology is the computer as an advanced calculator and typewriter.

ICT-repertoire. The relationship to the "information society" is linked to integrated information and communication technologies in play and/or work.

The public were asked about both what attitude they had to the Internet and to what extent they read Internet news in the papers (see Table 2).

Table 2.   Attitudes and Reader Interest

Repertoire	%-distribut.	Attitude*	Reading**
ICT	29	3,3	2,6
IT	42	2,7	2,0
PT	29	2,4	1,7
Total/average	100	2,9	2,1

*   4=very positive, 1=very negative
** 4=always read, 1=never read

The attitude to the Internet is most positive within the ICT repertoire, while it is most negative within the PT repertoire. The public were also asked whether they read material about the Internet in the daily papers when there was such material. The ICT repertoire read material about the Internet in Norwegian daily papers far more often than the PT repertoire. If we take a closer look at the significance of different sources of information about the Internet, the mass media in fact mean least to the ICT repertoire in spite of the fact that these are the keenest readers of the mass media. Within a technological repertoire particular information and communication systems will be established of special relevance to social groupings within the repertoire. At the same time those who are outside the repertoire will to a lesser degree participate in the specific information and communication systems. In this way different social groups take part in processes of interpreting, inscribing and transcribing new media technology based on very different information access. We find the joint arenas for information and communication about the Internet first and foremost within the mass media and the social networks.

A great deal of science and technology communication takes place through a network of communication actors. 38% mention mass media as an important source, 29% mention special media such as specialised journals, magazines, periodicals, the Internet, providers of equipment and access, and the like, 26% mention their place of work and/or school, while 36% mention family, friends and acquaintances as an important source. Interest in the Internet and corresponding technologies is therefore closely linked to the degree to which these technologies constitute an important part of daily life. Those who are included in the ICT repertoire stress job and school as well as special media as their most importance sources of knowledge about the Internet. On the other hand, large groups within the PT repertoire have the mass media as their most important source of knowledge about the Internet. The fact that job/school and special media are stressed as the most important sources of knowledge for groups within the ICT repertoire does not mean that the same groups have a passive relationship to the mass media. Rather it is the case that inclusion in a particular technological repertoire means greater interest in acquiring knowledge about a subject by means of several sources. The narrators behind the Internet articles therefore meet a heterogeneous public, but the most faithful readers are probably also those who have the most active relationship to the Internet. This makes it

interesting to look more closely at the interplay between narrators and the public. In order to be better able to analyse this interplay and its role in the communication of new media technology, it is necessary for us to take a look at the differences between the various communication routes.

Three Communication Routes

A traditional understanding of science and technology communication has been that the expert performs his/her research in the laboratory[4], or behind the scenes in Goffman's terminology (Goffman 1969). When the discoveries are to be communicated, one steps forward onto the stage. In this understanding there is in other words a distinction between research and technology development that goes on behind the scenes and communication that takes place in public, whether the target group is colleagues or people in general. Bucchi quite rightly points out that the distinction between what takes place behind the scenes and what takes place front stage may be fuzzy. He therefore chose to focus his research project on the deviant cases, that is to say those cases in which the laboratory is moved out onto the stage. Bucchi suggests in this connection that some communication situations follow alternative routes (Bucchi 1998). These alternative routes he studies by means of three investigations: "cold fusion" mainly from 1989, "big bang" mainly from 1992 and Louis Pasteur's experiment concerning anthrax vaccines in 1881. Common to the three examples is the fact that the researchers involve the public in different stages of the research process before the scientific results have been accepted by colleagues. Bucchi's most important contribution to increased understanding of science and technology communication is that he gives a more nuanced picture of the researcher as a communicator. The classical separation between the laboratory on the one hand and the public on the other is diluted. Meyrowitz claims that to an increasing extent we are getting a middle region (Meyrowitz 1986). It is this form of science communication Bucchi attempts to describe with concepts from Goffman, but without bringing in Meyrowitz's contribution to Goffman's use of the theatre metaphor. Further, Bucchi does not problematise the role of the public to any great extent. The public remain a black box. To analyse the role of the public in science and technology communication, I shall here argue that science and technology communication takes place in accordance with three different communication routes: (1) *the direct route*, (2) *the middleman-route* and (3) *the bazaar-route*.

