The Media Paradigm for Information Science

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We are witnessing the revival of discussions about the theoretical core of information science. The reason for this revival is the appearance of Internet technologies and numerous „anomalies" in application of the traditional methods of information processing and transmission of the communication and information processes in cyberspace. The process of rapid development and utilization of new communication technology brings up new communication models that differ considerably from the traditional models that were occurring in the formalized processes of the information production, organization and provision. The frequently used metaphors describing this change as Simulcult, Cyberculture, Netculture etc., suggest the twilight of the axiomatic basis of the current "subject-object" determined culture. It considers especially the traditional concepts of distance, matter and human corporeality. The information science is in center of these changes and is forced to accept this challenge and reconsolidate its own foundations.

1. INTRODUCTION: from a problem-solving art to the Universal Science of Information and back

From the very beginning, information science has shown the ambition to be a "general science of information" of its own kind. In order to show its specific character, different from that of its predecessors (librarianship, documentation, information retrieval) it manifests an attempt to create/compile a universal information theory as its own conceptual background. In contrast to the related "theoretical" disciplines (mathematics, semiotics, cybernetics, information theory, social information science, system theory, psychology, etc.), information science foregrounds its practical character, i.e. its origin in librarianship. At the same time, it has always put emphasis on the use of the new huge computers, which were expected to solve forever the global problem of the optimal organization, accessibility and utilization of knowledge (incessant pointing to Vannevar Bush origins from this very tendency) in the librarians' "honest and accurate" hands.

This inner "inconsequentiality" of the information science has been repeatedly pointed at from the beginning as a sign of its epistemological "immaturity" (Brookes, 1976, 1980, 1981; Hoel, 1980; Slamecka, 1975, etc.), or, as incompatibility of its starting point with the present scientific paradigm (Tudjman, 1990 etc.). As a result of this, two conceptual streams are still dominating the information science. According to the more successful one, described as "pragmatic", information science should be dealing with so-called „transparent aspects" of the knowledge transmission on the background of "the physical paradigm" (Brookes, 1980, 1981; Buckland, 1991, etc.). The opinion of the second stream called "information hermeneutics", less spread and typical mostly of European academics, is that the subject of information science should be information analysis from its generation to its exploitation, i.e. not only the information processes based on the communication of recorded, communicable and structured pieces of knowledge, experience and skill. "The pragmatics" were trying to prove the scientific nature of their approach by refer-

ring to rapid expansion of scientist methods in linguistics, economy, system theories, sociology, etc. The minority endorsing hermeneutics found its justification mostly in psycho-cognitive sciences and the new knowledge in the field of neurology, bioinformatics, genetics, etc. The recent urgent social need to solve the topical practice problems of the production, organization and provision of information in the widest spectrum of human activities established information science not only as a respectable profession but also as a scholarly discipline, despite its "evident" epistemological and methodological difficulties.

At present, there are emerging voices that, referring to these "evident" drawbacks in the information science, point at this very untenability of the concept of "generality" in science (for example Wallmansberger, 1996), i.e. at the paradox of the worn out dominant cultural paradigm - the so-called *paradigm of representation (of knowledge)*. Gone is the self-confidence and arrogance, with which opponents of dissertations in information science at the universities with a long tradition in humanities (as for example at the Charles University) despised this unclean, "embryonic" science (usually they were experts in "hard core" disciplines which the dissertation touched, as linguists, mathematicians, economists, psychologists, computer scientists, etc.). What has made these experts uncomfortable is, however, neither their sudden interest in postmodern epistemology, nor the spectacular theoretical development of the information science, but the *phenomenon of Cyberspace*.

