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### **Theses on the Impact of the New Forms of Telecommunication on Social Structures**

The digitalization technique, in combination with the extreme increase of the performance in electronic data processing, improved significantly the possibilities in telecommunication. Not only mass media takes profit of it, as (in combination with the satellite technique) moved pictures are transported from practically every place on earth to any individual, or as newspapers can be "read", via Internet, at each place on earth which is accessible by telephone line. Thereby, the Internet can be seen as today's example for the individual possibilities of usage for information and communication purposes. If one assumes the same conditions (competence in use, technical availability, economical access ...) - which can be seen as being true in industrialized countries -, the "global village" is almost a reality.

While mass communication - if one excludes the aspect of entertainment and dispersion - can be seen as a kind of *one-way information* (with very poor backward-channel possibilities), the new information and communication technologies give large room for individual communication and interaction. By the post services (mail) as well as by telephone, in general, telecommunication is provided since several years, so that, technically, one has to speak about *extensions* of traditional functions rather than about absolutely new forms. But several of the paradigms, especially cost, transportation speed, multimediality, and data quality, have changed in such a way that one only is able to derive basic *assumptions* from the traditional services, reliable prognoses about further development of the new telecommunication services and about their applications and individual usage on behalf of time and quantity are scarcely realistic. In so far, the following theses are to be handled with this general reservation.

The importance of the development in telecommunication can be shown or justified by the *political statements* and even efforts in the industrialized countries. On the one side, *economical aspects* are important (keyword: "information market"), on the other side, the requirement of *improvement of competence* in right usage plays an important role. To give an example, in Germany, this is realized by measures or projects like CIP (computer invest program) at universities or "Schools to the Internet" in the school sector. Similarly, the development at the labor market (keyword: telework), especially in the service sector (management information, consulting ...), are involved.

When discussing the possible *impact of the new information technologies on the society*, one has to deal especially with the so-called information society. Within a recent publication, G. Wersig (1997) describes different facets. One of his assumptions will be quoted within the relevant thesis.

For the purpose of this paper, we define information (in a restricted way) as a *process which serves the transfer and exchange of knowledge, opinions and/or beliefs*. It doesn't matter if this knowledge is true or reliable. The crucial point - from the viewpoint of information science - is

that the *specific information influences the decisions and actions of a recipient in solving his or her (actual) problems*. In this sense, information society is an *informed society* where individuals as well as social groups constitute (and justify) their actions on the knowledge received by corresponding information processes.

Thereby, the crucial problem is the overcoming of the diversity and complexity of the potentially available knowledge. No individual (and hardly a social group, either) is able to cover this knowledge (needed) in detail (because of psychological and physiological limitations) or to record it (to say nothing of the problem of forgetting). In this consequence, the mass media (newspaper, radio, TV) of today (not to speak about other functions) can be seen as an instrument of *densification* (in the sense of simplification) and *pre-selection* (i.e. a pre-selection out of existing knowledge offers). Mass media simplifies (apparently) the individual knowledge acquisition and the resulting actions.

Therefore, if "information society" is concerned, a society is understood - referring to modern times (and within industrialized countries) - as a system in which the individual or the social group has the choice between *knowledge which has been pre-selected* and even condensed or the access to *knowledge* (more exactly: knowledge representations) *provided by the "author"*. In both cases, knowledge is understood as a presentation in form of texts, facts, graphics or moved pictures.

## 2. General theses

In the following, some more general tendencies estimated are presented and briefly motivated:

T1 The *mediator role of mass media* (in the sense of knowledge and mind transfer) *will be reduced*, because the recipient will get and use direct access to the producer of knowledge or even to the events themselves ("ad fontes"). This presupposes an appropriate *activity* of the recipient (information retriever, searcher) which has to be developed.

To explain this, some prototypical scenarios are described:

- The regional newspapers nowadays inform about club events (schedules, summaries ...)

In the future, a club member (or any person interested and allowed) will be able to get relevant information by starting with the homepage of the club, getting all the information he or she is interested in, and even will be able to communicate with the club administration or special members.

- Let us assume that there happened an incident in a nuclear power station. Besides the press release, a detailed information will be given by the company via Internet about the dangerous substances, possible preventions etc. The main addressees of the (involved) people will be, in this case, the local authorities including the disaster prevention facilities, and via Internet, everybody will be able to recall these facts.
- If press, tv and / or radio will inform about this event (and comment it, of sure) and even if this is the first information point of the recipient, he or she will be able without any

problems to get more details from the originator or even from other critical institutions involved (environmental organizations, disaster prevention institution, local authority ...) via the same way (the relevant homepages etc.).

- If complete groups are affected by special events, they are able (ad hoc) to build so-called *newsgroups* or *chat groups* where the situation and possible activities can be discussed. In such a newsgroup, a qualified authority can take over a coordination function (not to be mixed up with the "one-way" mediator function of mass media).

