39. [Introduction] Towards a New Classification of Tele-Information Services

Marshall McLuhan's provocative explorations (◊13) sparked a great expansion of writing about media—but this has included few attempts to rigorously classify digital communications. While McLuhan provided useful metaphors grounded in the senses, the essay here considers the social role of various digital media, surveying new media from a fundamentally different perspective than the individual, sensory one—and placing these media within a more tightly defined schema.

Various new media can be quickly categorized according to the typology presented here: IRC, Unix talk, proprietary chat systems and discussions on MUDs function as conversation, while the Web usually functions for consultation—unless it is collecting credit card numbers or other information through forms. Likewise, it is not difficult to categorize network services such as email, gopher, finger, whois, push-media of the sort launched by Pointcast in the mid–1990s, and even graphical network environments and games, arena-style or of the *Everquest* and *Anarchy Online* massively multiplayer sort.

Given the way that the Web already had, in the early 1990s, functioned in both consultation and registration capacities, one might have predicted that email-over-Web services like Hotmail and Yahoo! Mail would be plausible. Their success points out some additional interesting cases, in which one Internet service is perversely used, against the seeming grain of the technology. For instance, chat systems have been implemented over the Web, some of them underground successes (e.g., *Bianca's Smut Shack*, which ran on *HotWired* servers beginning in 1995). Real-time chat systems (e.g., Yadda) have also been "implemented" by using just the subject lines of email—so that employers, only noticing that chatters had email windows open, could not see that employees were chatting. The important point made by such examples (and one made in the following essay) is that the basic technology employed does not determine the category of service a telecommunications system provides.

Although Espen Aarseth (◊52) has written that the typology described here is "less directly relevant" for textual systems, and he has offered a more focused and very useful typology of his own, one can attempt to extend the typology here to apply to systems such as those running on stand-alone computers, and such extension can lead to interesting insights. To extend the system further in this way, one might conceptualize elements of software as fulfilling the role of the service center at times and at times taking the role of another individual. This would allow a system like *Eliza/Doctor* (◊24) to be seen as conversational in the sense intended by Bordewijk and van Kaam. A scrolling text file can be seen as an example of allocution; a database, consultation; the program that requests your name and software serial number before installing software, registration. But to make this typology a useful one, it is important to distinguish how these terms are to be used in the stand-alone computing context, and to describe with rigor when software should be considered as a service center and when—if ever—it is appropriate to consider it as another individual. Perhaps the classification scheme here is strained by some analogies to stand-alone computing. In this case, the principles that motivated it can be used to select or construct another classification scheme appropriate to the elements of and participants in the systems involved.
—NM

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Another scheme for differentiating computer texts is Michael Joyce's division of hypertext into exploratory and constructive (◊42).

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Further Reading

Aarseth, Espen. "Textonomy: A Typology of Textual Information." *Cybertext: Perspectives on Ergodic Literature,* 58-75. Baltimore: Johns Hopkins University Press, 1997.

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Towards a New Classification of Tele-Information Services

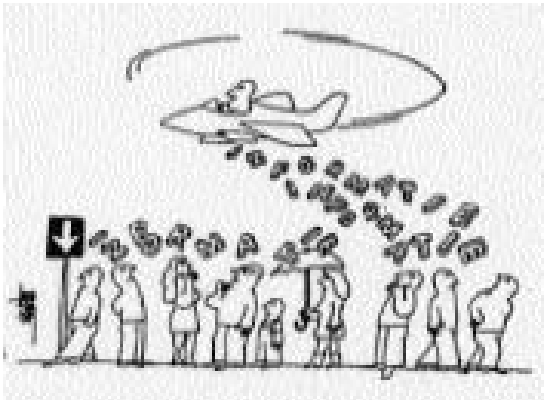
Jan L. Bordewijk and Ben van Kaam

Tele-information systems, based on an alliance of digital telecommunication and computer technology, will play an increasingly important role in inter-human communications. They are in fact ready to enter almost every area of human communication activity.

