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Sous la direction de

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**Challenges and Uses of Information
and Communication Technologies**

Media and information diffusion: towards an open society

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Volume 1

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L'impact de la diffusion de messages d'alerte précoce en matière de drogues (Early Warning System) dans les médias de presse - Pablo Nicaise, René Patesson, Pascale Steinberg, Isidore Pelc	223
Session 1.5 Évolutions des médias (IV): Presse régionale / The Evolution of Media (IV): Regional Press	231
La presse quotidienne régionale : comment la modification des formats et les TICS modifient les processus d'écriture ? - Audrey de Ceglie	233
Convergence entre journal papier et supports en ligne dans la presse traditionnelle. L'exemple de trois quotidiens régionaux - Aude Rouger	240
Médias en ligne en contexte réunionnais: Stratégies de presse - Bernard Idelson	249
Mutations et diversité des pratiques journalistiques à l'ère d'Internet : le journalisme en ligne dans trois îles de l'Océan Indien - Nathalie Almar	261
Session 2.1 - Mutations des logiques éditoriales (I) : Nouvelles stratégies éditoriales / Mutations of the Publishing Process (I) : New Publishing Strategies	271
The New Publishing Model: What about Public Sphere and Cultural Policy? - Myrsini Zorba, Despoina Valatsou	273
A la recherche de la forme perdue ? Mimétisme et chassés-croisés, le fantôme de la page papier dans les sites de presse en ligne - Dominique Cotte	292
Stratégies éditoriales des sites web des chaînes de télévision française. Le cas de TF1 et France 2 - Luc Massou	292
Message-Medium-Rules: the triptych of effective information diffusion - Andreas Giannakouloupoulos, Eirini Giannara, Dimitris Koutsombolis, Iro Laskari	300
Édition électronique : fonctions et stratégies - Moncef Mehrezi	311
Session 2.2 - Mutations des logiques éditoriales (II) : Hybridations éditoriales et médiatiques / Mutations of the Publishing Process (II) : Hybrid Publishing Transitions	317
Le discours médiatique en ligne «marqué» : l'intensification de la présence des marques - Caroline de Montety	319
Quand la marque avance masquée: le projet éditorial délégué aux consommateurs - Karine Berthelot-Guiet	328
Mutations des logiques éditoriales : l'hybridation à la croisée des chemins - Valérie Patrin-Leclère	337

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Message-Medium-Rules: the triptych of effective information diffusion

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Over the course of history, the structure of societies and the relations between different societies have been shaped to a great extent by the flow of information in them (Diamond, 1997). The mainstream adoption of the Internet and Web has changed the physics of information diffusion. Until a few years ago, the major barrier for someone who wanted a piece of information to spread through a community was the cost of the technical infrastructure required to reach a large number of people. Today, with widespread access to the Internet, this bottleneck has largely been removed.

It is commonly accepted that the appearance of the web put into question the traditionally applied practices, introducing a bottom-up model for information flow. Both universality of the new medium and its technological infrastructure which supports enhanced interactivity, lead to new norms as regards the ability to publish, especially for citizens with little to none access to mass-media.

While the message remains at the discretion of the information holder and the medium is defined by its various technological and communicative characteristics, publishing rules constitute the most controversial aspect of the triptych of effective information diffusion in the case of the web.

The parameters of web publishing rules, in their entirety, set up a grid of interrelated connections, much like the web's very own structural form. In order to discuss and clarify the most important and influential factors which model contemporary web publishing it is useful to categorize them under two broad sections: a) technological factors and b) socio-economic factors which also include the moral and legal ones. This is a working categorization and there are obviously many other valid and probably more detailed ways for one to organize such a multitude of issues, but the proposed twofold classification facilitates the diachronic comparison between the web and offline media, and remains focused on the big picture from the communicative point of view.

a) The technological factors are intimately embodied to the deep structure of the medium and are directly related to the technological literacy of information providers. It is worth noting that the web in its original form as conceived by its inventor Tim Berners Lee was as much a place for retrieving information as for publishing information: "The idea was that anybody who used the web would have a space where they could write and

so the first browser was an editor, it was a writer as well as a reader” (Berners-Lee, 2005). During the lifetime of the web up to now this has changed twice: during the first years it was proved that authoring markup was not as easy as initially anticipated and special craftsmen (web authors) mediated the publishing process from the information holder to the public. These were not cases of gatekeepers in the sense that the term appears with respect to traditional media, but in any case it detained the whole process. Later on, dynamic content management software and especially the platforms for blogging restored the balance to its initial potential and it may be claimed that from a technological perspective the bottom-up model may be successfully implemented since (a) advances in the field of information architecture make it easier to retain information well organized (Wodtke, 2002) and (b) modern web publishing software facilitates adequately the whole process and guarantees ease-of-use for the less experienced users.

