Mediatization theory and digital media

NIELS OLE FINNEMANN

E-mail: finnemann@imv.au.dk

Abstract

In the 20th century, the term "media logic" was introduced to denote the influence of independent mass media on political systems and other institutions. In recent years the idea has been reworked and labeled "mediatization" to widen the framework by including new media and new areas of application. In Section Two the paper discusses different conceptualizations. It is argued that even if they bring new insights, they cannot be unified into one concept, and that they also lack a consistent definition of digital media.

Section three provides a definition of digital media in order to identify new trajectories made possible by these media, which have led into a new media matrix built around the internet and mobile devices. It will be argued that the new media matrix cannot be understood from a point of view defined by the framework of 20th century mass media because digital media open new trajectories and because in the new matrix the previously existing media have had to transform themselves.

Keywords: Digital media, Internet, media matrix, media theory, media epochs, mediatization, coevolution of media

Introduction

In the 20th century, the term "media logic" was introduced, to denote the influence of independent mass media on political systems and other institutions. (Altheide and Snow, 1979; Strömbäck, 2008; Schultz, 2004; Hjarvard, 2008). In recent years, the idea has been reworked and labeled "mediatization" in an attempt to widen the framework by including older media, new media and areas of application (Schultz, 2004; Krotz, 2007; Hjarvard, 2008; Lundby, 2009a). At the same time, both notions have lost conceptual coherence and precision.

The concept of mediatization has also been discussed by Couldry (2008) and Livingstone (2009). Couldry argues that in the end the concept is not preferable because it is based on "linear" logic, Livingstone finds the notion "clumsy", but acknowledges that there might be an issue. Both Couldry and Livingstone find the notion 'mediation' to be more satisfactory because it is softer and more open-ended to cultural influences. This article does not deal with the terminology issue, but discusses how the various theories of mediatization deal with the emergence of digital media and their interrelations to older media.

In section 2, the following four, more or less conflicting notions of mediatization will be discussed:

1. As a "media logic" characterizing traditional mass media
2. As a "media logic" limited to "contemporary" media, including "interactive" media
3. As a notion of interrelations between different media
4. As a meta-process or point of reference for relating various studies of media to each other

It will be argued that even if each of these conceptualizations brings new insights, they cannot be unified into one concept. Instead, the latter three are seen as attempts to interpret the emergence of digital media, although they are limited by conceptual frameworks rooted in the study of 20th century mass media. It is argued that the concept should be split into a meta-concept for "grammatical" rather than "logical" characteristics for different constellations or matrices of media, and a concept of specific institutionalizations within a given matrix.

Section 3 provides a definition of digital media to identify new trajectories made possible by these media, leading into a transition from a television centered matrix of media to a matrix centered on digital media.

The term 'media matrix' was introduced in Meyrowitz (1985) to denote the set of media in a given society during a given period. In Finnemann (2001), it is used to define five major epochs in the history of media, each of which is characterized by a specific set of media. The five matrices are orally centered societies, script centered societies, print centered societies, societies centered on analogue electronic media, and societies centered on digital media. Each of these matrices can be characterized according to specific time and space constraints; material storage-, reproduction- and distribution-capacities; perceptual and semiotic repertoires.

Building on a soft interpretation of the principle that new media seldom replace old media, often described as Wolfgang Riepls "Gesetz"

Table 1. *Time-space relations for the five major matrices of media.*

Oral Societies	Script Cultures	Print	Analog Electronic Media	Digital Media
Local synchronicity; the here and now condition of embodied human existence	Separation of time and space; asynchronous communication added to local synchronicity	Separation of time and space reinforced and the reach widened by many copies, economy, etc.	Separation of speed of communication from speed of transportation of humans and goods; global synchronicity	Integration of storage capacities of print with transmission speed of electronic media; both asynchronous and synchronous formats allowing optional mixtures

(Rusch 2002), each matrix includes the media of the preceding epochs, though their function and use are changed. Furthermore, the development from one epoch to another implies an increase in the complexity of the matrix of media[1].

Accordingly it will be argued that a new, more complex media matrix cannot be understood from within the perspective of an older and less complex matrix both because digital media opens new trajectories and because the previously existing media have to accommodate and transform themselves in the new matrix. A medium can only be understood in the context of a specific matrix, and the specific institutionalization of the media system in question.

Conflicting notions of mediatization

Mediatization as a "logic" characterizing traditional mass media

According to Strömbäck (2008), Schrott (2009), and Hjarvard (2008) mediatization is characterized as a peculiar media logic as originally articulated by Altheide and Snow (1979), who defined this logic as:

> The process through which media present and transmit information. Elements of this form include the various media and the formats used by these media. Formats consist, in part, of how material is organized, the style in which it is presented, the focus and emphasis on particular characteristics of behavior, and the grammar of media communication. Format becomes a framework or a perspective that is used to present as well as interpret phenomena.
>
> (Altheide and Snow, 1979, p. 10)

For Altheide and Snow, "media" are mainly, but not solely, the mass media of the second half of the 20th century. While admitting that all civilizations have developed various types of media, all older types of media have been "overshadowed" by print media, radio, and television. The media logic refers to these overshadowing media.

The logic is mainly found in the symbolic formats, but Altheide and Snow also assume that the media become independent of the institutions formerly dominating them. From this perspective, the logic is described as "an interaction between organized institutional behavior and media." The main aspects are a "scientific rational logic" inherited by the modern communications media, and the coupling of this logic to entertainment, politics, religion and sports.