The Direct Route

The direct route is associated with a clear definition of who is the sender and who is the public. It is the expert who popularises the scientific findings for the general public. The group of actors that has received most attention in earlier research concerning science and technology communication is the experts – often in the form of researchers and scientists. Here I have chosen to keep a completely open mind about who are experts. The expert has a reasonable degree of control of the message. In the newspapers we recognise the direct route in the leading feature or the popular article. Otherwise lectures, textbooks or the popular book are viewed as the most central forms of communication within the direct route. The idea of popular enlightenment and the importance of knowledge transfer have had a strong position as grounds for the direct route. Only a small part of the studied material followed the direct route, 4% of the articles were contributions from

experts of various kinds. Among those, 44% had focus on the pro-innovation principle, 48% had focus on the domestication principle while 8% had focus on the anti-diffusion principle. The pro-innovation principle differs from the next two principles in that there are both a lot of contributions from experts that lend support to the principle and also a lot of contributions that problematise the principle. In numerous pro-innovation contributions it is emphasised that there is a need for more knowledge about the application possibilities, more user experience, new (communicative) competence, a new pedagogy and a new commitment to school and further education. In addition there is emphasis on the need for free and just competition on the Internet market. The implications that one sees from the new media technology are that one is reaching a new public, information is becoming easily available and cheap, the Internet is promoting democratic participation, one avoids the gatekeepers, the net can decentralise power, it can renew our written culture and not least electronic shopping will change the whole of world trade.

When the pro-innovation principle is problematised, there is a tendency to polarisation. On the one hand the Internet does not involve anything new in principle, it is easy to learn. In addition much use of the Internet is a waste of time and the costs are not in proportion to its usefulness. On the other hand the Internet makes possible a new situation in which "Big Brother is watching you". It is a step towards increased alienation, technologising and information overload. The Internet further involves increased "linguistic and cultural imperialism". A lot of information on the net is considered to be erroneous, and it takes solid knowledge and experience to interpret the information. The "gatekeepers" are therefore claimed to be important for the quality assurance of information.

In contrast to the pro-innovation principle, for the domestication principle there are only a few expert contributions in support, but more expert contributions that problematise the principle. The supporting contributions concentrate on the need for legislation and control measures against undesirable activities like pornography and racism, as well as on the need for safeguarding intellectual property rights. The voices of the experts raise, however, a number of questions about the domestication principle. Several arguments are voiced: (1) Unlawful material (especially pornography) is only a small part of the Internet and incidentally difficult to access and expensive. Those who criticise the Internet for being a "sewer" lack knowledge of what is happening on the Internet. (2) The net is an extension of public and private conversation. One cannot therefore censor utterances on the Internet that are otherwise legal. When it comes to private conversation, a lot of comparisons are made with the telephone as a medium, and one does not censor people's telephone conversations. (3) The control activities have led to a one-sided focusing on intellectual property rights, which results in too high prices for intellectual material. (4) Many of the attacks on the Internet are in reality attacks on the content, not the medium as such. It is therefore wrong to attack the medium. (5) All new media are looked upon as dangerous in the initial phase. This is not something peculiar to the Internet.

When the Data Inspectorate becomes an advocate of the anti-diffusion principle as a solution to protect the privacy of people, it is claimed by those who criticise this principle that its adherents lack the necessary knowledge and competence. The principle is considered in such situations as unnecessary and as an expression of an exaggeratedly conservative attitude.

Among the contributions from different kinds of experts, 86% make their occupational platform known to the reader, often to support their argument. One finds engineers and

natural scientists (33%), social scientists (22%), cultural workers (25%), students (6%) and politicians of different kinds (14%). In many contributions the writer either opposes or enrols support from other experts. In the next route, the middleman route, it is the journalists who use experts in the same manner.

