On the Medialization of Knowledge in the Digital Age

Prof. Dr. Theo Hug
Institute of Psychosocial Intervention and Communication Studies
Division of Media Education and Communications Culture
University of Innsbruck
Schoepfstr. 3, A - 6020 Innsbruck
Austria

Abstract

It is widely accepted that media play an increasingly significant role in regard to processes of generating, transferring and passing on knowledge. The range of modes and ways by which the topic can be addressed is extremely broad: Knowledge is edited and secured in ontologies; knowledge media are developed and tested; knowledge workers provide contributions to the design of knowledge spaces; furthermore, knowledge is socially redistributed, reflected with a knowledge-political intention.

Beginning with a short reply to selected modelings of the digital turn, this paper compares and contrasts some current discourses on knowledge. It raises the question to which extent, for example, talking about knowledge media can be seen as part of the problem or part of the solution. Moreover, it discusses in what way the common metaphorical modes of expression are useful or misleading, and how concepts of medialization can be successfully applied to the development of knowledge.

Key Words: theory of knowledge, mediation, medialization, mediatization, mediatic turn, digital turn, digitalization, knowledge media.

1. The Many Turns and the Digital Turn – Initial Considerations

"Turns" in science are similar to diagnoses of the present time in that currently there seem to exist plenty of both. At least, over the last decades, numerous turns, diagnoses of the present times, and societal self-descriptions have been considered, proclaimed, or pretentiously advocated. A quick look around, without much research effort, will yield many perspectives for describing the current times, among them such that pertain to different subcategories of society: event, communication, multi-option, information, knowledge-based, network, surveillance, control, media, and world society. In formal regards, we can distinguish everyday-theoretical interpretations, application-oriented models and ideologies (especially in politics and economy), and variously elaborate knowledge-sociological concepts. On the other hand, the 20th century seems to have brought an accelerated consumption of turns. At any rate, different turns have been discussed, also in recent time, by individuals or small groups at increasingly smaller intervals. From a historical perspective, the Copernican Revolution intensively engaged several generations and became the epitome of fundamental and existentially significant shifts in world view. Today, however, scientific turns sometimes seem to be a matter of career planning, editorial marketing, rediscoveries and professions of relevance by small research teams, or individual repositionings on the scientific market in the course of a job change.

The imagery of the Copernican Revolution is still resorted to, but in comparison to Immanuel Kant, who also refers to it in the preface to the second edition of the *Critique of Pure Reason* (*Kritik der reinen Vernunft;* 1995 [1787], p. 25), and who likewise has kept generations of thinkers occupied with his considerations, until today, these 'resorts' occasionally appear quite presumptuous given the factual reach of contemporary proclamations of 'turns.' This does not mean that the latter should be sweepingly dismissed as matters unworthy of further discussion which are essentially owed to narcissistically inflated self-manifestations.

Acknowledgment: This paper has been prepared with support of the Austrian Science Fund (FWF): P21431-G16. Manuscript, submitted to *International Journal of Humanities and Social Science* (IJHSS)

In cultural and social studies and the humanities, several turns have been suggested, from the linguistic to the mobile turn, which in conceptual regard contain innovative considerations throughout, even though they have sometimes met with limited interest from the scientific community and, in any case, have frequently not been taken up consistently in the mainstream developments.

Table 1 – Examples of turns in cultural and social studies and humanities

Examples of recent turns
Linguistic Turn (Ludwig Wittgenstein, Richard Rorty et al.)
Pragmatic Turn (Ferdinand de Saussure, Richard J. Bernstein et al.)
Symbolic Turn (Ernst Cassirer)
Cognitive Turn (Ulric Neisser, Friedhart Klix, Jerome Bruner, Meir Sternberg)
Interpretative Turn (Richard Shusterman, Kenneth Howe et al.)
Narrative Turn (Fritz Schütze, Steve De Shazer et al.)
Cultural Turn (Peter Janich, Doris Bachmann-Medick et al.)
Qualitative Turn (Klaus B. Jensen)
Affective Turn (Luc Ciompi, Patricia Clough, Jean O'Malley Halley et al.)
Spatial Turn (Jörg Döring, Tristan Thielmann, Jörg Dünne, Stephan Günzel et al.)
Postcolonial Turn (Homi K. Bhabha et al.)
Pictorial Turn (William J. T. Mitchell et al.)
Iconic Turn (Gottfried Boehm, Hubert Burda, Christa Maar, Frank Hartmann et al.)
Medial Turn (Göran Sonesson, Reinhard Margreiter, Sybille Krämer, Siegfried J. Schmidt et al.)
Social Turn (James Paul Gee)
Semantic Turn (Klaus Krippendorff)
Mobile Turn (John Urry, André H. Caron, Letizia Caronia et al.)
Sharing Turn (Volker Grassmuck)