- b) The socio-economic factors cover a wide range of publishing constraints including financial costs (hardware and software, along web access and hosting) and expanding to legal matters since the international character of the medium de facto overcomes national publishing laws. The whole range of socio-economics factors poses severe obstacles to the bottom-up model, since –contrarily to the technological factors–offline media rules apply to the web in much the same way. Small scale sites resemble the financial status of small scale media businesses (e.g. small local radio stations) and their ability to attract visitors is limited by their advertising and promotional budget. On the other hand, it should be noted that this analogous status should not lead to the conclusion that as far as information diffusion is concerned both types of media are alike in each and every detail. For example, smart metadata which increase the findability of the bearing information (Morville, 2005), may be a comparative asset for small web-based content providers, leading to more effective news dissemination and thus favoring the bottom-up paradigm.

The advances brought by the web to the individual user’s ability to publish information accessible to all other users, resulted in the phenomenon of information overflow, which in turn questioned the structural patterns used up to that temporal point in fields related to archival sciences. Information architecture, information literacy and findability have become key topics regarding the ability of the audiences to locate and pull the information they need.

Taking into consideration the above mentioned factors it may be concluded that due to the decentralized structure of the web the final recipients of information have (at least theoretically) the same power as the big information centers. The term “theoretically” refers to the fact that in

practice various constraints –especially of the socio-economic category of factors– actually lessen the strength of the individual’s transmitter signal in terms of availability and decrease the possibility to reach wide audiences, as opposed to the big information centers which operate in both the offline media sector and the web.

Therefore it would be more accurate for one to conclude that potentially an independent information provider may reach each and every web surfer, but there are practical limitations in the form of constraints which reduce the target audience. Still, beyond these limitations, the web as a medium to store and diffuse information, under the constraints mentioned above (which take the form of rules), remains an expanded system, which can be enriched at any time, from any place and from anyone with access to a computer and an internet connection.

After all the users of the web, which both produce and consume its content constantly increase in numbers and so does the content. What is new – due to the web– in this process is the directionality of information production and diffusion: instead of the traditional top-down model, or the socially attractive bottom-up scenario, we are facing a multidirectional information diffusion pattern where both the above models can be found in real life cases. Since this is not a zero-sum game, a continuous trade off in terms of expansion takes place between the two models, which after all benefits the new player in the game: the bottom-up model.

Linear media such as press, radio and TV, are traditionally structured after the guidelines of a decision-making center. The appearance of the Web, which entails notions as *interaction* and *real-time* projection, information *uploads* and *downloads*, came out with specific changes in the underlying system of mass media.

The news is not a closed-integrated product as it was in traditional media; it is constantly under creation. It is activated once the reader-user asks for it to appear on screen and then returns to its immaterial-invisible state of an IT code stored in a server. Thus, while analogue-linear media lend themselves to direct reading, digital non-linear media require the user to possess a “synthetic ability”. The process of informing involves the lay reader-user who is in turn able to assume the role of the reporter if they wish so.

Audience’s ability to reach the digital media’ daily news agenda was the cause of the appearance of independent media, which in turn “filter” and influence official media. On the other hand, official media need to overcome this overflow of information as well as maintain the credibility of previous times. This leads to a constant dialogue between official media reporters and the audience. A loop of information flow, filtering and enrichment arises, where linear and non-linear media support each other and a new structure of writing is being established. Alongside a new trend arises; it is nowadays

journalism that re-approaches audience's interests and main problems. Journalism re-invents its social scope. That new trend, mainly due to new technologies, is civic-journalism.