The Middleman Route

The middleman-route is associated with a notion that the expert does not understand the media's possibilities and limitations, or does not have time, or does not see the news value of the research material. Professional communicators therefore become necessary. These people arise at the point of intersection between research and technology development on the one hand and the public on the other. The message thus falls increasingly into the hands of researchers with an interest in communication (experts who communicate both their own and others' research), information officers, museum instructors, journalists, teachers and interested laymen. In connection with the middleman-route we often find an understanding of communication as a two-stage or multi-stage process, from various mass media through opinion-formers to the recipients (Lazerfeld et al 1968). The middleman-route also provides examples of the fact that middlemen both attempt to unmask (investigative journalism) and/or to conceal (a role that is often ascribed to information officers by both public and journalists).

Both implicitly and explicitly different actors appear in the mass media's Internet narratives. I have chosen to concentrate on the explicit actors – those who speak in their own voices in the stories. In a number of narratives it is more or less anonymous actors who appear, as the "common" man, woman, young person, elderly person etc. However, I have made a close study of how the diversity, from Internet experts in the form of researchers and technologists to Internet opponents, appears in the narratives. In 32% of the narratives a named source appears, in 11% two named sources, and in 8% there are three or more named sources, while 49% of the articles do not quote their sources. In many articles the named sources are from the same firm, organisation or institution. More than one named source therefore does not necessarily mean multi-source cases in the sense that the sources correct one another. It is rather the case that the different actors complement and support one another.

Five different categories of expertise have been identified, (1) spokespersons, that is to say persons who speak on behalf of an organisation/firm/product (not seldom this will be PR staff or the general manager); (2) independent experts (as a rule employed in teaching and/or research); (3) users (that is to say persons who speak on the basis of their experiences as appliers); (4) party or interest-group politicians and (5) persons who speak on behalf of control or regulatory authorities (often police or legislative authorities) or other public authorities. Table 3 shows how actors are enrolled in the text depending on the position that is taken in the global media package. The closer we get to the pro-innovation principle, the more strongly different spokespersons and the users are enrolled, while the closer we get to the domestication principle and the anti-diffusion principle, the more strongly politicians and representatives of the control and regulatory authorities are enrolled.

In spite of the fact that spokespersons were those who most often appeared with their own voices in the texts, it was especially independent experts and users with whom the journalists were concerned in the course of the interviews. They saw it as a problem that some independent experts easily get "a season ticket from us and are allowed to speak

again and again and again". Some names were mentioned by several of them, but on the whole it was stressed that they do not have a permanent source network when it comes to new media technology. If they do have permanent experts, the network of such experts is relatively loose. Most of the articles have their background in Norwegian conditions. 60% of the articles had in their entirety taken their examples from Norway, while 38% had taken their examples from other countries, many in combination with Norwegian examples. If the examples were taken from other countries, Norwegian experts were used to interpret them into a Norwegian context. One purpose of using local experts is therefore also to provide an explanation for and to give a face to events in completely different places. On the other hand the users are an important group of consequence experts. The users experience reality in their own way and it is therefore important "to communicate what the man in the street experiences". Not all journalists use experts equally actively. They choose to write a lot on the basis of their own experiences with the Internet, instead of getting others to narrate. Their contributions are therefore more coloured by their own experiences and points of view. Journalists are also users of course, and according to several of them this provides a background for making statements about the user situation, so several therefore use themselves as reference persons, – "If I can do it, everybody can do it". One of the journalists looks upon this lack of technical insight as an important qualification, – "I consider myself as the absolute touchstone of what it's possible to achieve."

Table 3. **Actors in the Texts, as Percentages**

			Principle		
Actors	**Pro-innovation**	**Domestication**	**Anti-diffusion**	**Hybrid**	**In all**
Spokesperson	55	33	13	48	47
Expert	12	10	20	19	12
User	14	9	0	21	13
Politics	9	17	7	8	12
Control&regulation	10	31	60	4	16
In all	**100**	**100**	**100**	**100**	**100**
No. of actors	713	374	15	97	1 199
Articles with actors	448	211	8	71	738
Articles in all	767	327	25	398	1 517