Thus, concerns about perspectival fixations or (new) representational cementations may be qualified to such a degree that most of the suggested turns have remained largely noncommittal, both in terms of theory and practice. On the contrary, when turns are addressed cumulatively and in increasingly shorter intervals, it does not in itself indicate heightened metareflexive activities or application-oriented reconceptualizations. My hypothesis is that none of the more recent turns have brought about perspectival fixations on a broad scale, established a new universalism, or given rise to fundamentally restructuring an entire research area. Even the, by and large, widely received main features of the linguistic turn seem to simply have been skipped in some quarters, or not even arrived there in the first place. Instead, new impulses and critical references to blind spots were picked up in subareas, and analytical tools as well as research methods and practices were modified or revised in more or less loosely networked research teams rather than entire fields of activity.

From the viewpoint of the sociology of science, the conceptual potentials corresponding to turns that are argued in a differentiated manner seem to be of limited significance for processes of change. Experience has shown that at least the persuasive power of good arguments is limited when it comes to overcoming accustomed ways of problematization, ideological content or perspectival fixations. Max Planck's well-known observation that the representatives of old theories have to die out in order to make room for something new may be true not only in those instances where justified criticism develops into the absolutization of partial aspects, into dogmatic blindness or missionary strategies of persuasion and conviction.

A closer look reveals that the situation is certainly more complicated, and not only where turns are intended to be valued as normative demands, and where the new is supposed to be overcome – as tactically and powerfully as possible, and in any case not tactfully – by the (assertedly) newest.

---

[1] Kant follows Copernicus' basic notion and asks whether the explanation of celestial movements would not be more successful if one "made the spectator to revolve and the stars to remain at rest," rather than suppose the stars "all revolved round the spectator." Thus, he challenges the assumption of an "intuition [which] must conform to the constitution of the objects" and proposes the idea that objects "must conform to the constitution of our faculty of intuition" (Kant, 1929 [1787], p. 22). By putting the focus on the terminology, consistently and in a detailed way, he rings in an extremely momentous "turn to the philosophy of consciousness."

Starting with the significance of external funding and the establishment of new structures of relevance, to the common lack of gratification systems for inter- and transdisciplinary research activities, to structural measures of the "Third Space," there are many factors which (can) promote or hinder the scientific examination of suggestions concerning the reconceptualization of areas of studies. Here it is important to mention the dynamics of homegrown problems within scientific institutions, which occasionally accommodate "academic royal courts" or "university oligarchies." There, protected by collectively enacted bans on criticism and tolerated privileges, particular interests can be sold, far too long and boastfully, as democratically legitimized public interest. Now, how about the digital turn? Does it hold an exceptional position or is it rather just another specimen in the reservoir of turns? Does it function as an umbrella term for different versions of multiple digital turns, or does it represent another facet of accentuations which can/could be characterized metatheoretically as variants of contextualist or perspectival positions? Upon closer consideration, the answers to these questions are less conclusive than the everyday experiences with digital technologies may suggest.

Alice Crawford (2003) for instance examines the topic by means of developments in the area of visual culture. Using the production and dissemination of animations and machinima as an example, she studies aesthetic, narratological and democratic aspects that have become important with the use of digital tools. Crawford concludes that the effects resulting from the interplay of factors such as collaborative development of narrative structures, "algorithmic" aesthetic, the integration of immersive and multisensorial inputs etc. have remarkably transformed the possibilities for animators and their audiences (Crawford, 2003, p. 127). Her thematically focused argumentation appears plausible in the sense of an exemplarily executed variation of "the" digital turn.