As a consequence the spread of knowledge, the cornerstone of democracy, seems to be headed towards a time of flourishing, but this optimistic expectation reflects only one side of the coin. The reverse side tells us that the penetration of technology in human information paths, on such a large scale as we witness today, can only succeed thanks to a huge information services industry. Such an industry, providing information-oriented products as well as technical facilities and employing many, many people, saddles us with a new concern: its own power. In order to avoid the risk of an Orwellian scenario, society should at least have at its disposal a clear and simple picture of what the power positions and relations are on the vulnerable terrain of human communication. We need some sort of classification of tele-information services with respect to their social role. The often intuitively applied classification by reference to their technical properties is untrustworthy and will cause more and more confusion as multi-function networks and terminal equipment replace the present dedicated systems.

This classification should be replaced by one based on social power relations. A classification in terms of idealised information traffic patterns provides a logical and unambiguous alternative. It provides a solution that harks back to the time when no technical devices were available, so that there was no danger of mistaking incidental technical designs for guidelines as to the character of the communication. It can moreover be defined independently both of the form of presentation and of the information content.

We start with a detailed description of the four definable information traffic patterns. There is a comprehensive introduction to the questions at issue in our monograph, *Measuring the Degree of Democracy of Information Societies,* (available from Het Persinstituut, postbox 7161, 1075 AB Amsterdam).



Allocution

Let us first look at the situation that occurs when a single human being, called C (centre), addresses another person called i (individual).

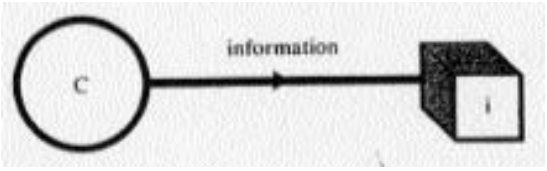


Figure 39.1. Allocution: information flow from service centre (C) to inividual consumer (i).

When the information flow is always in the same direction, we have to assume that C has at his or her disposal an unlimited amount of information, possibly of a specialist nature. We will call C the "information services provider" and i an "information services consumer." This formulation has the twofold advantage

of including technical facilities and leaving open the direction of the information flow.

This situation resembles that of a master-slave relationship, or general-soldier, teacher-pupil, etc. If we assume that the master owns more than one slave, the general commands more than one soldier and so on, we obtain a pattern in which C is the central leader and i, i_1, i_2 etc are the individual followers.

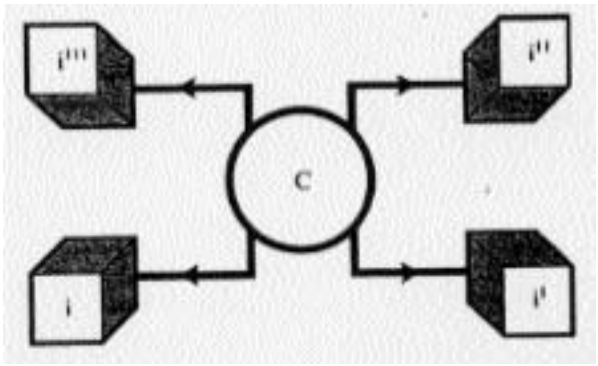


Figure 39.2. Allocution, general pattern.

In practical situations the followers will often be able to provide a certain amount of feedback, be it only the shuffling of feet, depending on the harshness of the regime. The figures show idealised situations without any sign of feedback. We will say that they follow an "idealised information traffic pattern."