Very often there is a close connection between those who appear as experts in the texts and those who appear as sponsors. The global media package Net utopias is particularly sponsored by (1) researchers from the institute and university sector and spokespersons for different market research companies, (2) the users or central actors who want dialogue with "the people", (3) the information providers and (4) all those who want to make money in the digital marketplace. The global media package Net wilds is particularly sponsored by (1) all those who want to make quick money by means of what they believe to be loopholes in the law or regulations, as well as those who make themselves into spokesmen for control of the same activities, (2) the experts from psychology and psychiatry, (3) representatives connected with "law and order" and (4) public control authorities and groups of activists. The global media package Net dystopias is particularly

sponsored by (1) control bodies and control expertise and (2) cultural workers and politicians. The power ratio between the actors is therefore important in the work of determining the agenda. The mass media both make their own choices when the material is angled and at the same time they often choose to trust the most influential actors in the political arena. When it comes to technology in general and media technology in particular, attempts have been made to look after changing interests through the world of politics. In the 1990s attention was particularly concentrated on regulation and deregulation policy. This strategy gave the technology producers and the service providers increased influence on and power over the agenda.

The middle-man route is usually the most important route in science and technology communication. However, the bazaar-route is of special importance in hot situations.

The Bazaar-Route

The bazaar-route is associated with an understanding that the relationship between sender and recipient is complex and polysemous at the same time as the entry threshold for participating in the communication process is lowered. What is relevant knowledge and how this is understood by various actors is the object of a dialogue in the bazaar. In media ethnography use has been made of inter alia social experimentation in which new media technology was introduced in field experiments. By means of participant observation and other data collection techniques, an attempt was subsequently made to understand the users' ways of applying the media technology (Hetland and Meyer-Dallach 1998). Experience of social experiments of this kind has since been used to develop different techniques for technology evaluation. These are techniques that take advantage of the experience of laymen and users. Thus they are examples of a type of technology communication that follows the bazaar-route.

The Internet has given the public new possibilities of giving feedback directly to the journalists. Only a short time after the Internet had been launched as a public service, the Internet appeared among other things as the mass media's feedback channel: the public was invited to interactivity. To an increasing extent the papers have also begun to publish e-mail addresses under the articles, which makes it easier to send feedback. Earlier the readers used to write solemn letters to the editor beginning "Sir, …" but now they send e-mail direct to the journalist in question. The journalists interviewed see this as an important change. In general terms it is difficult to put a figure on the extent of feedback of this kind since it is very dependent on theme. As a rule there is at least one e-mail per article, but if the article causes offence among major groups, there may be 20 to 30 e-mail messages. Generally there was agreement that the threshold for sending feedback had been lowered. The journalists also see feedback in the form of e-mail messages as less of a disturbance. This makes it easier for them to sort "the wheat from the chaff". This feedback had also been important in the sense that in the next round it had provided better contact with the sources. The feedback messages had, according to the journalists, had a tendency to place themselves at two extreme points. They were either strong declarations of support or furious attacks. Many of the critical feedback contributions took up newspaper articles within the global media package Net wilds. The public had a need to answer back that the Internet consisted of much more than pornography and crime. With the wisdom of hindsight several of the journalists also say that it could easily become "absolutely marvellous or just too foul". On the other hand several of the journalists comment on what they see as a group of "crusaders who do not like critical objec-

tions". In the journalists' opinion it is patently obvious that the Internet is like the rest of society with its "red-light districts, porn, drug addicts and criminals". Even though the journalists may see this as obvious, it is clear that not all groups of the public share this view.

The bazaar-route may challenge the traditional understanding of the distinction between the research and development process on the one hand and the communication process on the other, in that the communication process becomes a part of the research and development process. The users are also part of the public in many ways. Several of the journalists comment on the reactions that came when the Internet suddenly became subject matter in the mass media. There were already established communities around and on the Internet. When journalists started writing about the net, the consequence was that the established communities felt they were being invaded. Their little private world was in the process of being destroyed, partly because the established mass media were beginning to take an interest in what was going on, and partly because most people were beginning to get onto the net. The journalists experienced large sections of the veteran community as dogmatic, with little understanding of the change that the Internet went through when it became common property. The old Internet generation ended up as "watchdogs for the medium in a way". Several of the journalists were of the opinion that the feedback messages changed during the three-year period. In the beginning there was a lot of criticism to be had, not least anger and aggression. Later in the period the tone of the feedback changed for the better. This was not due to the fact that they wrote more pleasant articles, according to the journalists, but that gradually it was a cross-section of the population that sent in the feedback. According to several of the journalists this cross-section of the population probably had "more common courtesy than the pioneers or the net people".