In that point of view, the Web as a decentralized information space, offers users the freedom and the power to upload any kind of data so as other people will be able to see it. But as Steven Johnson claims portals and search engines exist in the first place because the Web is a tremendously disorganized space, a system where the disorder grows right alongside the overall volume. Yahoo and Google function, in a way, as a new medium, a man-made antidote to the Web's natural chaos, an engineered attempt to restore structure to a system that is incapable of generating structure on its own. This is the oft-noted paradox of the Web: the more information that flows into its reservoirs, the harder it becomes to find any single piece of information in that sea. That is why many researchers claim that search engines such as "google.com" act nowadays more like a mass medium than just a simple algorithmic search engine.

Since HTML-based links are one-directional, the Web lacks the complex interactivity of the bottom-up systems, where relationships are mutual and the interaction between neighbors has an impact on the overall system. A bottom-up structure would allow the overall system to comprise two levels of application, computation and emergence, as most "intelligent" systems do. The computation level may be conceived as a more general technological layer, a designed framework of software and hardware. On the other hand, the global emergence level may be conceived as a phenomenal and behavioral product of the above technological layer. Such a distinction can be easily made in a common computation system between the software and the material "machine" and its phenomenalⁱ products, the screen image and the sound produced: each level supports and generates the other. The key distinction lies in the relation between those two levels: within the daily operational use of the computer, causality is precise and instant: I type and, with some luck, letters appear on the screen. In emergent systems there does not exist such simple correspondence between the essential and the phenomenal (cause and effect) but rather a complex tangled causality generating facts and events that appear to be introducing a novelty, something more (Whitelaw, 2004, p. 215).

Self-organizing systems use feedback to bootstrap themselves into a more orderly structure. Given that the Web's feedback-intolerant, one-way linking, there's no way for the network to learn as it grows, which is why it's now so dependent on search engines to rein in its natural chaos (Emergence, p. 121). This is an algorithmic problem, not a representational one. This means that the *message* and the *medium* as they are, need *rules* in order to become more performant. Rules that will encourage the production and

dispersion of data, news and knowledge based on the activities of the participants.

In that point of view, news media are changing quite radically today in ways that differ substantially from traditional media. Traditional media involve deadlines, top-down reporting, are expensive and so far, are profitable. New media involve new technology, are 24/7, interactive, inexpensive, and in the case of online news media, mostly unprofitable. 'Networked Journalism' is collaborative - professionals and amateurs working together. Boundaries are crossed to share facts, questions, answers, ideas, and perspectivesⁱⁱ. New journalism raises many ethical issues. It also presents us with paradoxes. Different viewpoints, different languages, different cultures, values and goals are encountered whenever we cross boundaries. These differences have to be understood somehow because they affect our everyday lives and our perceptions of distant others – and indeed our actions.

Internet, mobile telephones, web sites and cyber communities represent a huge change for the media. A change that means we should give much greater attention to online spaces. Some say that the Internet makes possible a 'space of flows'ⁱⁱⁱ. Media operate today in a complex world in which this 'space of flows' contributes to a view that the risk of insecurity of mind or body is high and trust in authoritative viewpoints is low. But when we privilege new online spaces and technologies, it is easy to forget about the mundane, familiar practices that happen in the near and distant places that we encounter everyday through the media.

Unlike earlier mechanisms for spreading information at the grassroots level, weblogs are open to frequent widespread observation, and thus offer an inexpensive opportunity to capture large volumes of information flows at the individual level. Furthermore, recent electronic publication standards allow us to gather dated news articles from sources such as Reuters and the AP Newswire in order to analyze weblogs in the context of current affairs; these sources have enormous influence on the content of weblogs.

The weblog could be a way for building consensus according to Ito (2004). Jürgen Habermas describes how people could build such a consensus. Several researchers have connected Habermas' theory^{iv} to what we call the blogosphere, the network of bloggers. (Thompson, 2003; Mortensen & Walker, 2002) These researchers question whether the blogosphere can comply with what Habermas calls the public sphere. The public sphere is a domain of social life in which public opinion can be formed according to Habermas. This domain is accessible for all people. Part of the public sphere is constituted by the conversations that take place whenever people meet and form a public. (Thompson, 2003). Habermas distinguishes three aspects on basis of these salons and coffeehouses which constitute the public sphere: "not equality, but *a total disregard of status, the problematisation of areas*

that until then had not been questioned, and the principal of the *public as inclusive, not exclusive.*” (Mortensen & Walker, 2002: 258).