In the case of entertainment, Altheide and Snow focus on electronic media. In this case, the process of mediatization takes off with the advent

of television in the mid-20th century. In the case of religion, however, the process originates in the 18th century, as, since then, media "gradually have replaced religion as the dominant institutions in western society" (Altheide and Snow 1979, p. 199). Here, mediatization seems to be a manifestation of the principles of secularization, functional differentiation, and modernization. On the one hand, media logic is seen as a developmental logic, unfolding itself in changing constellations of media, from the printing press to electronic media. On the other hand, it is seen as a logic dominating a limited period, and related to a specific constellation of media including a specific set of narrative formats.

The unresolved dichotomy between the two conceptualizations forms the point of departure for at least three different positions in contemporary mediatization theory. First, the notion refers to an intrinsic and operative logic in a specific constellation of media (e.g. Strömbäck, 2008; Hjarvard, 2008; Schrott, 2009). Second, the notion refers to a developmental relationship between old and new media, whenever such relations unfold (Schultz, 2004; Krotz, 2007, 2009). Third, it is used as a notion of a meta-process, describing long-term developments on a par with industrialization, globalization, and modernization, or even more generally, as a notion for the changing forms and materializations of communication throughout history (Krotz, 2007, 2009; Rothenbuhler, 2009). Each of these three conceptualizations will be briefly considered.

Mediatization as a "media logic" limited to "contemporary" media

The notion of mediatization can be seen as a reflection of the growth of electronic media during the second half of the 20th century, and is most often applied to this epoch. This is the case for Strömbäck, Schrott, and Hjarvard, although Hjarvard includes "interactive media", and delimits the period of mediatization differently. Strömbäck (2008) limits his mediatization focus to journalism, where it:

> "can be taken to mean the dominance in societal processes of the news values and the storytelling techniques the media make use of to take advantage of their own medium and its format, and to be competitive in the ongoing struggle to capture peoples attention."
>
> (Strömbäck, 2008, p. 233)

Among these techniques, Strömbäck includes "simplification, polarization, intensification, personalization, visualization and stereotypization, and the framing of politics as a strategic game" (ibid.). Here, media logic is defined on the level of media discourse as an expression of the news criteria, and the ways in which things are told.

The definition of the media logic on the level of "news criteria and the storytelling technique" is accompanied by another definition which contrasts media logic to political logic. The latter is oriented towards obtaining power; the former is oriented "to being competitive in the ongoing struggle to capture people's attention". In this way, media logic comes close to market logic.

The relations between the media logic of storytelling and the media logic of the market remain unclear. Since the storytelling techniques employed in commercial media change over time, it is hard to see how there can be a uniform relationship between commercial media, on the one hand, and certain storytelling techniques, on the other.

Like Strömbäck, Schrott (2009) stresses the media logic, defining mediatization as a social process of media-induced social change "in social spheres that were previously considered to be separate from the mass media." (Schrott, 2009, p. 47). In contrast to Strömbäck, Schrott defines mediatization as social changes "caused" by mass media. The causal relationship is anchored in the institutionalization of media logic, which in its most basic form posits that messages must pass through the filters of selection and presentation.

These filters may be applied differently to different media. Therefore, media logic is a subject of empirical study to determine "in what way, and according to which rules, the mediatization process works. What are the rules and contexts that form the grounds of the mechanism of the mediatization process?" Here the logic disappears, because it is only a "placeholder" for rules yet to be identified by empirical analysis, which implies the possibility that different logics are detectable. It also disappears as a one-epoch-only term, because it is rooted in the fundamental processes of selection and presentation, which are constituent parts of all kinds of communication. Identifying media logic with these two basic filtering processes, Schrott, implicitly, includes not only writing, but communication in general.

It could be argued that there is a limit to this generalization, as Schrott also includes the institutionalization of media logic in his definition. This may allow us to exclude face-to-face communication, at least to some extent, but it does not exclude the highly institutionalized script cultures of the Chinese and Roman Empires, or the European Middle Ages. Most script cultures in the world have been based on institutionalized systems of information filtering and presentation. In addition, face-to-face communication has always been institutionalized in a variety of forms throughout history both inside and outside the family (Habermas, 1962; Meyrowitz, 1985).

Also Hjarvard wants to restrict the concept of mediatization "exclusively to the historical situation in which the media at once have attained

autonomy as a social institution and are crucially interwoven with the functioning of other institutions." (Hjarvard, 2008, p. 110). This, he claims, is only true in the most recent period, since the late 1980s, mainly in Western societies, and closely related to globalization.

At the same time, Hjarvard argues for a wider − and less normative − interpretation of mediatization as a process which takes place in all spheres of society, much as originally claimed by Altheide and Snow. However, Hjarvard also shifts the focus from the symbolic forms to "the institutional and technological modus operandi of the media" (Hjarvard, 2008, p. 113).

It is implicit in this definition that the various media are characterized by identical "institutional and technological modus operandi", though a back door to variation is opened by reference to a set of unspecified "formal and informal rules". Still, it is a strong claim, that the different media, both on the institutional and technological levels, can be ascribed a common "modus operandi" which is distinctive from the institutional and technological modus operandi of the social institutions that have to accommodate themselves with such a media logic. As it will be argued in section three, both older media and other institutions today have to accommodate themselves with new digital media and related institutional forms, to new narrative formats, new institutional forms and to new business models as well.

By restricting the notion of media logic to the institutional level, Hjarvard rids himself of the conceptual conflation of media and genre, and facilitates a more nuanced analysis of different formats in a wider range of social institutions. Hjarvard also changes the historical period and the constellation of media to which the concept is applied. Though he still refers to "the media", it is not the same set of media as discussed by Altheide and Snow, Strömbäck and Schrott. The change is introduced by simply adding "interactive media" to mass media. The aim is not to include the telephone, which would accord perfectly with the period of analogue electronic mass media, but to include digital media, especially the internet and mobile devices. As a result, the period of mediatization moves from the second half of 20th century, to the late 20th century.