As a matter of fact, cyberspace made some fundamental, "easily explainable" theories of the "hard core" (or, to use Khun's term, "normal") science to look like hypotheses hardly or totally impossible to exemplify and prove. For example, "*in the case of semiotics, it is the Internet which explains semiotics rather than vice versa; we can say that in the Internet environment, or in case of the HTML language, the arbitrariness of the sign is trivially true and that no sign or object in Internet has other reference than another sign.*" (Kera, 1999). Moreover, some of the information science's hyperbolas, exaggerations and "errors", difficult to explain or to justify from the position of the "normal science", became "easily provable" *in cyberspace* (as "the world information system", "Super-brain", "the world memory concept", etc. - see, for example, Meadow, 1979 *vs.* Heylighen & Bollen, 1996). The question, however, is, how the present information science reacts at the suddenly emerged chance for self-realization, i.e. to what extent it is able and willing to accept the challenge from cyberspace. At present, when considerable **changes in the very nature of practice problems of production, organization and provision of information are taking place** within the global framework, the traditional conceptual approaches of information science seem more and more inadequate both on theoretical and practical (application) level. The „pragmatic vision" of the 21st century information specialist refers usually to the image of bureaucrat, a member of various committees for building and managing the information superhighways, or an observer at various censorship committees and boards of directors of telecommunication, media and information monopolies. His operational equivalent, a manager-applicator is represented in these visions by a kind of a Sisyphus quantifier and organizer of the information resources and flows on the Net, relying on magic chants as *digital library, Dublin Core*, etc. Nowadays, this obscure "pragmatic visions" are often supported by the hermeneutics' lamentations over dehumanization and robotization of the man in cyberspace and their alarm because of cyberterrorism, fundamentalism, anarchism, pornography, etc. (Skenderija, Spring 1998)

The urgency of these problems that originate and cumulate every day in cyberspace as well as on its "margins" forces us to

seek for new starting points, new ways and means of understanding and to solving them.

2. WHAT WE TALK ABOUT WHEN WE TALK ABOUT INTERNET

Internet can be understood as electronic mail, web pages, easily accessible pornography or as a sum of IP addresses and the pertinent protocols. As Internet we also understand hardware and software, net infrastructure of cables, routers, servers and client stations. Is Internet the total number of net users or the number of the users connected at the very moment? Librarians and information experts usually define Internet as a sum of linked data and documents saved on the hard discs of the connected computers. Other interpretations, however, speak about the global network as a global virtual community, a sum of active operating memory of all computers connected at the same time, or, as a global mental, cognitive, associative and cultural capacity of all users connected at one moment, etc. However, these attempts to explain the phenomenon of the global computer network deal only with its isolated aspects, relevant for a certain circle of experts and users and which tell us more about the limits of the methodological scope of a certain field than of the Net itself. The phenomenon of the Internet seems to be only one of the first symptoms of a much more fundamental change, which we are undergoing. That is why I have tried to draft a working definition of the term Cyberspace (Skenderija, 1997) as a possible method, i.e. a **model of analysis** in information science, instead of defining Internet as a **object of analysis** within the framework of the information science:

*"From the point of view of the **methodological apparatus** of information science, cyberspace can be defined as a "field of penetration" of client/server network technologies into the present models and processes of social communication. From the point of view of its **categorial apparatus**, the cyberspace phenomenon can be understood as an evolving new (global) communicational paradigm."*

Cyberspace radically questions the traditional concepts of distance, speed and materiality (i.e. the consistence of a dominant model of *reality as an **object***) on the "empirical level"; similarly, also the traditional concept of *identity*, or, the assumption of the "*subject integrity*" is threatened, as e.g. Rheingold (1993) has shown. The traditional methodological tools with which we try to represent and interpret the **net situation** (tables, graphs) do not enable us to show the **distinction** between the net and the user, the machine and the man, the **subject** (the one who controls, articulates, manages reality) and the **object** (that part of reality which is articulated, controlled, managed by the subject in process of communication). The fact that this model of representation still prevails as a dominant methodological point of departure in information science results in both the above mentioned difficulties in attempts of a consistent explanation of the phenomenon of interactive computer networks, and the necessary distortion and devaluation of the "Net reality". In other words, this model does not cover some fundamental qualities and possibilities of cyberspace, which is one of the main reasons why the information science working with the model of traditional reflexivity is unable of adequate theoretical valorization and solution of some urgent problems connected with the organization and utilization of knowledge transmission in the Net. This phenomenon manifests itself most of all in the following examples:

A) Since the methodological apparatus of information science works with information forms, which "act" as certain formal representatives of knowledge in communicational processes, i.e. as (in the "physical" sense) recorded data, pieces of information, facts, etc., there arise problems, if unstable,

"hypermedia" or the so-called "virtual" information configurations enter the traditional methodological scope of information science. The present methodological apparatus of information science is unable to deal with the validation of such phenomena as "digital physicality" and "dynamic network consistency".