In 1995 Aftenposten published a story about misuse of a server at the University of Oslo. The paper reported that this server was functioning as an exchange centre for child pornography. Members of IRC groups were according to the paper exchanging pornographic pictures of children. This matter led to a comprehensive debate and a complaint to the Norwegian Press Complaints Commission (Pressens faglige utvalg). Furthermore this matter led to the fact that much of the debate was moved from the paper to the net. In this connection the journalist who wrote the original newspaper article, Jan Gunnar Furuly, became the target of the Furuly Watch Project by Naggum. The Furuly Watch Project was to map and follow up all articles written by Furuly. The project claimed that this journalist's articles about the Internet were of a professionally unacceptable level and that he had angled the material in a tendentious and unacceptable way. "This journalist has demonstrated a degree of prejudice in respect of the Internet and its users that appears to make him incapable of writing one single article about the Internet that is not directly negative propaganda. … Users of the Internet believe they are being collectively persecuted by Jan Gunnar Furuly, and rightly so. We now wish to answer back by following his movements and getting answers to a number of important questions:

• Are his articles reliable or are they propaganda?

• Are his articles neutral or are they deliberately angled?

• Does he respect the views of both sides?

• Has he an agenda deliberately intended to smear the Internet?

• What distinguishes good articles, if any, from bad ones?

If you are interested in contributing to the project, or simply following developments, you should put your name on the mailing list."[5] After this there followed a list of 16 articles. This example illustrates that not all feedback comes in the form of readers' contributions in the same newspapers. Instances of problematising in one medium may be carried further in other media. Direct reporting back to journalist or paper is therefore only one of several possibilities. Hot situations therefore lead to overflow between the media. Often this type of overflow is closely linked to different understandings or frames. Nobody has denied that the conferencing system IRC could be an "exchange" for paedophile pictures. The arguments against Furuly were mainly based on the fact that the pictures could not be transferred via the concrete server (one could at most enter into agreements on such exchanges), there was no proof that this had in fact happened, and otherwise sex was only a small part of the activity on the net. To the extent that sex was discussed, it was completely "… ordinary sex, much the same as in discussion programmes on the TV". Further it was emphasised that closing the IRC server would not in any way prevent the spreading of pornography. In the wake of this matter, Furuly Watch was started, as has been mentioned. Furuly stresses that

> … the first few days at any rate I felt that it was a bit unpleasant. He (Naggum) claimed that he had his own team, between 15 and 20 volunteers, who were to make sure that everything I wrote was put out on the web. And they put out all the articles in extensio on the web. You know, they were full of spelling mistakes. And there were indeed many strongly-worded allegations, pure and simple bullying and harassment with the use of words like 'idiot' and 'feeble-minded'.

Aftenposten took the matter up with Naggum and pointed out that it was a breach of copyright to put out articles in the way he was doing. So the articles were removed, but still the name Furuly can be understood as a term of abuse in certain communities such as the discussion group no.general. Incidentally, Naggum has been interviewed in several newspapers and in a number of communities he has the status of a cult hero or net personality. Furuly for his part also has a collection of quotations that he often uses for introduction and illustration at courses he gives for other journalists on use of the Internet.

As time passes we begin to see a number of examples of overflow between frames and the media. One of these cases ended up in an attempt to draw a boundary between the Internet and personal conversation. The Development Director in Schibsted Nett AS is one of the many who took part in the electronic discussion groups on the Internet. The professional journal Computerworld used pieces of a contribution of his as part of an article commenting on child pornography on the net. In addition to complaining about the journal's presentation of the matter, he also claimed "that the electronic discussion group must be considered as a "café table" and that any reproduction from it must be comparable to use of a "hidden microphone'".[6] The Norwegian Press Complaints Commission concluded that Computerworld was fully entitled to quote from the Internet contribution since access to the discussion group was open to everybody. This conclusion therefore equated contributions on the Internet with contributions in other media.