This move can be considered a strength as it brings the concept up to the present. However, it questions the coherence of the concept with regards to both the technological and institutional modus operandi and the ways in which digital media are integrated into social institutions.

If mediatization is governed by professionalism, oriented towards commercial and competitive goals and serving various audiences (Hjarvard, 2008, p. 120), the internet cannot be included. Even if the description fits some activities on the internet, it does not fit the civic activities or the activities of public institutions. At the same time, we have a grow-

ing variety of ways in which commercial media activities relate to civic activities (Benkler, 2006).

It might even be argued that the internet and mobile devices, and digital media in general, reduce the independency of old media 1) in relation to other institutions (as new media allow these institutions to bypass the gatekeeper function of old media), 2) in relation to their financial basis (by taking over part of the advertising revenues), and 3) in the relation to the citizens and old media audiences, as well. With the advent of the internet, conventional mass media lose their monopoly as mediators between citizens and politicians. The same goes for the role of media as mediators between citizens and various expert systems; finally, the internet provides a new sort of mediatized marketplace and a new kind of mediatized space for civic connections.

Digital media differ from mass media, not only in their being born with a repertoire of new potentials, but in that the internet also provides new conditions for the modus operandi of traditional mass media (Finnemann, 2006).

The concepts of mediatization discussed differ in several aspects, but they are all related to a specific set of media, characterizing a specific historical epoch. Most of them address conventional mass media, while Hjarvard also includes 'interactive media'. They also agree that 'the media' share − one or another − media logic. Very little attention is given to the properties of the specific media included.

They also offer brief accounts of the historical development of the epoch, which simultaneously explains their selection of media. Altheide and Snow admit that all societies are built around media, and make a distinction between the whole range of media, and the specific set of "overshadowing" media. These are the modern media, which inherit a specific "scientific rationality". Accordingly, mediatization originates with the printing press, and culminates with 20th century mass media. However, they do not discuss whether the media logic is the same, only influencing still more areas, or whether the emergence of radio or television implied a change in this logic.

Strömbäck, Schrott, and Hjarvard are less concerned with history. Hjarvard explicitly states that the printing press did not imply mediatization, as it did not "exert a particularly predominant influence on other social institutions" (Hjarvard, 2008, p. 110).

One might also argue differently, that the − now digitized − printing press is still an influential medium in everyday life, as the reading of books and printed papers is still a precondition for participation in many social processes. Also included here is the reading of academic works. At the same time the printing of texts on a non-commercial, civic basis

is today widely used and is a significant part of the transition from the fourth to the fifth matrix of media.

Recalling the role of printing as one of the preconditions for the Protestant Reformation, the rise of the sciences, the emergence of human rights, the nation state and modern democracy, of the modern education system, of the industrial revolution, including the production of the knowledge required to produce printed newspapers, television and radio it seems difficult to deny that print capitalism (Anderson, 1983) represented institutional developments which all other social institutions had, and still have to accommodate − thereby qualifying print media for inclusion in the definition.

Mediatization as a notion for structural relations between different media

According to Schultz (2004), a basic assumption of mediatization theory is that the technological, semiotic, and economic characteristics of mass media result in problematic dependencies, constraints, and exaggerations. Therefore, Shultz analyzes whether digital media will lead to demediatization, as promised by many enthusiasts.

To analyze changes created by new media, Schultz describes the transition from the process of mediatization in the late 20th century (mass media) to the processes of mediatization implied by "new" media as defined by four variables: extension (in time/space); substitution (of unmediated and mediated processes with new mediated processes); amalgamation (with non-media activities in social life); and accommodation (of society to media logic).

However, even if new tendencies are identified, the conceptual framework is based on the assumption that digital media "are not that new", that digital media are still to be considered mass media, that the effects of old mass media "endure in the new media environment", and that the main perspective is that of convergence between old and new media. This is supported by the claim that, even if we have left the television-centered period of mass media, there is "continuity in the evolution of media systems", so "a single approach" may be appropriate for analyzing different stages of media development.

In spite of the focus on the parameters of change, there are no fundamental changes. Schultz's perspective is too narrow, because the question asked is whether new media "demediatize", and not how they actually afford changes to the general media matrix. This maybe explains why Schultz ignores the fact that the economic and institutional organization of old mass media differs in many ways from the distributed economy of the Internet, which also includes a significant non-commercial, but

now mediatized sector which is not conceived of in the existing "single approach".

A similar limiting perspective is presented in the definition of amalgamation: "as media use becomes an integral part of private and social life, the media's definitions of reality amalgamate with the social definition of reality" (ibid., p. 89). The notion of "the media's definition of reality" stems from the mass media culture of the 20th century, but the question to be asked is whether the internet and mobile devices provide similar definitions – which they do not. Perhaps "similar definitions" can also be found on the Internet, since old media are present, but only alongside a huge number of other commercial, civic, and official actors, delivering other images and definitions. The internet is not an agent in the same sense as the mass media. It is not an institution but a complicated system of interrelated networks.

Schultz's perspective is predominantly that of the old media. Extension, substitution, amalgamation and accommodation are rightly mentioned, but without implying any changes in the gradual unfolding of the former logic of media. Thus, the "evolutionary" theory is missing one of the most fundamental evolutionary principles: Evolutionary developments are not simply processes of gradual change within the same overall system. Evolutionary processes may also include the emergence of new phenomena, which, when replicated and integrated throughout the broader system, may also lead to the development of a more complex system based on a new, more complex set of trajectories.