This kind of "direct" access only is realistic if the relevant persons or groups have *learned* the right dealing with these new information and communication services and also have access to it. If we consider, for example, that the most important instrument for today's mobility, the automobile, also presupposes a specific and successful learning phase to use it properly, one can conclude that it will be only a question of time until the "information licence" is acquired.

The progress done in man-machine interface development in the field of communication (I refer to the mobile telephone as well as to the graphical user interfaces) simplifies the access to the networks and services, and it is quite clear that the access barriers which might still exist will be reduced, step by step.

T2 In the *process of selection and filtering* (increasingly also in the "densification" process), *intellectual work* - as it is done by an editorial staff or by a press agency - *will be replaced*, step by step, *by technical systems* (today: search engines, in the future: "intelligent" electronic agents or expert systems). On the one hand, this will lead - theoretically - to higher transparency (in the sense of a better understandability of the process), but misleadings cannot be excluded.

Facing the *abundance of daily events*, the mass communication market developed a multi-stage process, where by relevance criteria (also called news factors) it is decided if or when: in what way and form a *transfer* is processed. This starts, for instance - to give one example - with the correspondent of a press agency, it is continued at the agency itself (where some formal criteria are included: domain, importance ...), and ends at the editorial staff of a newspaper or of a radio or tv company which can be seen as the final authority of decision or manipulation (in the positive sense).

This process, in democratic systems, is determined by "anticipations of expectations" of the authorities on behalf of the interests of the target audiences in mind, sometimes also by the interest of the state on a somehow "weighed" or *balanced information supply*. For example, in Germany, the public broadcasting system plays the role of securing a kind of basic informational supply.

On the other hand, regarding information retrieval in the Internet (only to give a modern example), two types of information providers can be noticed:

- On the one hand, the classic mass communication providers (press, radio, TV) are using the new technical possibilities by themselves for greater individualisation or differentiation of their transmissions. For instance, the most recent news can be accessed by a user at the time he selects, data which up to now is available in one depth or size are presented -

using hyperlinks - in different dimensions, even via networking.

- On the other hand, data - especially full text - can be accessed directly by the (final) user by using keywords or catchwords via so-called search engines. The total material of the Internet is filtered by these machines and very simple (boolean) queries might be used to provide data which fits the queries of the user.

Even if the results of today's retrieval instruments include a lot of noise, we know that these tools are only in a starting phase, the realisation of more "intelligent" concepts, for instance *information agents* based on *special user profiles* (comparable with SDI profiles in professional online data base services) will give the interested user the possibility to express his or her own interests. The agent will clear the information offers (or selected parts, for instance only based on texts in German) permanently or periodically about relevant themes and thereby perform a selection of the inventory for individuals or interested groups.

On trial, even concepts of automatic abstracting or at least extracting is offered (for instance by ORACLE) which goes into the direction of "densification" of data. If one transfers the requirements for *expert systems* (e.g. the explanation of the selection and / or decisions made) to these agents, the user might even get higher transparency about the filtering process that he now gets via traditional mass media.

T3 Mass media will (or have to) be more *oriented in the direction of entertainment and distraction aspects*. In the information sector, the basic role of *mass media* will be a kind of references provider.

Even if the information function of the (one-way) mass media, compared to the greater nearness to the user's interests of the new dialog and telecommunication based media, will *diminish*, the *segment of entertainment and of infotainment will remain*. For instance, talk shows will continue to exist. One might regret such a development (of loosing the "information" component) or even fight against it as being a kind of impoverishment. This will not be a revolutionary, but a kind of evolutionary process which doesn't need panic reactions. But it seems as false to close the eyes as to overreact.

As far as the German broadcasting scenery is concerned, on a longer or long term basis, the question of maintaining the public broadcast system will arise. If such an opinion is expressed today, there is the danger of getting handled as a lobbyist of the so-called "privates". But it is not allowed to equal the evil of commercial interrupts of a movie with the good deeds of the public broadcasting services which are, under this respect, nothing else than a cumulation of the pay-tv channels.

Moreover, I believe that the mass media, in the future, will have a kind of informal *reference function* which is used - like an *index* - to preselect information or events to branch to real (or more detailed) data provided by the real competent information providers (originators etc.).

With respect to the social structures (in highly industrialized countries), the following changes or modifications are to be expected:

T4 The *individualization will increase* (further). This can - at least partially - be seen positively as a chance for *greater self-realization*.

Under the assumption that one succeeds in leading people to greater "informational mobility", i.e. to do *active information retrieval* (for instance, this functions to a high degree in getting the driver's licence), and that this activity is done with some competence, from the viewpoint of the individual, this will result in *greater satisfaction*. I assume, for the moment, that all the teething troubles of the existing telecommunication networks (including the Internet) will be overcome. At the moment, these deficiencies are contra-productive, because, for instance, the relation between "relevant data selected" and "selected data" (and even "relevant data not selected") is more or less negative.

On the other hand, compared with the existing, anonymous partner "mass communication media", this loss doesn't matter very much.