Kathy Mills (2010) concentrates on more recent research in New Literacy Studies. In her profound synopsis, she presents evidence for research that shifts and focuses on digital literacy applications, and for an increased attention to "new literacy practices in digital environments across a variety of social contexts, such as workplaces and educational, economic, and recreational sites" (Mills, 2010, p. 246f.). In her interpretation, the digital turn is a result of globalization processes and the expanded field of communication technologies. While some authors regard the digital turn as concluded (see, for example, Gadanho, 2009), Martin Hand, in *Making Digital Cultures* (2008), resorts to different social-scientific and culture-theoretical lines of discourse in his analysis and characterization of the digital turn as a bundle of those narratives which revolve around promises and threats of new digital technologies (Hand, 2008, p. 15–42).

So far, however, there exists neither a comprehensive edition nor a monograph on this subject matter. Gebhard Rusch (2009) authored a very plausible and at the same time differentiated interpretation of the digital turn as a variation of a mediatic turn. Departing from the question if there is empirical evidence for assuming several mediatic turns, he demonstrates the extent to which recently, in a twofold sense, (a) observable changes in the areas of media and communication and (b) political and economic programs for the promotion of the same changes can be termed mediatic turns (Rusch, 2009, p. 27). In view of the particularities of digitalization processes, the historically new forms of sociotechnical integration, and not least the path dependence of current developments (p. 32–34), Rusch's characterization of the latest mediatic turn as a digital turn appears to be well-founded.

2. Knowledge, Forms of Knowledge and Knowledge Media

The question of knowledge has not only occupied philosophers and scientists of all ages; it has played a role in all areas of life. It usually becomes urgent when we doubt our knowledge, when it suddenly becomes questionable or insufficient for coping with everyday situations. In most cases of this kind, we settle for solutions which are practicable for the problem at hand and do not keep inquiring about the nature, structure or forms of knowledge.
In contexts of philosophically and scientifically motivated reflection, the question of knowledge is pursued more systematically. For example, ancient Western philosophy already distinguished the concepts *doxa*, *episteme*, *techne*, *phronesis*, *gnosis* and *sophia* (see Table 2). In this context, Ernst von Glasersfeld mentions problems that arise from combining these concepts, as it happens in the use of the English term 'knowledge,' insofar as 'theory of knowledge' may refer to such diverse areas as technical knowledge or metaphysics (Glasersfeld, 1997, p. 199).

---

[1] "Third Space" means that sphere between academia and administration which on one hand is oriented to goals of the "optimal use of the potential of Third Space professionals in higher education" (Whitchurch, 2010), and, on the other, pursues separate project ideas and logics.

Table 2 – Overview based on Glasersfeld (1997, p. 198)

doxa	opinion or empirical knowledge
episteme	rational understanding, theoretical knowledge
techne	craftsmanship, sense of design, applied knowledge
phronesis	prudence, practical wisdom
gnosis	true knowledge as it is claimed by metaphysicians
sophia	theoretical wisdom

However, problems do not only emerge due to a lack of conceptual clarity. They result from efforts for true knowledge and the transformation of different forms of knowledge, about which Glasersfeld writes:

> For more than 2,000 years, Western philosophy has been struggling to find a way to substantiate the claim that empirical knowledge (*doxa*) could be transformed into true knowledge of the world (*gnosis*). Almost all great philosophers have embarked on this quest, in spite of the fact that already among the Presocratics there were thinkers who demonstrated beyond question that human knowledge can never be separated from human modes of perception and conceptual thinking. (Glasersfeld, 1997, p. 199; italics in original)

Both aspects continue to play a weighty role in contemporary discourses about knowledge. On the one hand, numerous notions of knowledge are in use, and efforts toward clear conceptual boundaries and mutual references constitute the exception rather than the rule. On the other hand, the attempts at desubjectivizing processes of knowledge, in the sense of uncoupling them from human modes of perception and conceptual thinking, do not seem to have decreased in the digital age.

Those who search for definitions, paraphrases and modes of problematizing knowledge in philosophical and scientific contexts, and with a sense of openness, will find a wide variety of conceptual designations, among them the following:

- true opinion or tested knowledge
- reasonable belief (in the non-religious sense)
- socially situated construction
- mental construction of a thinking subject (concept map)
- symbolic representation of societal practice
- overall generally available orientations in the context of the framework of everyday actions
- bundle of skills for successful action
- co-evolutionary matter of course (in the sense of a formative practice)
- accumulation of ideational models
- bundled, ordered or interconnected information (informational organizational performance).