Three aspects, which will be further discussed below, are missing in Schultz's approach. First, there is no definition of digital media. They are only represented as ad hoc instantiations, and seen in relation to the (normative) question of demediatization. Second, as a consequence of this, the four processes of change are only discussed in relation to various hype-ideas and not to the properties, biases and affordances of digital media. Third, the theory assumes that media develop according to an intrinsic logic – as interplay between the three functions and the four processes of change – thus ignoring the issues of how various cultural and social forces innovate, select, and adapt media for communicational needs and purposes.

To the four dimensions of change specified by Schultz, one should add that new digital media have their own set of unique properties, creating an opportunity for new communicative trajectories. Today's new media have properties that differ from the properties of yesterday's new media. This is also why "new media" is not a very convenient notion.

As further discussed below, old media are also often transformed and given new functions and usages in their co-evolution with new media. Even if this is acknowledged by Schultz, he is not much concerned with

the question of whether the transformations of old media also enable new developmental trajectories[2].

These features add to the four features specified by Schultz, and make it clear that the relationship between old and new media is increasingly complex. Whenever they arrive in history new media imply extended mediatization, widen the array of possible combinations and blend of media as well as widening the spaces of communication that depend on the specific properties of the new media.

Overcoming these limitations in the conceptualization of mediatization is key to a reformulation of mediatization theory so that it is capable of explaining the role of mass media and the development of digital media, and of bringing these developments into a wider historical framework including not only print culture, but also earlier writing cultures and oral societies.

As a metaprocess or point of reference for relating various studies of media to one another

In a paper on mediatization as a metaprocess, Friedrich Krotz (2007) presents quite a different take on mediatization: "there is a need for a conceptual frame that takes account of the wide range of theories and explanations for developments in media and communication" (Krotz, 2007, p. 256). According to Krotz, mediatization "means the historical developments that took and take place as a change of (communication) media and its consequences, not only with the rise of new forms of media but also with changes in the meaning of media in general" (ibid., p. 258). Important to this argument is Riepl's insight that "new media are not substitutes for the old ones […] and thus the number of media grows and media environments become more differentiated." (ibid. p. 258).

In a subsequent article, Krotz (2009, p. 24) defines the meta-process of mediatization as a long-term process, which "has, in each historical phase, a specific realization in each single culture and society." Mediatization cannot be applied to only one epoch, and there is no single media logic. There are different stages of development, but the processes of mediatization also differ among contemporary societies and cultures. While most societies today share the same matrix, they differ in regard to the institutionalizations and usages. Each matrix can be organized and utilized in different media systems. Unfortunately, Krotz does not specify his criteria for distinguishing between epochs and/or cultures, but he stresses that mediatization is not a technologically driven concept.

Krotz defines mediatization as a meta-process above the level of mediated communication. At the base of this system we have face-to-face communication and above that, three forms of mediated communication

(mediated interpersonal communication, interactive communication, communication as production/reception of standardized content). Consequently, the relevance of the notion cannot be restricted to modern history.

Alongside this, however, Krotz also parallels the process of mediatization with "drivers like globalization, individualization and the growing importance of market economy as a reference system" (Krotz, 2008, p. 56), which seems to limit the overarching framework to the last few centuries[3].

Krotz rightly transcends the "one-epoch-only" definitions to include different historical phases. Like Schultz, he adds the non-substitution perspective of Riepl, and the growing differentiation of media. Still, it is unclear at which point in history mediatization emerges. The definition of mediatization as meta-concept indicates that it covers the whole history of human communication, yet at the same time, Krotz limits the framework to modern societies. While he gives a few hints writing should be included as a medium, there are several indications that only the "overshadowing" media of Altheide and Snow are seen as driving mediatization.

Krotz is not alone in restricting media to "modern" mechanical media. The "modernist" bias in the concept of media has dominated media studies, both in the general understanding of what counts as media, and even more so in the empirical studies. It can be argued however, that the properties of digital media invite a breakdown of this bias for several reasons. One reason is that their interactive potential brings digital media into a closer relationship with personal and social communication in everyday life than any of the "modern" media. Another reason is that digital media contribute to fundamental changes in the relationship between (type-)writing and printing, and in the institutionalizations of oral communication. If, for instance, there is a computer, there is probably also a printer, allowing far reaching transformations in the production, distribution and consumption of printed texts. Similarly, oral and audio-visual communication can be produced and circulated via Youtube, video-conferences and other services. Transformations of functions and usages of media apply to the whole media matrix. A medium can only be understood in the context of a specific matrix, and the specific institutionalization of the media system in question.

As an implication of the transformative dynamic, we should transcend the line of demarcation between media and "overshadowing" modern media which are based on the use of mechanical devices and machines. Perhaps media studies should finally provide itself with a conceptual framework covering all media.

This would be very much in accordance with one of Rothenbuhler's conclusions in his *Continuities: Communicative form and Institutionalization*: "All communication is always, already mediatized." (Rothenbuhler, 2009, p. 287). The argument is strong: You cannot communicate if you are not externalizing your ideas, feelings, emotions, identifications, etc. Externalization is a precondition for others to relate to what you want to communicate. The external form has to be material, and it has to be "manifested in the shape of a collective system" for others to recognize what you communicate (ibid.). These externalized forms of communication are what media studies are about, whether they are manifested as speech, writing, painting, printing, radio, television, music, dance, and so forth. Every message is mediated, and the mediations are always institutionalized in shared collective systems.

To this one might simply add that speech is distinct from other media only because the spoken word does not transgress the boundaries of our embodied presence, while other media do so.