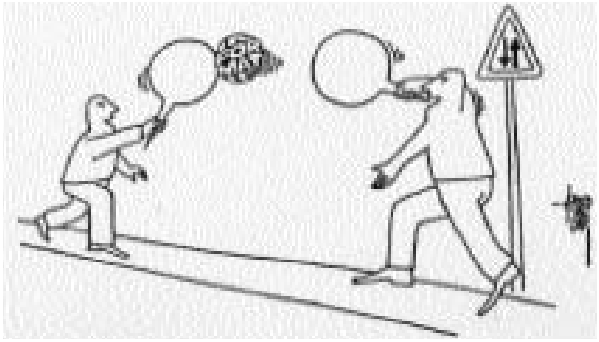
This pattern will be labelled: "allocution,"[1] from the Latin word "allocutio" (the address of a Roman general to his troops, and afterwards a special address of the Pope to his cardinals). "Allocution" is more appropriate than the term formerly used, "distribution,"[2] because, inter alia, information cannot be "cut into pieces" distributed among a number of consumers. In fact every participating consumer receives the same information and the information store at the centre never becomes empty!

If we refrain from a particular presentation form or a particular information content, the second figure can be used as a stylised representation of many other situations. For example C might represent a broadcasting organisation and the i's the listeners and viewers. C can also represent a stage performance and the i's the public. In an extreme case C could even represent a drowning person and the i's the passers by.

Characteristic of the "social status" of allocution is that C is the owner of the information and alone decides what part of the information stock will be "handed over" and when. The "destinations" receive the information simultaneously at a normal human perception rate. The simultaneous-perception effect often plays an important role.

All the "power" is clearly concentrated in C. The i's have none at all. The term "power" in this connection should not be taken too literally. It should be understood as "being entitled to some kind of remuneration." This can be of a financial nature, but can also take the form of obedience, respect, care, help etc. In many cases C will also provide technical facilities as part of the total information service.

A preliminary definition of allocution that covers both the situations described above could run: *the issue of information by an information service centre under programmatic control of the centre itself.*



Conversation

If two terminals, both representing an average human information services consumer, exchange information, we obtain a different picture. We assume that the ownership of the information as well as the information handling capacities are divided equally between the two terminals. We will name the pattern obtained, independent of the form of presentation and the information content, "conversation." Instead of speech, the information exchanged could just as well be text, written or printed on a sheet of paper or any other carrier, or moving pictures, and could deal with any subject.

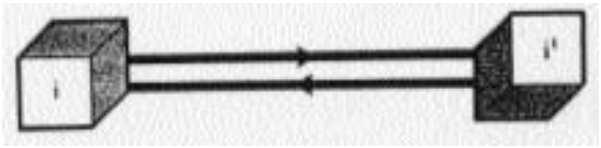


Figure 39.3. Conversation: information flow between individual consumers.

The idealised conversation pattern shows a balance of power. In many practical situations, however, the "information levels" of two partners will not be equal. We shall encounter applications that are completely asymmetric. The number of partners in a conversation need not be restricted to two, but above about six the need for a chairman is felt. The chairman has to coordinate and allocate speaking time. One arrives more or less at a situation of sequential allocution. In a conversation situation people do not normally pay one another for the information supplied. They only pay for the use of the means of transport (telephone bill, postage, etc).

One might wonder whether conversation by telephone, which allows almost instantaneous reaction, and conversation by telex or mail should be covered by the same pattern. Our view is that they belong together because the principal social and legal desiderata connected with conversation in a democracy hold equally for telephone and mail services. No state interference and protection of privacy are the two conditions that consumers will demand for both services. The close connection between the two can further be illustrated by observing that modern hybrid services such as voicegram and voicemail are being introduced, combining the presentation form of telephone and the response times of mail.

The conversation pattern is characterised by the property that the ownership of the information as well as the choice of subject and time of information exchange rest in the hands of information service consumers i. This includes a kind of "self-conversation," in which one could include meditation, but also "communication" with a personal (electronic) file, ie all the information stored for personal use.

If such personal utterances are meant to be made public in some way or another the person, (a speaker, an author or a composer) has changed role, is acting as a C-terminal involved in "allocution" or in a pattern dealt with later under the title of "consultation."

In a more general picture of the conversation pattern, the connection between i and i_1 passes an information service centre C.

