The Order of the Senses: A Summary

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from

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Preface

This paper is a preliminary summary of my dissertation "The Order of the Senses - A Media Economic Code of Man." As the following is supposed to be an overview of my German language dissertation, it will be a discussion paper rather than a self standing article. I explicitly want to invite general questions on Media Economics, as well as questions on issues mentioned in the attached table of contents (translated from German) but not addressed in this paper. Please understand that the dissertation itself has two target groups: 1. Economist who are interested in the effects of media and 2. Media scientists who are interested in an economic approach on media. While the German dissertation explains the economic concepts and thoughts at quite some length to meet the needs of media scientists, these parts are "cut short" for this specific presentation. Please note that, within this paper, the single term "media" is not a synonym for organizations, such as "media companies," nor for solely "journalistic products," but refers to entities as "the book", "the movie", "the internet," etc.

Introduction

The topic of my dissertation is the relationship between media as humanly devised communication systems and economic decisions. To enhance the understanding of these relations, an interdisciplinary approach is chosen that draws its framework from the media theoretical concept of "Medialität", which was presented here last fall.[1] This concept describes media within three different layers: 1. by their technological presence (object layer), 2. by their dispositive structure, which is understood as the specific media rules enforced by the media technologies (dispositive layer), and 3. by their ability to act as a filter of perception (layer of the symbolic form). This media theoretical framework is applied in the dissertation to achieve a better understanding with regard to the theories of the founding father of modern Media Theory, Marshall McLuhan, who wrote in 1967:

»Media, by altering the environment, evoke in us unique ratios of sense perceptions. The extension of any one sense alters the way we think and act – the way we perceive the world. When these ratios change, men change.«[2]

Obviously, this idea conflicts with the traditional "starting point" of neoclassical behavioral assumptions of an economic actor with stable preferences in a stable environment. To bring the two theories to terms and "mutual understanding," my dissertation explores the relationship of media and economic actor in three parts. The parts are loosely connected with the different layers of the "Medialität" framework and different

[1] See "Media Economics - A Media Theoretical Approach": http://cniss.wustl.edu/workshoppapers/treutler.pdf

[2] McLuhan, Marshall / Fiore, Quentin (1967): S. 41

concepts of economic rationality. *Part I – The Technologies of Man* explores the origins, content [meaning] and scope of the concept of economic man (homo economicus) and elaborates on the usefulness and shortcomings of the neoclassical assumption of perfect rationality and hence perfect information in comparison to the theories of Marshall McLuhan. Based on this argumentation, *Part II – The Structures of Human Behavior* introduces the assumptions of bounded rationality and incomplete information. The structural aspects of "media rules" are explained under these conditions, and the thoughts of the New Institutional Economics are therefore included in the study. *Part III – The Boundaries of Knowledge* concludes the study with the elaboration of the relationship between individual cognition and media.

Part I: Technologies of Man

After exploring the origins and scope of traditional economic assumption of self interested, utility maximizing rational behavior, the explicit neoclassical assumption of perfect rationality and perfect information is addressed within the context of media. In a world of perfect information the role of media is very limited. Under perfect information media appear as goods and services which provide just utility from consumption, from basic communication services like phone networks or entertainment products like Hollywood movies. Media seem not much different from other consumption goods or production tools since the world of perfect information assumes away the importance of the communication process itself.

This is a problem, since even a strictly technical communication process scheme, like the traditional one proposed by Shannon and Weaver (1964), regards media technology

always as a *process* of sending signals over a communication channel from a sender to a receiver. For a better understanding of the way media work in this technical dimension, I worked out a distinction between elementary media functions and aggregated media functions that are shown in Figure 1 and which can be economically utilized.