Although it is impossible to dwell on these and other characterizations as well as other differentiations, for example, of propositional and analogic, explicit and implicit, conscious and unconscious, individual and collective, static and dynamic, everyday and scientific, and theoretical and practical forms of knowledge (see summary in Hug & Perger, 2003), it seems important in this context to highlight a distinction made by Heinz von Foerster many decades ago. He distinguished between *decidable* and *undecidable* questions. In the case of the former, people operate on the basis of a predetermined frame within which statements are linked according to certain rules. In the course of applying these rules we, by necessity, arrive at certain results. Such applications of rules refer to general formalisms, for instance to logical deductions, grammatical syntax or arithmetic. The case is different with *undecidable* questions, for instance about the origin of the universe (act of creation, big bang etc.), about diagnoses of the present times, or about the future of society or (human) life.

[2]The complex interaction of dynamics inherent to science and transscientific as well as transepistemic conditions (Knorr-Cetina, 1984, p. [3]54–164) has not become less difficult since the 1980s.

Answering questions of this kind requires the choice of a theoretical frame, about which Heinz von Foerster writes: "As the choice of such a frame is itself the decision about an undecidable question, we can use the decisions in regard to these questions as tools in order to develop the appropriate theoretical frame" (1993, p. 352). Questions about the connection between knowledge and ignorance, knowledge and reality, knowledge and experience, knowledge and truth (or viability), knowledge and society, knowledge and power, knowledge and media, knowledge and representation, knowledge and gender, knowledge and/as capital etc. are such undecidable questions.

In these cases, we can presuppose the choice of different theoretical frames and thus determine the horizons of reflection as well as the modes of interaction, (de-)contextualization and objectivization either tentatively or in the long view. In selecting such frames of reference, we decide on localizations of knowledge in relation to opinion, belief and wisdom, the status of situation-relatedness, degrees of explicability, or the qualification of knowledge authorities (such as actors, actants, alliances, books, computers, cultures, networks, or minds). Of course, the options in a specific case are not discretionary but limited in a number of ways. Which "We" considers which frame to be 'appropriate' for whom or for which reasons, and to what extent institutional leeways, normative demands, theoretical openness, tactical commitments, hegemonic claims, or motives of cooperative and constructive problem-solving play a role, may substantially restrict the scope for dealing with undecidable questions.

However the modalities of reducing the complexity may be motivated, and the options limited, by means of analyzing the application of the rules and explaining the preconditions, it is possible to examine questions about the usefulness and performance of presupposed theoretical frames for knowledge-sociological and -psychological as well as conceptual aspects of the organization of knowledge. This is all the easier the clearer the conceptual distinctions have been made in a specific case. Yet in many cases we are confronted less with clearly defined focusings than with open, vague terminologies, as can be illustrated by the discourse on 'knowledge media.' The range of common language about 'media knowledge' has been expanded for a few years. For a while, "media knowledge" has mainly meant knowledge *about* media (for example, as empirically identifiable knowledge about media systems or individual media knowledge about one's own handling of media offers and technologies) or knowledge *through* media (for example, as mediated forms of the organization of knowledge in learning processes, or as knowledge through media as agents of socialization). Lately, the discourse on "media knowledge" in the sense of knowledge of the media has also attracted increasing attention (for example, as objects of knowledge created by media technologies, or forms of medially visualizing otherwise invisible objects).

What should be added is the expression 'knowledge media,' which refers to media as tools of the intentional construction of knowledge, to content-related media offers for specific purposes of teaching/learning, and occasionally to all three mentioned discourses at the same time. On one hand, this term occurs in the context of institutional designations and more or less narrow descriptions of objects. On the other, it is sometimes used synonymously with specific knowledge metaphors like e-books, e-book reader, or knowledge maps, which point out paths to knowledge and its generation. Of late, a particular knowledge metaphor, the vision of "knowledge in the cloud," has been brought into play in the context of semantic web developments:

> Knowledge in the form of semantic data is becoming increasingly ubiquitous in the Internet, but important steps towards scalable, dynamic systems to support collaborative work with distributed, heterogeneous knowledge are still missing. Following the *data in the cloud* paradigm that is emerging today (such as Amazon S3), in this paper we propose a future vision of "knowledge in the cloud." (Cerri et al., 2008, p. 986; italics in original)

---

[4]See also the contributions to the 2008 annual meeting of the Gesellschaft für Medienwissenschaft on the topic "What do media know?" ("Was wissen Medien?"), October 2-4, 2008, Institut für Medienwissenschaft, Ruhr-Universität Bochum, retrieved January 15, 2013 from http://www.gfmedienwissenschaft.de/gfm/start/index.php?TID=204.