In a classic telephone connection C represents a technical facility: a telephone exchange or a cascade of telephone exchanges needed for the routing of the telephone call and does not participate as an information terminal. In a direct conversation between two people of different tongues, C could be an interpreter, providing content-oriented services also. In a future world telephone system C could be an (automatic) translation or correction centre. For purposes of data transmission nowadays C could be a packet-switching transmission system in which the data to be transported from different origins and with different destinations are arranged so that transport cost is minimised. These last examples belong to the classes of value-added services or networks.

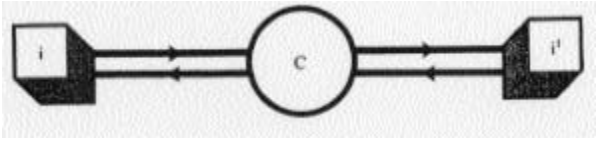


Figure 39.4. Conversation via centre C.

Generally C can handle more than one conversation-connection, leading to a more general configuration.

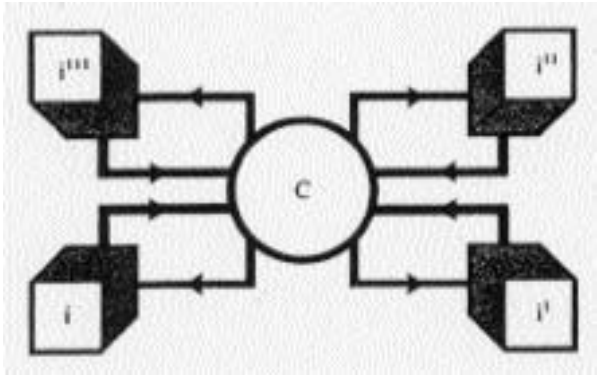


Figure 39.5. Conversation, general pattern.

A preliminary definition of conversation could run: *the issue of information by information services consumer(s) under programmatic control of the consumer(s) themselves.*

Consultation

If an information service centre C only delivers information upon the request (dotted line) of an information service consumer i, there is a markedly different power relationship

from those considered above. C is the owner of a large (ideally infinite) amount of information, but the i-terminal decides at what time and on which subject information should be delivered.

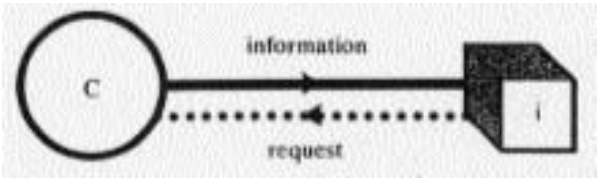


Figure 39.6. Consultation.

In a practical approximation to this idealised situation the i-terminal could be a person who consults a human memory when phoning a doctor or seeing a lawyer, but it could also be a person consulting an encyclopedia, a dictionary or an electronic memory. Consultation requires more activity by the consumer than allocution, but also grants much more freedom in selecting the information required.

Reading books, magazines or newspapers can normally be done at a time convenient to the consumer. A newspaper can be considered as a collection of items that can be "consumed" according to an individual programme, or indeed be marked as a databank refreshed daily (rather than a dynamic one). Reading is not always consultative. A good example of "allocutive reading" can be found in television news magazines for the deaf, with pages broadcast at a standard speed.

Consultation is not restricted to graphic or pictorial information. Examples of voice consultation are found in the telephone enquiry systems for time, weather, traffic conditions or medical information. They are all examples of tele-consultation, like teletext and some videotex applications.

The objection is often made that teletext is not such a good example because the (dotted) request line is missing. In fact, it is present but is very short. The trick with teletext is that the whole information stock of C is periodically offered to the receiving equipment of the consumer. In this way the consumer i disposes of a virtual service centre C_1 within the terminal. (In some configurations C_1 is housed in the head-end of a cable television system).

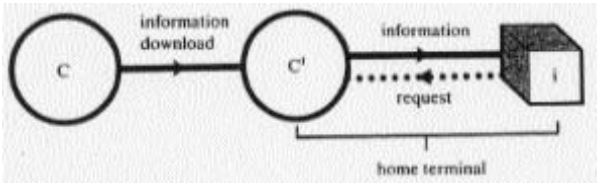


Figure 39.7. Virtual consultation centre C1 (eg teletext terminal).