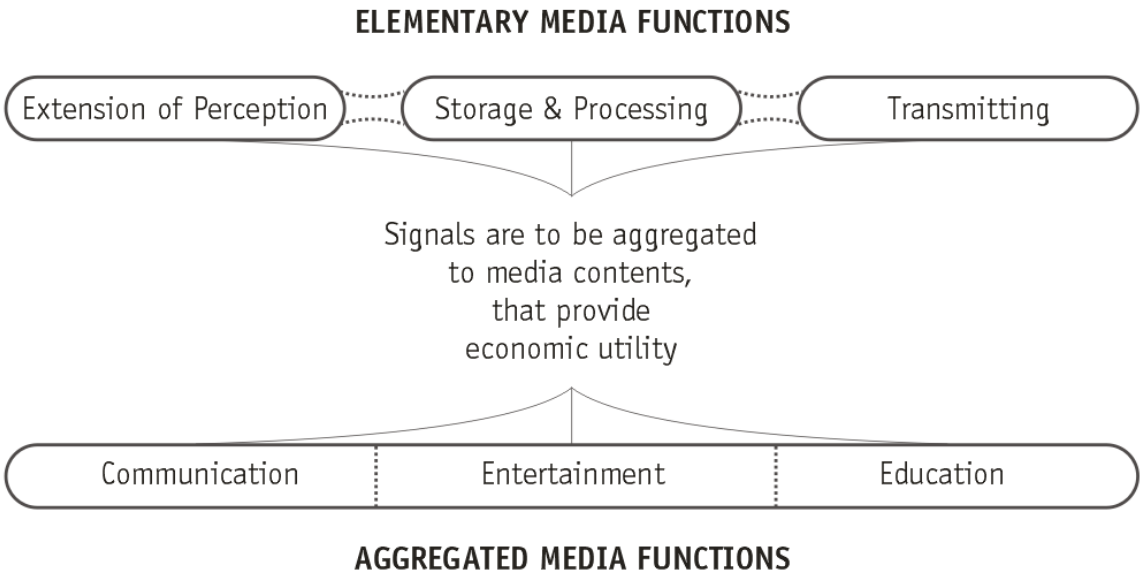

Figure 1 - Elementary and Aggregated Media Functions

Media for the Extension of Perception can be used for enhancing communication signals and therefore increasing the performance of the human senses. Classic examples is the binoculars, cameras, and hearing devices, but, of course, the TV can also fit as this type of example since it enhances our eye sight metaphorically "around the globe." Also more advanced technologies like touch sensitive virtual reality devices (i.e. reciprocal data gloves) are of this classification.

Media for Storage & Processing store data over time. The storage function allows for the processing data and can therefore be used as an external "memory." Storage function and processing function of a medium can not be separated and are therefore subject to

possible manipulation. Historical examples are clay, paper, and gramophones, as well as photography, film or the modern computer.

Transmitting Media transport of data signals over spatial distances with the sub goal of speeding up this process. Historical examples are couriers, carrier pigeons, smoke signals; modern examples are landline and wireless communication networks.

These elementary media functions of perception extension, storing and processing and transmitting are normally perceived as technical services and give no implication about a wider aspect of media technology, which is the generation of media content. The technical signals processed through elementary media functions are aggregated to media contents which can, as Figure 1 shows, be summarized as communication content, entertainment content and educational content, what I described as aggregated media functions. These different contents are the actual goods to be traded. The ongoing convergence of media technologies leads toward technologies that can fulfill all these technical functions in one apparatus.

The established branch of media economics covers to a great extent only the application of economic theories on the elementary and aggregated media functions; in other words, it focuses on the question how media can be economically described as goods and services. Media in this world have no role in the economic decision process, just media goods and services are evaluated due to standard economic restrictions. The technical functions of media described above are already quite complicated within a neoclassical world, since the usage of media always implies an ongoing process which is not comprehensible in the timeless neoclassical world. But the media theoretical assumptions that media are a very

dynamic and influential part of the social environment imply a more important role of media within the economic decision process.