B) These "virtual" configurations can, under specific circumstances, not only *represent*, but also directly *present ("create")* certain so-called *objective* ("scientific") contents (for example, virtual surgical operations, various kinds of interactive simulators, 3D modeling in natural sciences, etc.). Information science is very conservative in the way of approaching these problems; its interest has been up to now directed mostly towards the questions of *interface*, in the sense of:

- presentation of the re-presented sources (e.g. 3D interface for educational and didactic purposes, "the Telematics for Libraries", etc.)
- representation of the "self-representing" contents (organization and bibliographical description of virtual, multimedia and hypermedia informational configurations).

C) New communicational environment, evolving in cyberspace and characterized by open, decentralized and dynamic "virtual hyperstructures" as well as by interactively transferable communicational procedures, is a complete opposite of the traditional centralized and institutionally managed library and informational structures and processes. The fundamental deficiency of all centralized library and information systems stems from the fact that inevitably they are centered around institutions. On the contrary, in cyberspace (understood as information system) there is no fixed center. It is substituted by "variable centers" represented by **individual users at the moment of placing their information request**. (Skenderija, 1998). Nevertheless, at present, we can read from various 21st century information science and librarianship action programs that for example: "*Our traditional skills, together with those acquired as part of our commitment to continuing professional development, should therefore place us at the centre of information revolution.*" (IIS & LA, 1998) However, there are also more enlightened voices, for example: "*To take our place at the centre of the information universe we must move beyond jargon...*" (Walsh, 1997)

D) Until librarians and information scientists, with the help of Dublin Core, organize Internet in their digital libraries, the operators of Internet Search and Meta Search Engines are sure to make libraries "chaotic" by simply adding (from the technical point of view quite banal) utilities enabling a possibility of distributed searching/finding in the www OPACs. The fact that this has not happened yet proves how much backward we are, i.e. to what extent we are uninteresting for the users of Internet, which is nowadays shaped directly by their demand and by the mass marketing logic. To put it simply: nobody assumes that by incorporating the library infosphere the number of visits and thus also commercial attractiveness of his/her web pages would considerably increase. Nevertheless, our experts keep coming up with wise remarks and anticipations as for example: "*The Internet is not substitute for libraries. In fact, the Internet is a dangerous problem for librarians and teachers whose concern is honesty and accuracy.*" (Mesa, 1998) Or: "*At some point the Internet has to stop looking like the world' s largest rummage sale. For taming this particular frontier the right people are librarians, not cowboys. The Internet is made of information, and nobody knows more about how to order information than librarians, who have been pondering that problem for thousands of years...*" (Rennie, March 1997)

E) Information science joins the debate on copyright in the situation of the rapid takeover and utilization of new types of

documents and services that make them accessible. These efforts are, however, directed mostly towards finding new ways of charging fees. The legal approach is, even in this new situation, based on the priciple of *per analogiam*, i.e. it tries to react at this new kind of problems by means of analogies functioning within the framework of the present paradigm. However, in case of cyberspace, these analogies are very problematic and contradictory, since the present legal theory and practice are, in principle, based on the traditional concepts of distance, matter and human corporeality, which cyberspace puts in doubt. From this point of view, the information science could (should) offer the legal theory much more.