In case the storage capacity of C_1 is the same as that of C, a realistic proposition nowadays, the waiting time will be reduced practically to zero. A consultation centre can generally be interrogated by several consumers, giving a more complex configuration.

A preliminary definition of consultation could run: *the issue of information by an information service provider under programmatic control of an information service consumer.* This definition also embraces the special case in which a consumer requests information to be delivered to another consumer or consumers.

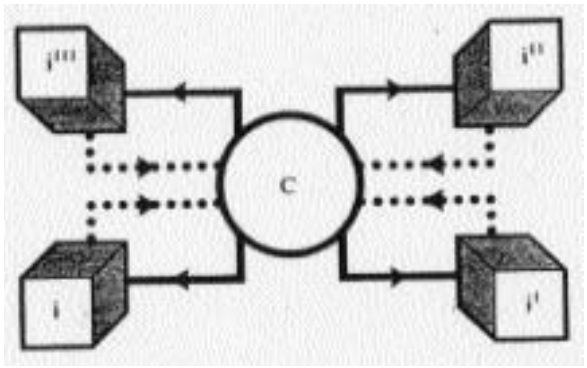
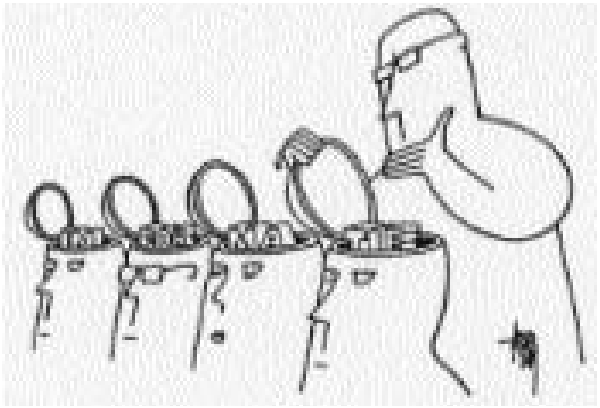


Figure 39.8. Consultation, general pattern.



Registration

If the information flow directions are reversed, we obtain a pattern that we shall call "registration." In this pattern the centre no longer has the task of issuing information, but of

collecting it. Modern tele-applications such as tele-opinion polling, tele-metering, tele-alarm, earth observation from satellites and so on can be conceived, but simple well known services like civil registration centres or news agencies follow a good approximation of this pattern.

A second task of such a centre can be to process the incoming information (re-arranging, translation or mathematical operation). The purpose of the processing can be to prepare a publication along either an allocutive or a consultative pattern. But then the centre is changing its role.

Registration is characterised by the fact that the information is owned by the information service consumers, located at the periphery, while the programme (opening hours for each subject!) is controlled by C, the provider of the information service. (It could be said that the centre is consulting the periphery, as opposed to the situation described above where the periphery consults the centre. In older work2 we therefore used the same term "consultation" for both patterns. In order to avoid confusion we now propose using two different terms).

Sometimes people reject a fire alarm service as a good example of the registration pattern, arguing that the time the fire sets in is not determined by C. But the characterisation given does not claim so: the centre C determines only at what time(s) it will be interested in which subject. A good fire alarm service will be on the alert 24 hours a day, ready for the message "fire" as well as the message "no fire."

A preliminary definition of registration could run: *the issue of information by an information service consumer under the programmatic control of an information service centre.*

We are now in a position to combine the preliminary definitions of the four idealised information traffic patterns: allocution, conversation, consultation and registration, into a single matrix definition. In order to obtain this general matrix definition, we only have to bear in mind that the four preliminary definitions represent exactly the four different combinations of answers to the following two questions:

- is the owner of the information issued an information service providing centre, or an individual information service consumer?
- is the programme of information issue controlled by an information service providing centre C, or by an individual information service consumer?