Based on that philosophy, three basic aspects of Internet can be distinguished as regards news and journalism^v:

1. **Internet as a primary source of information:** it is a scope of publicity, a different parallel public sphere at the disposal of individuals, organizations and companies to publish information in.
2. **Internet as a tool:** several applications of the Internet, the e-mail topping the list, render the Internet a useful working tool for the modern reporter.
3. **Internet as a medium:** apart from being a primary source of information and a useful tool, the Internet, namely the World Wide Web is also a platform for the development of new media.

Journalism has been affected by the digital wave of that Convergence and by the new digital era that has been exercising a tremendous impact on each and every aspect of human communication.

In particular, new digital media reform journalism on six fields:

1. The **content-message** of new digital mass media is wider and comprises several distinct forms subsumed in a whole, new “package”^{vi}. This is a **convergence** of different information genres. Text, sound, picture, video as well as information describing and classifying the rest of information converge into a single – and not essentially uniform – flow of information (bits). The **range of communication media** has been increasing. Another major feature of new media and multimedia at large is the use of **hyperlinks**^{vii}. It is a new method of narrative that helps transmission of information expand dramatically in comparison with linear narrative and conventional communication models in printed and electronic journalism (e.g. reverse pyramid). The basic question governing journalism “*What is news?*” is re-posed within the framework of the new digital media that determine new working methods.
2. The **way reporters work** has undergone dramatic changes. New powerful tools for the collection and production of news offer immense potential but also cause several problems. Moreover, the new digital media also change the working methods of reporter (e.g. new methods of narrative, different methods of visual communication, 24-hour “real time”). Such changes in the way work is conducted exercise a tremendous effect on the form of the transmitted message.
3. The **structure of the news production system** has been changing dramatically. Namely, both information organizations as businesses and the news production groups operating within such organizations (newsrooms) are obliged to adapt to the new state of affairs in the digital

world. That state has already led to crucial restructuring of the ownership of several press organizations, mergers and takeovers being most typical of it. Furthermore, new structures must take into serious consideration the universality of the new digital media and the broader geographical area that is now easily approachable.

4. Another crucial quality typical of the new digital media is the element of **interaction**. In the new media the **receptor** of the message also sends messages to the medium as well as to the general public of each medium. Via the potential provided by the digital world, interaction between the reporter and the public is feasible on the very moment a piece of news is published.
5. The immediate and constant response and finally the assessment of public places even more stress on the responsibility reporters shoulder and the importance of their vocation. In the new digital environment of corporate as well as independent digital media, where information flows so rapidly, the social responsibility assumed by reporters is huge. From that perspective journalism, as already mentioned, is “re-invented”^{viii}, its deeply social role being discovered (that trend is termed “**civic journalism**”^{ix}). Hence, journalism sets new **goals** alongside the provision of information. Those new goals:
 - 5.1. place more emphasis on the interaction with the public and restructure the relations between the public and the media, facing the public not as a consumer but rather as a transmitter
 - 5.2. regard journalism as the provider of integrated expanded services and not merely news
 - 5.3. regard journalism as the pioneer in the creation of a new, digital public sphere that is bound to ensure the active participation of as many citizens as possible.
6. New digital media **form the relations anew** between press organizations, journalists, advertisers and advertised, the sources, legal and executive power and the public. Especially with regard to the public, the new media offer the chance for individualization, that is their being individually used-consumed by the public. Practically, any user may form the contents they shall be receiving from a medium, basically as regards the type as well as the form, in accordance with their preferences. In that way the news (message) searches for the receptor and not vice versa^x. However, that tendency towards individualization does not necessarily lead to seclusion. The interactive character of new media allows individual properties to be easily integrated into broader social forms (that tendency is rather typical of independent media). Moreover, new digital media set new rules in the field of competition. Having access to a potentially global public and

aiming to cover the full range of news, with a view to ultimately serve isolated receptors (individual use) instead of a mass public alone, new digital media must equally cater for all dual levels, namely local and global, national and international, general and specific so as to meet the requirements of their vocation and survive stiff competition.