T5 The growing *plurality* (leading to greater differences in experience as well in mind) *hinders* the development or the allocation resp. to related *social groups*.

The consequence of individualisation (of personal information selection), *theoretically*, leads to different connotations (i.e. knowledge) or - within other words, as it has been expressed otherwise: everybody knows *something*, but everybody knows *something different*. If this would happen, the *consensus of social groups* which is needed for several purposes of the society can hardly be reached, because members of such groups wouldn't be identified constantly. Instead, social groups would be built "virtually" according to ad hoc interests on behalf of a special problem, and they would be steadily moving.

At the moment, I do not see a realistic possibility to counteract, if this will happen. There is only the chance to make this phenomenon aware very early to the people.

T6 The *feelings of uncertainty* (i.e. the knowledge that everything only seems to be true, but that there is no final proof) will grow, which leads to greater isolation, in spite of growing global technical communication possibilities.

Today, using modern information technology leads to very "positive" results. To give some examples: By installing and using the ground positioning system (GPS) in a car, one is able to select the shortest or fastest or most comfortable way between two places interactively (and the system "speaks" with the driver in natural language); with the approaching coupling of such systems with traffic direction systems, other improvements (like information on roadworks, traffic jams; or automatic speed conditioning) are just before realisation.

Mobile telephone and mobile fax are other examples for improvements in communication and information which, in a very short time, are handled by the user as being an obvious acquisition. The same is true for cash machines which facilitate, based on a standard article code and its presentation in natural words, the control of purchased goods. One day, the refrigerator information system (in a household) automatically will signal that the expiration date of a special stored arti-

cle is arrived, the individualised electronic banking or the ordering of goods via online systems will be a daily procedure.

These practical-technical advances (also in vital domains like medicine technique) should not mislead that especially the new possibilities of individual access to world knowledge presented by text, graphics and / or moved pictures etc. also will lead to the recognition of the *tremendous complexity* of knowledge and the impossibility (of the individual) to cope with it, even in relation to the personal - and in such a way restricted - action and problem solving area, i.e. to allocate it to the personal world view (or scheme etc.). G. Wersig, with relation to this phenomenon, concludes that aiming at certainty has reached a point which generates by its successes again uncertainty (1997, 975).

Under such a viewpoint, mass media represent a kind of *protection shield*, their definition of target audiences (and the corresponding content orientation of their data) constituted a certain *safety*, which suggests (even if falsely) a simpler world than it results by the individual attempt to develop it independently. One did suspect it, certainly, but because of the lack of technical possibilities, one was not required to go one's own way.

T7 One *solution approach* might be the *professionally or privately organized information broking activity*, by which groups with common interest will socialize themselves to some Degree.

Mass media as *information providers* are too rough, the individual, because of insufficient capacity, is not able to filter personally the multiple information offers. One way out might be a *new information service sector*: In information science, this profession (or activity) is called *information broking*. At the moment, information broking is oriented at the preparation of online searches in professional (domain specific) data bases. In the future, in a more general sense, one can think of *professional agents* or *private initiatives*. The basic aim is the value-added preparation of available knowledge (with using any computer aid available) for a *special user group*. In information science, we are speaking of *value added information services*.

T8 To overcome the "lost in cyberspace" problem, another solution might be that *existing social groups* (political parties, clubs, *associations, trade unions ...*) will take over a new role as information brokers and mediators for their *members* as "clients" with special (but more or less common) interests.

In comparison with the mass media (newspapers, radio, ...), by commissioning an *information broker agency*, the participant has far more influence introducing his or her personal interest and / or opinions in this "special information system". If interests are more or less equal, research and analysis can be shared within groups so that synergy effects will result.

In so far, *existing interest groups* (i.e. social groups) like political parties, trade unions etc. will become an *outrider role*. But one will have in mind that the individual will socialise himself or herself to a less degree with this group "as such" and the group will be seen as a kind of *alliance of the specific purpose* to reduce the effort of information retrieval compared to his or her individual activities.

## **Conclusion:**

The theses presented are not gained empirically. Developments in telecommunication are too new, the overall conditions are too complex and the penetration of the market is not yet reached. Therefore, step by step, empirical research has to be applied in the direction of the theses mentioned (and may be others not yet to be seen).

There is no reason for euphoric prophesies of an equality of chances for people in accessing worldwide knowledge, totally apart from the countries on earth which are less technified, and apart from access problems of people handicapped of any kind. But there is also no reason for pessimism about the development of culture and society.

On the one hand, one has to meet with negative trends by addressing the problems very early, for instance in school, including practical experiences. On the other hand, the subject has to be overcome by scientific research. If the world (and with it the society resp. the societies) is complex and pluralistic, we are not able to simplify it with using any kind of technique. Simplification, in most cases, means loss of information. What we can do is to work together to make the complexity more *understandable* for the individual as well as for the different social groups and to provide the best access to knowledge as possible. Within this aim, the individual as well as the social groups have to take over responsibility to act in this way.