The foundation for an approach that allows for the embedding of the influences of media on economic decision was laid by the economic historian Harold A. Innis. In the last ten years of his life, Harold Innis initiated a project that is now known as "The Culture of Communications" project (see Heyer (2003): p. XII). Innis main interest was the impact that the communication technologies utilized by a society had on its culture. Innis came to this idea after he discovered in his earlier work (1923, 1930) that the national economy of Canada was mainly influenced by the characteristics of the given trade routes. He stated for example that in the underdeveloped infrastructure of 19th century Canada, fur, which was easy to carry, was the main trading good on land routes while heavy lumber was transported on the waterways. According to Innis, other goods could not be traded in great numbers before the establishment of the Canadian railroad. Derived from these observations Innis developed the idea that the "trade-routes of the external world" determine to a certain extent what kind of goods can be traded in general. In his book the "Bias of Communication" (1949), he applied the same logic to the human communication technologies, which he labeled "trade routes of the mind." Media in this sense have a dominant role in the "cultural bias" of a society, because they play an important role in the distribution of knowledge over time and space.[3]

[3] In his book "The Bias of Communication" Innis describes the development of knowledge monopolies and their institutionalization within societies as a permanent struggle between centralization (time biased knowledge) and decentralization (space biased knowledge).

This idea was taken up and radicalized by Innis's pupil, Marshall McLuhan. who developed a theory of media as extensions of human faculty. In McLuhan's view, each medium enhances the performance of the human body and therefore "extends" human faculties. Storage media act as a extension of the memory, script as an extension of human language, television as an extension of the eye, and so forth. While Innis had devoted his work mainly on the passage from oral to literate cultures, McLuhan utilized these ideas[4] with respect to the rapid changes within the electronic media (1968).[5] His theory derives from a frameset that assumes a (rapidly) changing external world that has strong influences on the actors and their way to think and act. McLuhan had for his time a very innovative point-of-view on the role of media, but his work was troubled by an unconventional set of terminology he applied to describe the effects he suggested (most famous are probably the distinctions of "hot" and "cold" media, or his ideas about "anaesthetization" and "amputation" of the senses through media). While the exploration of these concepts would be to much of a deviation from the point of this presentation, nevertheless it is important to recognize that McLuhan's work is the starting point of most of today's Media Theory. Media Theory therefore begins with the idea of a media driven non-ergodic world in which environment and individuals are subject to a constant media driven change.

The economic concept of rationality interacts in this light with two aspects: external aspects of a media environment and internal aspects of individual cognition. The two remaining parts of the dissertation therefore address the two problems McLuhan's

[4] In fact, McLuhan called his work on the Gutenberg-Galaxy (1962) "a footnote" on Innis work.
[5] McLuhan just witnessed the developments in telecommunications and broadcasting. He died in 1980 at the eve of the decade that laid the foundation for the even faster changes brought by the internet.

approach leaves behind. Namely, how can media be described as part of the external world that constraints our choices (Part II) and finally what impact have media on the individual cognition (Part III)?

Part II: Structure of Human Behavior

Part II focuses on the external aspects of human decisions and therefore on the relationship of Institutions and Media. The main rationale behind these elaborations is that Media, as humanly devised tools of communication, constitute the intermediaries of impersonal exchange in modern societies. This point of view is enabled through the concept of bounded rationality and incomplete information that implies that individuals gather information to overcome (as good as they can) uncertainty. For this reason it is worthwhile to take a look inside the way that media technologies organize and distribute information that is to be gathered to form knowledge for the decision making of economic actors. For this purpose the media theoretical concept of the "Dispositive" is helpful to get a deeper insight into the rules that media imply on the information they deliver. The concept of the dispositive is that the communication needed to structure human interaction in modern societies is always dependant on the specific symbolic processes enforced by the technology of a medium. Since the term "Dispositive" has similar problems as the terms "Institution" or "Transaction Cost", namely that they are used in very different and not very precise ways, I develop a frameset to describe enhanced media functions that specifically capture the aspect of rules implied by media, which I will refer to as "institutional media functions" (in contrast to the "technical media functions" of Part I). As shown in Figure 2, the enhanced elementary media functions determine how knowledge can be communicated, gathered and

dispersed over space and time. In an aggregation of these functions, media fulfill economical, cultural and social functions.