F) Et cetera

3. ON THE MEDIA PARADIGM

The evident problem of the present "normal" information science is that it either refuses to deal with the problems connected with the knowledge transmission in cyberspace, or it tries to solve them (or, rather, to enforce prerogative model solutions) without having first diagnosed them properly, without even trying to understand them in a more complex way. However, the objective of these reflections is not a strict refusal of the dominating paradigm(s) in information science: "To reject one paradigm without replacing it with another means to refuse science as such." (Petricek, 1992) I will try to remain, after all, within the framework of science ("*Theories make life better*" - Grifin, 1991), therefore, I propose a media paradigm as an alternative solution for re-evaluation and enhancing the present methodological apparatus, which we try, *per analogiam,* to apply on "objectivization" of the communication of knowledge in cyberspace. This new starting point could serve, first of all, as a diagnostic tool and, later, perhaps also as an alternative methodological tool for solving the practical ("empirical") problems with the knowledge transition in cyberspace. Information management, librarianship and "speculative" information theories refuse these problems, or, evidently, are unable to deal with them. At the same time, I am aware of the so-called **la condition postmoderne** (Lyotard) and I respect the fact that nowadays, nothing - and, the least the phenomenon of communication - can be explained by means of the model of *functioning machine*, "whose all parts are subordinated to the only goal and make sense only when they serve the whole." (Petricek, 1992) The complexity of the phenomenon of information and the diversity of models and forms that appear in the processes of knowledge transmission will hardly ever be fully conveyed by cyberspace. The plurality of impulses will continue to require plurality of methods, concepts, and pragmatic models of information science. Cyberspace as the only and exclusive model of communication is untenable, however, it seems that it is going to become more and more dominant. The media paradigm could enable the information science to regain the former competence in understanding and solving the urgent *practice problems* of information processing and transmission not only in decentralized communication environment of digital networks. At the same time, information science would get closer to the newly established and fast developing disciplines focused on multidisciplinary and "advanced" media and communication studies (consider "COWBOY disciplines" by some colleagues). These new disciplines are not constrained by the institutionalized tradition and they are taking over some of its former "jurisdiction." The very tradition and institutional background of information science could constitute a framework for the new multidisciplinary research and educational projects focusing on various aspects of the new communication paradigm and at searching new ways and means for solving urgent problems resulting from the knowl-

edge transmission.

"Unhonest/unaccurate librarians and teachers" could ally with the "cowboys" on the information science ground under the label of media studies and research, share their knowledge, experience and skills, and work for the common good.

4. ON THE APPLIED MEDIA THEORY

One possible way of leaving aside *the traditional categorial framework* could be approaching information science to the newly emerging media conceptions, where "the medium and information are no longer considered as to be radically different entities: in that sense medium is a space of information, in which medium is yet nothing else but information with its virtual relations and configurations." (Petricek, 1998) This possibility derives from McLuhan´s radical questioning of the traditional concept of media as a constitutive loss of information (noise, entropy) in communication channel, a kind of means/environment that opens a fatal gap between subject and object, man and reality, and prevents them from immediate relationship. Traditionally, the main goal of information science, similarly to that of the *normal science* in general, has been to reduce medium to the minimum by the Shannon's theorem. In the 21st century, the information science *should accept* new models of reality, which are characterized e.g. by Net Model, hypertext structures, plurality of codes, understanding information as a process, not a state, Self-organizing Systems, reacting at their environment, which they, at the same time, shape and create, etc.

The applied media concept for information science should be the summary of present critical conceptions referring to the various aspects of newly arising communication paradigm (authors as Baudrillard, Deleuze, Guattari, Derrida, Flusser, Heim, Lovink, Lyotard, Kroker, Mlinsky, Petricek, Rheingold, Saarinen, Taylor, Varela, Virilio, etc.), as well as *"holistic practical understanding of how to use electronic (and nonelectronic) technologies to manage information for effective use"*. (Schamber, 1996)

However, at this very moment, there is not yet a generally accepted evaluation of media which could be considered a "General Net Theory" (Lovink, 1996). According to Geert Lovink, one of the most distinguished media theoreticians, the reason for that is that "cyberspace is still a work in progress." However, the same author shows that there is a certain continuity in the process of consolidation of the Media theory as an "autonomous" field:

1. Medium as "the debate about ideology and power" (mass media and social communication, journalism, politics)
2. Medium as "the notions of discourse and structures" (McLuhan and technodeterminism, Eco and media semiotics, etc.)
3. "The Speculative Media Theory" (Technocult, Cybercult, Simulcult, Media Archeology, Media Philosophy, CyberArt, Virtual Reality - authors as Baudrillard, Virilio, Guattari, Deleuze, Leary, Flusser, Kroker, Dery, Taylor, Heim, and others)
4. „Net Criticism" (as "a pragmatic form of negative thinking, in the aftermath of a period dominated by speculative thinking that tried to define the 'new'")

Taking this classification as a starting point, we can say that there is a considerable field of penetration/intersection of information science and media conceptions in case of the phases 1. and 2., while there is no interaction between information science and media conceptions in phases 3. and 4. However, there are several rare attempts which should be mentioned, as for example: McMurdo (1995-1998), Bauwens (1993), Huwe (1996). The interesting point in the media conceptions of the phases 3. and 4. is the fact that they saw their own realization in cyberspace, i.e. they were, in a way, *empirically realized*

or that nowadays they take "empirical" prerequisites as their starting point. And that is why information science could/should accept them.