Pattern matrix

	Information issue by centre	Information issue by consumer
Programme control by centre	Allocution	Registration
Programme control by consumer	Consultation	Conversation

Each element of the matrix can comprise a group of different interconnection modes. The members of such a group of interconnection modes all follow the same idealised information traffic pattern. This is more than a flow diagram. It informs us not only about the routes and directions of an information flow, but also about the responsibilities of the information terminals involved. That is why we have a slight preference for the expression "traffic pattern" over "flow pattern."

The pattern matrix can serve as a basis in drawing up a legal framework. It does not of course solve the problem of whether, how or to what extent the interests of operators and clients of tele-information systems should be protected by law. That is a matter for political discussion and decision. But it must be expected that for all services which follow one and the same information traffic pattern, similar action will be considered relevant because the four patterns refer to four mutually exclusive social power relations that differ from one another in principle.

It should not be inferred that certain patterns may not have some regulatory aspects in common. As Jens Arnbak[3] has pointed out, we may even expect that possible laws adopted for one pattern will overlap with those for "neighbouring" patterns:

- copyright issues are generally confined to the left-hand column of the matrix
- the protection of privacy is relevant to the right-hand column
- formal public access and control procedures will usually be needed or appropriate in the upper row
- the free flow of information is generally served by minimising state interference in services belonging in the lower row.

In this way each element of the matrix lies at the crossing of two lines of desiderata. The systematic approach thus obtained immediately clarifies the social and legal position of

old and new information services, which follow sufficiently closely one of the four idealised information traffic patterns.

Many practical information services, however, do not follow a single pattern to the total exclusion of the others. Moreover, in daily life many centres will operate simultaneously, functioning and competing within a complex communication structure with lots of cross-connections, in which the idealised information traffic patterns will only play the role of building blocks. Therefore, in application of the foregoing theory, we shall deal with some multi-pattern services, the development of multi-pattern networks and the relation between the two phenomena.

From these examples it will, we hope, become clear how important it is to classify information services as correctly as possible according to their social and, from that standpoint, their legal position, and not according to the incidental technology that they employ, their form of presentation or their information content.

Multi-pattern Services

The matrix definition offers a sharp demarcation between the four areas of "idealised information services." The borderlines between actual (tele-) information services will not always be so clear cut. Some information services are typical of a multi-pattern type, ie that several patterns occur almost simultaneously. Sometimes a number of patterns will occur in alternation. In other situations the presence of more than one provider centre plays a role.

Broadcasting presents a good approximation to an idealised allocution pattern. But for the viewer it makes all the difference whether there is a large group of TV channels from different centres with a broad range of programmes, or whether choice is restricted to one or two channels of similar quality.

If, moreover, in the first case some of the channels carry programmes that are frequently repeated, so that the consumer has a certain influence on the time of "consumption," we can say that the service shows consultative features.

Another example of a diffuse pattern is encountered when a talented (political) orator in a direct address transforms his "allocution" more or less into "registration" by only forwarding rhetorical questions and after each sentence waiting for applause.

Conversely, a consultation service may possess strong allocutive features. A newspaper, for example, can be considered as a kind of databank that is consulted by each reader according to a personal programme. But the fact that so many people are confronted with centrally selected headlines reduces the influence of the consumer considerably.

Another instructive example can be found in the telephone service. Although it offers an almost ideal example of the conversation pattern, we have to admit that two other patterns also play a role. A telephone call is initiated by dialling a number. That number has to be found by "consultation" be it from a directory, a voice-based enquiry service or an electronic directory. At the end of the call, the distance and duration have to be "registered" in order to enable the telephone service provider to recover charges.

As a consequence, a telephone service provider also has to pay heed to copyright issues and registration regulations. If a connection with a mobile station has to be built up, the service provider is involved in a further privacy problem: the approximate position of the mobile station has to be known to him.

In this case it is clear that conversation is the main or primary pattern and that consultation and registration play a secondary role. But telephone systems lend themselves to other patterns than conversation alone. The technical properties are not very pattern-selective.