From a television centered matrix of media to a matrix centered on digital media

From a fourth to a fifth matrix

As argued in the previous section, mediatization theory today does not provide a unified conceptual framework for understanding contemporary media development.

The theories deliver different notions of media logic, as well as critical objections to the very notion of a media logic (Lundby, 2009b; Krotz, 2009; Rothenbühler, 2009; Couldry, 2008, Livingstone 2009). In some cases, the media referred to are the 20th century mass media (Altheide and Snow, Strömbeck, Scrott). In other cases, mediatization is used for the co-evolutionary interaction between mass media and so-called "new media" (Schultz). In other versions, it is used to describe a shared institutional logic assumed to cover both mass media and interactive media (Hjarvard). Interactive digital media are in some cases assumed to be reducible to mass media (Hjarvard and Schultz). Mediatization is also conceived of as a more generalized conceptual framework for analyzing different historical epochs (Krotz; Rothenbuhler), by including print culture preceding the modern newspaper, or by including all sorts of writing cultures. Finally, it is conceived of as including oral cultures, as a generalized concept for communication, closely related to the fact that all sorts of communication are externalized, materialized, and coded into a shared social system (Rothenbuhler).

Some of these conceptualizations are concerned with the interpretation of the relationship between the 20th century mass media and new

Table 2. *Notions of mediatization.*

	Altheide and Snow	Strömbeck	Schrott	Hjarvard	Schultz	Krotz	Rothenbuhler	Author
Media included	Printmedia, radio, television	Newspapers, radio, television	Newspapers, radio, television	Newspapers, radio, television + interactive media	Newspapers, radio, television + digital media	All media or print media, radio, television	All media, including speech	All media, including speech
History/ origin	17th Century	20th Century	20th Century	Late 20th Century	20th Century	Meta-perspective or 17th century	Human history	Human history
Modus operandi	One over-arching modern media-logic related to institution-alization, agenda-setting and framing	Logic de-veloped in four phases during 20th Century, primarily related to agenda-setting and framing	Causal media logic operating via filtering and selection – to be identified only by empirical analysis	Specific institutional independency or logic to which everybody must accommodate	Four dimen-sions of change in the relation between old and new media	Many epochs – different forms. No general logic. Each epoch with its own characteristics	The con-tinuity of mediatization and institutional particularities. No single logic	Media constraints are "grammatical" not logical. Media are not agencies with separate intentionality
Domains	Religion, culture, sports, entertainment journalism	News media	News mass media and "areas formerly considered to be separate from the mass-media"	All spheres of society – since the 1980s	Structural relations old/ new media: 1) extensions, 2) substitution, 3) amalgama-tion,	Four levels: Face-to-face; mediated interpersonal comm.; interactive comm.;	Communi-cation is always mediatized and physically manifested in	Five major matrices each with its own particularities of media systems and practices.

					4) accommodation of society to media logic	production/reception of standardized content	a collective system	Time-space biases, see table 1
Long term perspective	Related to "overshadowing" modern media	Close to processes of commercialization	20th Century mass media	New type of agency since 1980s	Media evolution as continuous process of gradual changes related to the four dimensions	Parallel to modernization, globalization, and individualization, – growing differentiation of media	Changing forms also depending on non-media processes such as e.g. economy, industrialization, institutionalization	Oral and written communication covers the pre-modern history. The history of modernity comprises the latter 3 epochs. Increasing complexity
Media matrices embraced	3rd–4th	4th	4th	4–5th	4th–5th	3rd–5th	1st–5th	1st–5th

digital media, though none address the question of defining digital media.

Between mediatization as a logic characterizing an epoch, and mediatization as a meta-concept covering different epochs, there is a gap. The concept of mediatization needs to be split: It can either be used a meta-concept for grammatical rather than logical processes which differs according to the matrix of media, or it can be specified within a given matrix but only by referring to specific institutionalizations which depends on the cultural, social and political context. At the same time a gap should be introduced between the power-issues/institutional forms of media systems and the issues of genre/narrative/discourse, as these two dimensions, even if they are always connected, may also vary independently, thus breaking the "logic". From the meta-perspective the notion of media-matrices becomes crucial, as the transition from one epoch to another introduces new variables.

Returning once again to the non-substitutable character of earlier media, we can derive three criteria for identifying a new media matrix, and, thereby, a new epoch in media history. First, there needs to be a medium, with new properties to be identified. Second, the new medium should create opportunities for new trajectories in communication. Third, the new medium should also enter into a co-evolutionary relation to old media, implying that they are transformed, which may also lead to the creation of new trajectories[4]. If these criteria do not apply, there is no need to define an epochal change. If they do apply, there is a transition from one matrix to a new matrix.

Defining digital media – why and how?

In the following it will be argued that digital media meet the above mentioned criteria and that their incorporation into society initiates changes in the roles and functions of all media. The point of departure is a definition of digital media in order to identify new trajectories in communication.

It is sometimes assumed that we do not need to define digital media, or that it is not possible to do so since they are so diverse and malleable, and since we can digitize all media, which makes digital media a sort of meta-medium. To this also comes the idea of the social shaping of technology, asserting that digital media do not have their own constant properties, as they are socially produced.

It is, however, possible to agree with the social shaping argument and the description of digital media as flexible and malleable, while maintaining that it is possible to define invariant and significant properties, distinctive to digital media. A basic characteristic of digital media is that

they integrate the storage capacities of print media with the transmission speed of electronic media. This integration opens up an indefinite array of new mixtures ranging from a number of speech-like near synchronous written formats (mails, chat, texting, status updates, blogs, comments etc.), interactive location-sensitive communication, fictious 3-D landscapes to not yet created new formats and genres also including asynchronous and globally distributed formats.