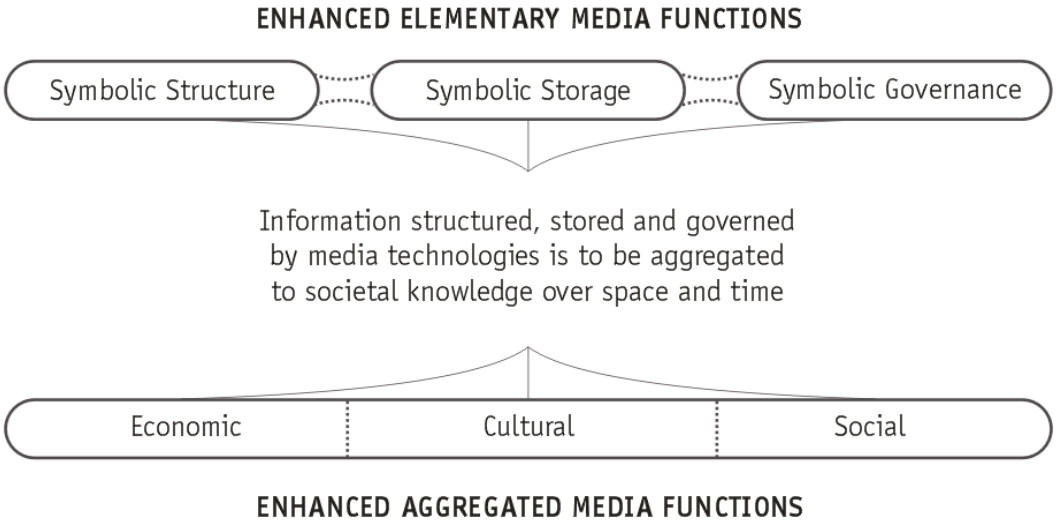

Figure 2 - Enhanced Media Functions

The **Symbolic Structure** of a medium describes the rules of the specific code that a medium uses. Technical signals (like 0 and 1) always have to be encoded following a certain algorithm that arranges the data in a certain decodable way. The symbolic structures of media are the most formal aspects about media rules, since communication breaks down when no code is applied. Signals without a code are simply "static hiss." From the basic grammar of a language to the complex computer algorithms, media organizes information in a specific way. A major shift in the symbolic structure of media was from the linear order of information in text toward the simultaneous order of information in photography, film or television.

The rules of the **Symbolic Storage** of information determine the accessibility and durability of knowledge over time and space. From the very first clay made symbolic storage systems of the Babylonian traders to the highly complex structures of modern data storage

systems like DVDs or computer RAMs, the storage media determines *what* information can be stored for *how long* and how easy it can be distributed *over spatial distances* (Innis called these "time or space biased media"). The stock of knowledge and its availability is therefore subject to specific characteristics that storage systems have in respect to the durability and dispersion of their content.

The **Symbolic Governance** describes the effect that the structure and storage characteristics of media technologies imply (or stronger "govern") certain behaviors that are enforced by the technology itself. Since you can only read, write, talk to others or express information over time and space if the specific rules of media are followed, these rules tend to be self-enforced by individuals that have the intention to communicate. Since it is a self enforced rule, it tends to be taken for granted, but there are important implications in this since media are the boundary of the kind of knowledge which is available to a society. Before the invention of the printing press, societies informed themselves mostly through oral communication (since scripting was often limited to monasteries). The printing press changed this, creating what McLuhan called the "Gutenberg Galaxy". The possibility to print and finally electronically transmit graphical information through the media of photography, television and computer technologies provided yet another change in the kind of knowledge available to societies.