Finally, we might refer to an age-old information service that is typically multi-pattern in character: education. A teacher lecturing is clearly operating in allocution mode. But pupils putting questions to their teacher or studying books are working in consultation mode. A teacher trying to measure the progress of pupils by subjecting them to examination applies a registration mode. And pupils discussing the subject matter among themselves follow a conversation mode. The four modes are roughly of the same weight. This implies that for a complete tele-education system a multi-pattern network is inevitable, and contains a warning for those broadcasters who believe that tele-education is their exclusive domain.

Multi-pattern Networks

As long as the recognised specialists in certain kinds of tele-information services operate their own strongly differing technical systems, there exists no great need for a new

classification of tele-information services. And that has been the situation up to the present day: telephone and broadcasting use their own service-dedicated technical solutions.

But today a strong trend towards the setting up of multi-functional, or perhaps better, multi-pattern networks is also making itself felt. European telephone administrations are working hand in hand in order to unite telephone, telex and data networks into one so-called integrated services digital network (ISDN), to be implemented in the coming decade. Several studies have been started on the possible coupling of local wideband networks (cable TV, local area networks) with the ISDN. Even satellite communication will play a role in this context.

This means that it will become increasingly difficult to characterise a tele-information service on the basis of the technical appearance of the network or terminal equipment used. We may expect more and more multi-pattern terminal equipment to appear on the market. Already existing networks originally designed for only one of the patterns are provisionally used for others. The same applies to terminal equipment. Teletext and videotex are two well known examples of an alternative use of video equipment, which leads to misunderstanding and disputes between broadcasting and PTT monopolies.

Here we touch upon the very reason to review our classification system. With teletext as well as with videotex we run the risk that technology plays the role of the Trojan horse.

Neither consultation nor registration services need technical transport systems and terminal equipment of a completely new character. They differ strongly from the classic telephone and broadcasting services but largely in a non-technical sense. Consultation, for example, is the "bread and butter line" for press and other publishers who disclose information stored on paper or other "artificial memories." It seems not illogical that the legislation in existence for these publishing activities will also be applicable to tele-consultation services. To subject these services to telephone or broadcasting regulation on the ground that they make use of similar networks and terminal equipment would be a grave mistake.

The analysis presented in this paper rests on social power relations but is in fact politically neutral. No political programme of action can be derived from the pattern theory. It improves insight and facilitates a more systematic approach to legislation. It contains no prescriptions for specific laws.

It should be realised, however, that the fact that the classification in traffic patterns does not depend on technological properties does not imply that technical developments and technical management may not exercise a certain influence on the relative balance of the four different patterns. The history of the art of printing proves that such influences can even be very marked. Governments can greatly influence specific activities by promoting or retarding certain technical developments, as with cable television and the restrictions often placed on alternative use of these networks.

The pattern theory provides the yardstick by which to check whether governments follow a pattern-neutral course or not. It is obvious that under a dictatorial regime such a neutral course will not be found. Adolf Hitler, for example, had a notorious dislike for books, in fact, for consultation. He even made apologies for writing *Mein Kampf*. And of course he loved allocution, be it by personal address, by radio or by means of the cinema.

But we should not conclude this reflection on a downbeat. For each example of abuse of the power position inevitably connected with a centre of allocution we can find numerous cases in which allocution is put forth as a means of reaching the masses with messages of understanding and tolerance.

International broadcasting in particular bears a great responsibility in this respect and should be constantly on the look-out for positive opportunities. Yet the main ambition of broadcasters should perhaps be to resist any temptation to acquire some kind of hegemony over the other patterns.

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2. J.L. Bordewijk, "The combined use of CATV—and telephone networks for purposes of education and consultation," in *Two-Way Cable Television,* edited by W. Kaiser et al, Springer, Heidelberg, 1977.

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39. Tele-Information Services

IV

Revolution, Resistance, and the Launch of the Web