The integration of storage capacities and transmission speed is based on a − new kind of − textualized, variable, and editable functional architecture that contrasts to previously known media and machines[5]. The underlying − invisible − textual properties of digital media stem from the fact that the content, the interface, and some parts of the functional architecture have to be manifested and processed in the binary alphabet, and processed as sequences of editable bits. The binary alphabet is the first universal alphabet for representing everything representable. We may consider this as textualisation of the second order and it is the basis for and the limit of the flexibility and malleability of digital media. (Finnemann, 1999, 2005)[6].

While the functional architecture in the "universal" computer (as defined by Alan Turing in 1936) is completely textualized, most digital media today are more precisely described as dedicated computers in which some parts of the functional architecture are bound to the physical architecture for the sake of convenience. Nevertheless, textualization of content (including all sorts of images and sounds), as well as some parts of the functional architecture, is a fundamental and editable part of all digital media. This is the basis for the hypertextual, interactive, and multimodal features unique to digital media. Each of these features − eventually combined − provide a repertoire of ways to communicate not available in any previous matrix. However the utilization of this repertoire depends on cultural, social and political dynamics. This is also why it is preferable to speak of a grammar − rather than a logic − defining the enabling and disabling capacities, the constraints, affordances, and biases of various media and media constellations.

The internet inherits the three basic features of the computer, but adds five new features that make new trajectories possible, thus altogether constituting "the cultural grammar of the internet":

1. It is a medium for both public and private communication − and a variety of intermediate spaces.
2. It allows for a variation of reach, from the local to the global.
3. It is a medium for differentiated communication, as both senders and recipients may select and differentiate among a huge repertoire of

possible connections (one-to-one, few-to-many, and network- and group communication).
4. It offers constant availability, with optional combinations of live, synchronous, nearly synchronous, and asynchronous communication[7].
5. It brings corporations, public institutions an all sort of civic groups and individuals into the same platform, thus affording both new forms of surveillance and of collaboration.

These five trajectories are all new and variable on a nearly seamless scale.

Add mobile devices and we are close to being *always on*, connected to our jobs, families, friends, and foes − and everybody else in the global network − leaving our digital footprints everywhere[8]. Mediatization is extended into everyday life, at work, at home and in between. We are still listeners, readers, and viewers as we continue to select our individual set of audiences from a more differentiated set of service providers, among them, old media, but we are also able to be senders − writers, printers, and producers − as part of daily communication, thereby establishing the individual, social, and public connections that form our own audiences (Benkler 2006; Bruns 2008; Ling 2008; Baron 2008).

Digital media have spread into urban spaces. They are used for the surveillance of prisoners, disabled people, and children. Our digital transactions, whether private or in public spaces, are monitored by private companies and public institutions. Privacy and copyrights today seem to be reinterpreted, both in the growing social conflicts around file sharing, and in various other initiatives such as "creative commons" and "open access". To surveillance comes "sousveillance", and reciprocal peer surveillance or 'coveillance' performed on Facebook and similar social network sites (Mann, 2002; Nolan, Mann; and Wellman, 2003). Perhaps we are experiencing a transition from a culture based on internalized self-government to externalized monitoring of one another?

Finally, perhaps as the most radical of the new trajectories created by digital media, we may soon be *always in*, not only by connecting ourselves to "the internet of things"[9], but by eventually incorporating digital devices into our bodies (pacemakers, neurological replacements, scanners), and connecting ourselves to all sorts of surveillance systems and digital replacements, whether to remedy somatic or psychological flaws, or to monitor health.

The arguments for making an epochal distinction around the digital media, claiming that we are in a transition from the fourth to a fifth matrix, can be applied on a macro-level, a meso-level and a micro-level. We are at a very early stage, and far from the completion of such a transition, and the relationship between the two matrices does not imply two completely different matrices. Instead, the fourth matrix, centered

on television is, over time, inscribed and transformed into the fifth, centered on the internet. Inscription is the most appropriate term, as we are inscribing former media cultures into a new and generalized textual format.

On the macro level, we have a new matrix, with the internet as the backbone shared by all societies, and now accessible via mobile devices, while older media are transformed, accommodating themselves to the internet, mobile services and location sensitive communication. This is the level for analyzing the new communicational infrastructure of the global information and network society as a whole.

The meso-level is the level of media systems, which employ the same matrix in different ways, according to specific regional, national, social, and cultural relations, even if some of the actors act on a global scale. This is the level of different media systems, as described by Hallin and Mancini (2004) for print media, and for the different models of the information society (North American, Northern European, and Asian Tiger models: Castells, 1996−1998; Castells and Himanen, 2001). At this level we might include the co-evolutionary dynamics of old and new media, which is a matter of more globalized commercial competition with newcomers like Google, but also a matter of politics, culture and civil society, and of new genres and changing relations to audiences (civic journalism, the role of user-generated content via a growing variety of conduits, blogs, social network sites, twitter sites, etc.).

The third dimension is the micro-level of users. New media are integrated into everyday life as part of ordinary, daily routines. A growing part of everyday communication is 'textualised', primarily, but not exclusively, within pre-existing social groups.

The micro-level is the level where everything is enacted, but it cannot be analyzed solely on its own scale, as the meaning of an action in one place is related by mediatizations to actions somewhere else. Because of the storage capacity inherent in the textual nature of digital media, they transcend local situatedness, the here and now of speech, radio and television, as did writing and print media to a more limited and less intensive extent.

Conclusion

These new trajectories bypass many limitations of old mass media, as only a tiny minority of people could expect to be able to express themselves in those media, while this is exactly what "everybody" does on the internet and over their mobile devices.