This gives us an idea how the rules of media fulfill not only economic but also cultural and social functions, which I label "enhanced aggregated media functions". The economic function of media in this layer can be described as "alteration" of transaction cost, since communication over time in space is the essential prerequisite of impersonal exchange. From a technical point of view, it can be assumed that the more efficient the

communication can be arranged, the lower the transaction costs can be expected.[6] But since communication is always a symbolic process, transaction costs are not only be influenced by the technology, but also by the cultural and social aspects of media.

For Media Economics the more complicated problem is therefore the implications of cultural and social functions of media. While it is the cultural function of media to enable communication, it is the social function of media to enhance the possibilities of communication over time. To provide a simple example, the decision to see a movie is obviously not only one of economic restrictions, but also one of how it relays to the expected cultural value with reference to the individual preference of the movie recipient (does the movie integrate into cultural habits, build up in earlier movie consumptions, is the invested time and money worth the opportunity cost with regard to an educational, or entertainment value etc.). In addition to these cultural aspects the expected social value plays a role in the decision for a movie, for example, with who does one see the movie, and what further communication can be generated out of this. This very simple example (drawn from Haucap (2001)), shows the problems of economic analysis in a lot of media issues. Human decisions for the use of media can not completely be explained by economic restrictions, but they also have to account for cultural and social restrictions, which are not permanently stable but change over time.[7]

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[6] Interesting in this context is that media not only are tools to lower transaction cost but can also result in higher transaction cost. A good example for this is the perceived "information overload" through the sheer volume of information in the internet. The response to this information overload was to devise a number of reputation mechanisms that tried to overcome this obstacle.

[7] I am very aware of the quantificational problems an approach that includes social and cultural capital carries along. Nevertheless I draw the idea from Pierre Bourdieu's work on "Symbolical Capital" (1983) which he divides in social capital (comparable to the approach from Coleman), cultural capital (in some respect the

The layer of the "Dispositive" is hence mainly interested in the external aspects of media on human decision, namely how media technologies interact with informal and formal rules and therefore influence the cultural and social dispositions of human actors. From the point of view of McLuhan's notion, this leaves the question how Media are able to alter the perception of human beings and hence economic actors. This issue is addressed in the last part of the dissertation: *The Boundaries of Knowledge.*

Part III: The Boundaries of Knowledge

The third and last part of the study is an effort to link Ernst Cassierer's theory of the Symbolic Form with the implications made by the studies of Friedrich A. Hayek (1952) and Douglass C. North (2005) on the role of cognition for economic decisions. Turning back from the external aspects towards the internal aspects of rationality, the focus of this part lies on the interplay of Media on mental patterns developed through learning by individuals.

The theory of Symbolic Forms argues that we only have access to the world through the symbolic environment man created. As Ernst Cassierer wrote, "Through this [symbolic environment] alone we see and own that what we call "reality": hence the highest objective truth, that is known to the mind, is in the end the form of his own doing." (Cassirer, Ernst (1998): S. 96 [own translation]). Since Media are the substantial part of the symbolic

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stock of knowledge) and economic capital (traditional monetary). Regarding the problem, how the quantification difficulties and the smooth transfer from one sort of symbolic capital to another can be solved, good answers have still to be developed. Having said that, I believe that for Media Economics (maybe more than for other economic issues), this is very promising research direction to achieve better understanding of its topic.

environment, it is argued that Media perform a symbolic forming of the human mind by offering "preformatted" connections (the results of social knowledge and technical innovation) that are condensed and conserved over time through the institutional media functions described above. Since many (if not most) of new encountered experiences in the modern world are either directly communicated through media or put in context of something actors "learned" through media, mental models are not only shaped by personal experience but in a raising number by "mediated" experiences. Institutionalized media, which means media that have become part of the rules of the game (in modern economies, this refers to communication flows of societies like mass media or the internet, or also cultural institutions like the entertainment media), provide symbolic data that is "tested" (or better connected) by actors in regard of their established mental patterns.