5. MEDIA PARADIGM FOR INFORMATION SCIENCE IN PRACTICE

For many information experts and teachers, the concept of media still refers to mass media, or possibly to "filters, switches, technical limitations, silly simulations and heartless representations. Focused on particular senses, they still need access and selection mechanisms. There are only particular media." (Lovink, 1996). A significant example are the opinions of Ron Dunn, who states in the article After the Tsunami: The Information Profession in the post-Internet world (Aug. 1998): „*The medium is not the message. It's important to remember that, despite its many benefits, the Internet is simply another distribution channel for information services...*". Some attempts to overcome such prejudices or, at least, to approach the media questions differently within the framework of information science, can be seen mostly in the university LIS's. When visiting the respective faculties' and schools' LIS web sites, I have noticed that recently, some workplaces have become interested in the less traditional types of problems and that they tend to use the less traditional research and educational means. However, in most cases such approach refers to conceptual and program contents for using laboratories, net and multimedia technologies, characterized by a kind of "methodological vacuum", manifested mostly in the mass use of empty cliches from the so-called *grant jargon*. Another frequent phenomenon is the notice "under construction". The best example of a successful implementation of this new information science strategy is the founding of the Faculty of Information and Media Studies at the University of Western Ontario.

The three years experience (1996-99) of the MED - the Comparative Media Research Group at the Institute of Information Studies and Librarianship (IILS), Charles University, is also worth mentioning. The MED has been offering the following courses: Cyberspace (Skenderija), Introduction to Media Theory (Petricek), Foundations of Web Literacy and Publishing (Skenderija), Cybersemiotics (Kera-Sourek), Comparative Media Studies (Skenderija), Virtual Multi-User Enviroments (Riha) a Introduction to LibrPunk (Skenderija). At the same time, the MED organized a series of lectures and seminars concerning various aspects of the new communication paradigm, as for example:

* Information and public services in cyberspace
* Distance learning, teleconferencing and other telematic application on the Internet
* Co-operation and interaction in the shared virtual environment
* Electronic publishing on the Internet
* Business, management and marketing in the new media environment
* Intellectual property in cyberspace
* Media convergence in the Internet media environment, Web TV
* Visualization, 3D modeling and interfaces
* Multimedia, high-speed networks, ATM
* Sociological, philosophical and political aspects of the new media
* Film, Visual Art, Literature in the new media environment, etc.

The majority of these activities took place in the well-equipped IILS computer room, where the issues discussed could be "practically" addressed, demonstrated, or analyzed. Within the framework of the MED activities, a project called „Kocourkoff - Cybertown 5000" has been started.

One of the results of the above mentioned activities is a defended doctoral dissertation in the field of Information science, two diploma theses and several dozens of

research papers. The MED provides research background for two internal doctoral students (one has an M.A. degree in Information science and the other one in Law) in the field of Information Science; the third candidate (M.A. in Philosophy) undergoes the entrance procedure at present. The MED project attracted more than thirty experts and students from the following fields: information science, philosophy, computer science, journalism, law, film studies, theatre studies, computer graphics and design, etc. Altogether, there have been more than two hundred participants in the courses and lectures. The interdisciplinary character of the MED activities under the common denominator of "media studies" proved to be completely "natural", promising and inspiring. This positive experience lead to the idea of founding a new type of M.A. study program at the IILS called Comparative Media Studies, including a lab of network technology. The syllabus has been preliminarily approved by the Head of the Institute, but due to technical and financial problems the project has been temporarily abandoned.

6. INSTEAD OF CONCLUSION

Cyberspace offers *"the newly arising possibilities of communication. However, these can be seen only* ***if we cross traditional categorial frameworks****; if we worked with the model of traditional reflexivity even in this situation, we would hardly see these possibilities. The era of representation may be really over, not only in the sphere of communication."* (Petricek, 1995)

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