We may expect these trajectories to be further developed, owing to cultural, social and political needs and desires. Created by people, they

are simultaneously made possible, but not caused, by the fundamental and invisible properties of digital media, in other words those of the binary alphabet and the hypertextual, interactive, and multimodal grammars of computers, to which is added the specific grammar of the Internet and mobile devices.

The incorporation of digital media into the overall matrix has forced the 20th century mass media to accommodate themselves with the new media landscape. They strive to develop adequate business models, they reorganize their former institutional platforms by producing media content for a broader set of platforms, and they compete with a huge sector of non-commercial civic agencies and with newcomers like Google, Facebook, and other professional communication agencies who access the public directly via their own sites and via interference on social network sites as well. The very notion of 'the media' as a uniform general agenda setting agency which defines the framing of the storytelling in society is giving way to a more complex system of media that allows the citizens to compose their own individual media menus and tell a wider specter of stories in a richer set of genres such as for instance "digital storytelling" (Lundby, 2009c). These are new genres, which are not defined by the mass media. Others are also present and others again will follow in the years to come. Old media still have a say both on local and regional levels and are influential in agenda setting in the national public spheres. But they have to accommodate as much as they define. Most of the old media in the world were on the internet before Google was invented, but they did not take advantage of this and have lost huge advertising revenues to the advertising model invented by Google early this century. Today, Google's services have a wider reach than any other medium and Google also provides a more focused personalization service. Google is both more general in reach and more individualized than traditional media, thus being the emblematic manifestation of the fundamental change in the long term processes of mediatization. Not only Google, but mechanical search engines as such are a new kind of competitor on the media market because of the increasingly significant role they play in our selection of news, information, knowledge and entertainment. Digital media not only change the role of old media, they also bring with them a range of new social, cultural and political issues, whether these involve social networking, or civic and professional collaboration, copyright, privacy, political strategies, economic development, and so forth.

They do so because they have a set of unique properties shared only by digital media as they incorporate and blend the storage capacities of print media and the transmission capacities of electronic media. Thus, the binary alphabet becomes a turning point in the history of media, and

in the history of society, as was the invention of speech, of alphabets and writing systems, of printing, and of electronic media in previous history.

The long-term process of mediatization, originating with the invention of speech has now reached a new level of complexity, allowing us for the first time in history to represent both sounds, whether music, speech, or even noise as well as texts and all sorts of images in the most simple alphabet possible, the binary alphabet.

Bionote

Niels Ole Finnemann is Professor at the Department of Information and Media Studies, Aarhus University, Denmark.

Notes

1. The notion 'complexity' refers to systems (e. g. a media matrix) with several variables, often assumed to be more or less unpredictable. The complexity in a system increases if new variables are introduced into the system. 'Increasing complexity' is used to denote that new media enters into the matrix as a new variable, which is further defined in the cultural, social and political contexts of institutionalizations and usages.
2. This is often the case. The telegraph and the rotary press e. g. allowed for a significant transformation of printed newspapers, as they could now provide daily news from around the world, thus allowing for the establishing of a synchronized, nationwide public sphere.
3. It is not clear why 'institutionalization' is not a driver on a par with those mentioned, but it seems to be necessary to include it if we want to analyze societies and their media systems.
4. The claim that 'new media are not substitutes for the old ones' cannot be a universal principle without exceptions, but there is empirical documentation that this is often the case. If so, it marks a significant change in the overall matrix. Examples: Writing did not become a substitute for speech. Printing did not become a substitute for writing or speech. Modern analogue electronic media did not become substitutes for printing, writing, or speech. We still talk, and organize institutions for spoken communication, such as schools, parliaments, councils, churches, associations, board meetings, public events etc.
5. The bits are often referred to as 0 and 1, as if they were numbers. Since numbers are semantic units, while letters are semantically empty, the bits are letters, rather than numbers. In contrast to numbers (and formal notation units), meanings can only be ascribed to sequences of bits. For an elaboration, including an analysis of the semantics of algorithms, see Finnemann (1999).
6. Since it is possible to digitize all media, one might assume that this will happen resulting in a blurring of the distinction between digital and traditional mass media. It's more likely, however, that old media will not be completely digitized, as some of their non-digital features will survive due to tradition and to various specific needs. For this reason we might still distinguish between born-digital media and digitized mass media at least in the foreseeable future. The difference is also maintained because traditional mass media are one of many institutional actors on digital platforms such as the internet and mobile networks.

7. See Finnemann 2005.
8. The term 'mobile device' is used instead of 'cell phone' or 'mobile phone' as the medium is oral, textual, and visual, and includes a deliberately composed set of functionalities (speech, text messaging, email, web access, twittering, calendar, address lists, games, radio, etc.) merged together with other handheld or wearable devices.
9. The internet of things refers to the idea of connecting to the internet physical objects using technologies like RFID, short-range wireless communications, real-time localization and sensor networks. See e. g. International Telecommunications Union: ITU Internet Reports 2005.