In most situations of impersonal coordinated modern societies, media are the filters through which individuals perceive the world. Since the technical media functions explored in Part I lead to specific media rules, which where described as institutional media functions in Part II, media offer on different levels pre-configured connections of successful human communication. These pre-configured patterns are described as *symbolic media functions*, which offer working (existing) concepts of reality, identity and worthwhile attention patterns as shown in Figure 3.

Figure 3 - Symbolic Media Functions

The information humans gather through their senses is therefore to a certain extent "filtered" by man made media that offer explanations how the world works (**reality**), what

role individuals play within society (**identity**) and in addition what information is worthwhile to actively gather (**attention**).

The connectionist school therefore gives a more detailed explanation for the very broad argument of McLuhan that media have the ability to "organize the senses" in a way that have a strong impact on individual perception and on human interaction. The results of these influences are for most of media history only visible over longer periods of time, which some authors have described as the transitions from oral, to literal and to electronic cultural stages (McLuhan/Innis) or from episodic, mimetic, mythic to theoretical culture (Donald 1991). Nevertheless the example of the internet shows how new networked media technologies lead to new and complex symbolic environments that influence the development of institutions and human perception through their technological, institutional and symbolic functions.

Conclusion

Where does this effort to merge media theory and economic theory into a field of media economics leave us? The main outcome of this study goes in two directions. 1. If economists are interested in the field and the impact of media, they do well to not only concern themselves with media as tools and goods for communication but also should direct their research efforts to understand the impact of media utilized by a society on its institutions. In order to do so, they should concern themselves with the impact media have on individual cognition, because the cognition lays out the foundation of institutional development, as all in this group maybe agree to be true for economics in general. It is, in my opinion, mandatory for an economist's approach on media. 2. If media theorists are interested in a complete understanding in their very subject, they will fall short if they

neglect the economic forces in the change of media. Media theoretical understanding of economic theory often ends with a implicit notion of complete (or substantial) rational behavior and therefore disregards economic theories with reference to the "non-rational" symbolic aspects of media. With the theoretical frameset of the New Institutional Economics and its extension into cognitive sciences, these reluctances will hopefully lose their ground.

The approach sketched out in this dissertation makes the work of media economists on the one hand more complex, but on the other hand, provides a framework to better understand and scrutinize the technological, institutional and symbolical functions of media within and across societies. Table 1 revisits the main structure of the dissertation with reference to the behavioral economic assumptions discussed along with the respective media functions and the resulting theoretical role of media within (media-) economic theory.

Topic / Part	I	II	III
Behavioral assumptions	socially independent rational behavior	socially influenced bounded rational behavior	cognitive and socially influenced bounded rational behavior
Internal Aspects of Rationality (belief systems)	static (ergodic)	ergodic	non-ergodic
External Aspects of Rationality (institutions)	static (ergodic)	non-ergodic	non-ergodic
Media functions	technological	institutional	symbolic
costs affected by media	none	transaction costs	symbolic costs
effect of media on economic decision	none	change of incentive systems	change of incentive perception
media development influenced by	market prices	institutional design/development	cognitive predisposition
Role of media in Economic Theory	goods & services	rules of communications	preformatted cognitive connections

Table 1- Structure of the dissertation

With regard to the media economic behavioral assumptions the following is concluded:

1. The rationality of economic players is not independent from a complex media environment.
2. The media environment can be analytically divided in technical, institutional and symbolic functions of media.
3. To account for all of these functions the internal and external aspects of rationality should be regarded as a dynamic (non-ergodic) process that is embedded in social, cultural and economic (institutional) contexts.
4. Economic actors are therefore neither uninfluenced nor completely determined by media. But the human invention and application of media technologies are bound to the past through institutional media functions and influence the present and the future by providing symbolic media functions.

While these statements are surely only elements of a "Media Economic Code of Man", they leave one clear implication for the field of Media Economics. A lot of work needs to be done. I hope to provide at least a structured frameset from which further research can be systematically organized.

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