In light of the above, all the component parts of a communication formula (sender, medium, message, the way a message is produced, the receptor and the aim of communication process) seem to be changing as long as media work within a digital and interconnected environment. Therefore, should we contrast the traditional communication models^{xi} versus new digital media on the internet, the following conclusions are reached:

- In new communication media the **Gieber** and **Johnson** model may be applicable, according to which the **sources** tend to simulate or have been simulated with the communicator-journalist. With specific reference to the digital – online media that means the source functions as the communicator.
- In the new media, **massiveness** is on the wane whilst the absolute power of the transmitter is restrained and the receptor becomes more and more powerful.
- **Journalists as gatekeepers of news take** their work far more seriously for they are not the only “gate” through which news enters the public sphere. Gates have multiplied.
- Following the boom of new technologies the potential of information release increased dramatically. Information media increased in number as well whilst the role of the source often identifies with that of the communicator-journalist. Hence, **news supply** and **demand** are unbalanced, whereas the application or the effect of news on society remains unaltered. Oversupply is not essentially harmful or negative. Theoretically the user is supplied with a wider range of options and access to media. Should those increased options be combined with the growth of interaction, then the final user will indeed be benefited. Also, the creation of digital tools facilitating the collection, infiltration and classification of the information-news is bound to favor the increase of demand versus the supply of news.
- The conventional media as well as the **flow of news** was considered to be flowing from centers (developed countries) towards the periphery (developing countries). On the internet the concepts of center and periphery disposes of every geographical sense and is no longer in force, at least theoretically. In practice though the internet is still considered to concern a certain center, namely the USA and the E.U, especially Northern

Europe. However, its nature and character, as described by N. Negroponte^{xii}, allow independent “players” to enter the center.

Conclusions

In light of the above mentioned the following remarks could be made:

- There is a dynamic interactive relation between the transmitter and the receptor.
- The convergence of telecommunications, information technologies and the media has led to the creation of a new form of contents.
- Within that new communication process the receptor is able to function as a transmitter as well not only by reproducing information but also by attributing new qualities to it, leading to the creation of new information data without loss of their original character. Additionally, the receptor is able to insert new information-news thus enriching the information system.
- The evolution of the message-news within the new technological environments (online media) is reconsidered as regards its contents as well as its effect on the communication process total. New digital media are their message itself.
- The open form of media renders the message flexible and constantly processable thus dictating a new way of writing and presenting it.
- Messages-news develop on a non-linear basis, into individual sections. The reverse communication pyramid is substituted for by a loose net consisting of several smaller individual reverse communication pyramids interconnected with hyperlinks.

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ⁱ In this case the term “phenomenal” stands for apparent, visible.

ⁱⁱ See <http://www.buzzmachine.com/2006/07/05/networked-journalism/>
accessed 22 September 2007.

ⁱⁱⁱ Castells, M. (2001) *The Internet Galaxy*, Oxford: Oxford University Press.

^{iv} Habermas, J. (1984). *The theory of communicative action, volume 1, Reason and the rationalization of society*. (T. McCarthy, trans.). Boston: Beacon Press.

^v Pavlik, J.V., (2001), *Journalism and new Media*, Columbia University Press, New York. [On this point it is necessary to make a distinction between **online journalism** and **multimedia journalism**. Therefore, the work of online journalism is to be finally presented via the Internet and more specifically the World Wide Web, whereas multimedia journalism deals with the type of information provided on each subject (text, sound, picture, animation) as well as with its distribution to different platforms. The former is not essentially multimedia journalism as well. Yet, the use of multimedia in journalism takes full advantage of the internet potential.]

^{vi} Kopper G.G., (2000), *Research review: Online journalism – a report on current and continuing research and major questions in the international discussion*, Journalism Studies, Vol. 1, No 3, p.p. 499-512, Routledge

^{vii} Dimitriva D., and others, (2003), Hyperlinking as Gatekeeping: online newspaper coverage of the execution of an American terrorist, Vol. 4, No 3, p.p. 401-414, Routledge

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^x op. cit

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^{xii} Negroponte N., (1995), *Being Digital*, Kastaniotis Editions, Athens