References

Anderson, B. (1983). *Imagined Communities*. London: Verso.
Altheide, D. L. & R. P. Snow (1979). *Media Logic*. Beverly Hills, CA: Sage.
Baron, N. S. (2008). *Always on. Language in an Online and Mobile World*. Oxford: Oxford University Press.
Benkler, Y. (2006). *The Wealth of Networks. How Social Production Transforms Markets and Freedom*. New Haven, CT: Yale University Press.
Bruns, A. (2008). *Blogs, Wikipedia, Second Life and Beyond: From Production to Produsage*. New York: Peter Lang.
Castells, M. (1996−1998). *The Information Age I−III*. London: Blackwell Publishing Ltd.
Castells, M., & P. Himanen (2002). *The Information Society and the Welfare State*. Oxford: Oxford University Press.
Couldry, N. (2008). Mediatization or Mediation? Alternative Understandings of the Emergent Space of Digital Storytelling. *New Media and Society. 10*(3), 373−391.
Finnemann, N. O. (1999). Modernity modernized. In Mayer, P. A. (ed.) *Computer Media and Communication − A Reader*. Oxford: Oxford University Press.
Finnemann, N. O. (2001). *Internet − A new Communicative Infrastructure*. Conference Paper, 15th Nordic Conference on Media and Communication Research, "New Media, New Opportunities, New Societies", University of Iceland in Reykjavík, Iceland, August 11th−13th, 2001. Aarhus: Working Paper no 2. Center for Internet Research. http://cfi.au.dk/fileadmin/www.cfi.au.dk/publikationer/cfis_skriftserie/002_finnemann.pdf (consulted 27. 9. 2010).
Finnemann, N. O. (2005). The Cultural Grammar of the Internet. In Jensen, K. B. *Interface://Culture − The World Wide Web as Political Resource and Aesthetic Form*. København: Samfundslitteratur/Nordicom. p. 52−71.
Finnemann, N. O. (2006). The internet and the Public Space. In Carlsson, U. (ed.) *Radio TV and the Internet in the Nordic Countries. Meeting the Challenges of New Media Technology. Nordic Media Trends 9.* Göteborg: Göteborg University, Nordicom: 11−28.
Finnemann, N. O. (2008). *The internet and the Emergence of a New Matrix of Media*. Conference Paper, 9. aoir Conference Copenhagen 15.−18. 10 2008. from http://aoir.org/conferences/past/ir-9-2008/ and scribd: http://www.scribd.com/doc/38225571/The-Internet-and-the-Emergence-of-Aoir-Conf (consulted 27. 9 2010)
Habermas, J. (1962). *Strukturwandel der Öffentlicheit.* [The Structural Transformation of the Public Sphere] Darmstadt: Lucherthand Verlag.
Hallin, D. C. & P. Mancini (2004). *Comparing Media Systems: Three Models of Media and Politics*. New York: Cambridge University Press.

Hjarvard, S. (2008). The Mediatization of Society A Theory of the Media as Agents of Social and Cultural Change. *Nordicom Review 29*(2), 105−134.

International telecommunications Union: *ITU Internet Reports 2005: The Internet of Things.* URL (consulted Feb. 2010): www.itu.int/internetofthings/

Krotz, F. (2007). The Meta-Processes of "Mediatization" as a Conceptual Frame. *Global Media and Communication 3*(3), 256−260.

Krotz, F. (2008). Media Connectivity. Concepts, Conditions, and Consequences. In A. Hepp, F. Krotz, S. Moores, & C. Winter (Eds.) *Connectivity, Networks and flows* (pp. 13−32)*.* New Jersey: Hampton Press.

Krotz, F. (2009). Mediatization: A Concept with Which to Grasp Media and Societal Change. In K. Lundby (Ed.) *mediatization, concepts, changes, consequences* (pp. 21−31). New York: Peter Lang.

Livingstone, S. (2008). Mediation. *Journal of Communication 59*(1), 1−18.

Ling, R. (2008). *New Tech, New Ties. How Mobile Communication is Reshaping Social Cohesion*. Mass: Massachusetts Institute of Technology.

Lundby, K. (Ed.) (2009a). *mediatization, concepts, changes, consequences*. New York: Peter Lang.

Lundby, K. (2009b). 'Media logic: Looking for Social Interaction'. In K. Lundby (Ed.) *mediatization, concepts, changes, consequences* (pp. 101−121). New York: Peter Lang.

Lundby, K. (Ed.) (2009c). *Digital Storytelling*. New York: Peter Lang.

Mann, S. (2002). *Sousveillance*. from http://wearcam.org/sousveillance.htm (consulted Feb. 2010)

Mann, S., Nolan, J., & Wellman, B. (2003). *Surveillance and Society 1*(3), 331−355. from http://www.surveillance-and-society.org (consulted Feb. 2010)

Mayer, P. A. (Ed.) (1999). *Computer Media and Communication − A Reader*. Oxford: Oxford University Press.

Meyrowitz, J. (1985). *No Sense of Place: the Impact of Electronic Media on Social Behavior*. New York: Oxford University Press.

Meyrowitz, J. (1993). 'Images of Media: Hidden Ferment − And Harmony − in the Field', *Journal of Communication 43*(3), 55−66.

Riepl, Wolfgang (1913). *Das Nachrichtenwesen des Altertums mit besonderer Rücksicht auf die Römer*. [The News Communications of the Ancient World with Special Reference to the Romans]. Leipzig: Teubner.

Rothenbuhler, E. W. (2009). Continuities: Communicative Form and Institutionalization. In K. Lundby (Ed.) 2009a (pp 277−292).

Rusch, G. (2002). Medientheorie. [Media Theory] In W. Schanze (Ed.). *Metzler Lexicon. Medientheorie Medienwissenschaft*. [Metzler Lexicon. Media Theory, Media Studies]. Stuttgart: J. G. Metzler.

Schultz, W. (2004). Reconstructing Mediatization as an Analytical Concept. *European Journal of Communication*, *19*(1), 87−101.

Schrott, A. (2009). Dimensions: 'Catch All Label or Technical Term'. In K. Lundby (Ed.), 2009a (pp. 41−61).

Strömbäck, J. (2008). Four Phases of Mediatization: An Analysis of the Mediatization of Politics. *The International Journal of Press/Politics, 13*(3), 228−246.