[5]See for example the interdisciplinary focus of the "Institut für Wissensmedien" (Institute for Knowledge Media) in Tübingen (www.iwm-kmrc.de [April 16, 2012]) or the Knowledge Media Institute at Open University in Milton Keynes (UK), which studies knowledge media in the context of the converging areas of "Cognitive and Learning Sciences, Artificial Intelligence and Semantic Technologies, and Multimedia" (http://kmi.open.ac.uk/ [April 16, 2012]) and characterizes the term as follows: "Knowledge Media is about the processes of generating, understanding and sharing knowledge using several different media, as well as understanding how the use of different media shape these processes."

These few examples already show that we are potentially dealing with very different phenomenal domains. Here – as is always the case with the application of metaphors – certain perspectives and options of thematizing knowledge are opened up and foregrounded, while other aspects are put aside or ignored. Even if open or vague concepts may seem helpful for communicative reasons in application-oriented work contexts or in inter- and transdisciplinary research, we have no choice but distinguish more precisely and use clearly delineated focusings if the purpose of individual approaches is supposed to become apparent, and problem-related, solution-oriented forms of scientific cooperation are meant to be promoted.

3. What Can We Understand by the "Medialization of Knowledge"?

Today it is largely beyond doubt that media are involved in the creation of realities and the design of knowledge processes. As stated similarly in remarks made elsewhere in conjunction with socialization theory (Hug, 2010), "the media" are granted traits that are by all means constructive, even and especially when the media influences and impacts are judged to be destructive. If, however, the concern is how to shape the role of media and processes of medialization, and name the reach and characteristics of constructivity and mediality, then we encounter highly differing opinions.

On the one hand, (empirical) knowledge is frequently characterized in a generalizing manner as medialized knowledge: "Whatever we know about our society, or indeed about the world in which we live, we know through mass media" (Luhmann, 1996, p. 9). On the other hand, there are warnings about overestimating the media and overemphasizing medial communication; references to problems of inflated and commercialized knowledge, of the dissemination of pseudo-, superficial, and lack of knowledge; doubts about the possibilities of playfully acquiring knowledge (Liessmann, 2006, p. 31).

Talking about the medialization of knowledge certainly requires differentiations, the more so as media dynamics do not concern in the same way all areas and forms of knowledge, knowledge carriers and technologies, as well as institutions that generate, transfer and pass on knowledge. Vice versa, assumptions of "pure knowledge" prior to medialization would be naive, at least considering some of the above-mentioned recent turns. I think it has become difficult to conceive of media, mediality and medialization as optional dimensions in the theory of knowledge. Points in case are the ubiquity of digital media and the "integration of medial, information-transferring, -storing and -processing elements in all structural units of society" (Dröge & Kopper, 1991, p. 79); connections between intense phases of technologization and knowledge change (Leidlmair, 1997); and not least the arguments put forth in the debates about medial turns (Margreiter, 1999; Hug, 2009; Münker, 2009). Why should knowledge, of all things, be excepted, if the medialization of politics, economy, culture, public life, power, sex, communication, education, childhood etc., in short, "the mediation of everything" (Livingstone, 2009) is made the subject of discussion?

With this phrase – "mediation of everything" – there emerges a linguistic challenge. In her synopsis, Sonia Livingstone points to different accentuations in English (mediation vs. mediatization) and different uses of the term "mediation" in other languages. In the German-speaking area, the terms 'Medialisierung' and 'Mediatisierung' are the most common ones (see the summaries in Schulz, 2004a, 2004b, Meyen, 2009, and Adolf, 2011). Terminologically speaking, the word 'Mediatisierung' offers a more direct compatibility to English discourses (Krotz, 2008). However, it seems appropriate to retain the use of 'Medialisierung' for the time being since 'Mediatisierung' occasionally takes on more specific meanings in historiography and economics, and 'Medialisierung' is perfectly suitable as a technical term in German (Schulz, 2004a, p. 1). Moreover, the latter term suggests the mental and conceptual combination of processes and process results ('Medialisierung,' 'Medialität').