Conclusion

The understanding of new media technology can gather different groups of actors in a common task of exploiting particular possibilities, but to extremely different ends. In phases of rapid technological development the mass media can be an important common

arena for dialogue between actors in co-acting networks. The mass media can in this way function as an arena in which the public, different types of middlemen, and experts are all allowed to perform as experts, but in different expert roles. In situations where the public increasingly take the new technology into use, the direct route, the middleman route and the bazaar-route are all important in technology communication. *However, the communication that takes place often takes place between the mass media and innovators & early users.*

Bucchi calls the bazaar-route a deviant route. I wish however to claim that this route has *always* been an important and central route in science and technology communication, especially in what Callon calls hot situations. As communication routes, the three routes have existed parallel to one another for a long time. They do not replace one another, but one can argue that there is an increasing emphasis of the bazaar-route, especially in technology communication. This is connected with a number of factors: (1) To an increasing degree a critical light is being turned on technology development and research. This is due partly to the fact that the general level of knowledge among the public has increased and partly to the fact that many scientific and technological advances have turned out to be questionable. (2) The struggle for attention has increased. The media have therefore become an important arena for the marketing of what are to be important sides of the research and technology questions that are put on the agenda. The bazaar-route can therefore be increasingly experienced as an important route for ensuring institutional and personal interests on the science and technology market.

Notes

1. Part of this research was funded by a grant from the Norwegian Research Council under the programme "Societal and cultural presuppositions for information and communication technology". The study took its point of departure in the way in which tree Norwegian daily newspaper portrayed the Internet in the period between 1995 and1997. The data base consists of newspaper cuttings about the Internet from the following newspapers: *Aftenposten* (the morning edition of *Aftenposten*), *Dagbladet* and *Dagsavisen*. The important point was not to compare the three papers but to select three papers covering the breadth of the Norwegian press both politically and journalistically. I therefore chose three of the more national newspapers. One or more of the three newspapers included in the investigation was read by altogether 40.2% of the population over the age of 13 years in 1995/1996 and by altogether 42.2% over the age of 13 years in 1996/1997. According to the same source the figures for each individual newspaper showed that for 1996/1997 the morning edition of *Aftenposten* was read by 22.3%, *Dagbladet* by 26.3% and *Dagsavisen* by 4.8%. The established data base consists of 1 517 newspaper cuttings, 656 from *Aftenposten*, 491 from *Dagsavisen* and 370 from *Dagbladet*.
2. For a closer study of the journalists' work, I chose to interview six of the most active journalists in the three-year periods in question. Of the six journalists were three from *Aftenposten*, two from *Dagbladet*, and one from *Dagsavisen*. With these six I carried out qualitative interviews concerning their coverage of the Internet. Furthermore I have studied their texts in detail.
3. In order to obtain a survey of the public and users I used special run-offs on the Gallup InterBuss for 1995, 1996 and 1997 (the November count for each year). The Gallup InterBuss is a quarterly investigation in which use of the Internet is the central theme. The investigation is conducted on the telephone each quarter in respect of a nationally representative sample of roughly 1000 individuals over the age of 13. The Gallup InterBuss was carried out for the first time in November 1995, and thus shows the development trends when it comes to central questions of use and assess. Seen from the angle of media science one of the weaknesses of the investigation is that relatively few questions are put to those who don not use the Internet. The strength of the investigation is the thorough coverage of questions of use and assess as well as the fact that over time the investigation describes a historical development. The investigation included Gallup's standard investigation, as well as my own questions in 1997.
4. The concept of the "laboratory" usually makes one think of research in the natural sciences and technology. Here it is used more generally of those arenas in which research takes place.

5. The text had been written by Erik Naggum and was downloaded from the web on 8/2-1996.
6. *Aftenposten*, 23/6-1996, page 5.

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