Prior to some considerations on differentiating the subject matter, I want to indicate a few pitfalls which in my opinion are commonly underrated. The abovementioned problems in regard to metaphors are of fundamental importance in the sense that most of us lack knowledge about forms of digital coding and are thus dependent on translations between digital and cultural codes, as Marianne van den Boomen (2009) emphasizes in reference to Lev Manovich (2002). Many metaphors disseminated or conventionalized in connection with internet developments (for example desktop, surfing the Internet, virtual community etc.) are misleading in that they mask the dynamic part played by digital-numeric structures (for example code, software).

---

[6]Similarly, Sybille Krämer (1998) writes: "Everything we can say, perceive and know about the world is said, perceived and known by means of media" (p. 73).

Van den Boomen therefore supports using the terms "material metaphors" in the sense of Katherine Hayles (2002) or "transcoding metaphors" and conceiving of them as actors in the process of media communication: "Material or transcoding metaphors are not just linguistic or conceptual frames, they are hybrid actors in social and cultural configurations" (Boomen, 2009, p. 48). In a similar manner I believe reductionist and ontologizing terminologies to be problematic (for example, "digital knowledge"), such as they are also known from e-learning discourses (for example, learning platforms as software, electronic learning etc.). In these instances, there usually occurs the misjudgment of culturalistic and contextual as well as technological aspects of communication dynamics. Such language frequently corresponds to an implicit technological determinism or a tendency to naturalize – in disguise – the results of cognitive and cultural achievements. To further differentiate the question of the medialization of knowledge, there are several structuring options. I want to highlight some which I regard as especially suitable both for conceptual developments and empirical studies.

In his considerations on medialization, Schulz (2004a) distinguishes four interrelated aspects to the purpose of analysis which are particularly relevant to the relation between media change and social change (p. 8–11). These four aspects – extension, substitution, amalgamation and accommodation – all offer points of contact for discussing (new) knowledge dynamics:

- *Extension:* To the extent that media technologies expand the natural and cultural boundaries of human communication capacity in regard to time, space and aesthetics, there are obvious changes worthy of reflection, for example, in connection to enhanced memory functions, new modalities of generating knowledge by means of digital cognitive tools, or the social (re-)distribution of knowledge (Bakardjieva, 2008). As respects the development of concepts concerning the co-evolution of space and knowledge, a promising approach has emerged with the notion of "knowledge scapes" in the tension between knowledge milieus and knowledge networks (Matthiessen, 2006 and 2007).

- *Substitution:* So-called "scopic media" (Knorr-Cetina, 2003) are relevant to processes of both substitution and extension. Other examples of (partial) substitution processes include collaborative forms of knowledge organization by means of wikis; e-meetings and online conferences within academia; and those forms and tools of a concise, database-driven presentation of partial aspects of knowledge production which are grouped under the misleading heading "knowledge balance" and which suggest that most if not all relevant dimensions of knowledge can be measured and balanced in economic terms of assets and liabilities.

- *Amalgamation*: As for the amalgamation or blending of media activities with other activities, it is possible to considerably modify the structure and communication of knowledge, for example, if decisive pieces of information occur via text messaging in the setting of face-to-face meetings. Further illustrations of knowledge-relevant, hybrid media practices are learning vocabulary via cell phone while waiting for public transport, the production of memos through a digital recording device, or the reception of a conference paper or a missed show by means of an MP3 player while driving a car.

- *Accommodation:* Similar to political parties and governments who increasingly adjust their course of action to "media logics," members of academia also noticeably accommodate to media change. Relevant phenomena range from the observance of style sheets, which is more or less taken for granted when producing publications; to the widespread use of databases in research; to email, blogs, wikis etc.; to time-consuming appearances of university professors in newspapers, on radio and television shows, or the internet; to the high significance of public relations for institutions.

These remarks can easily be amended and expanded in many respects. However, the few points of reference mentioned should make clear that (a) we are dealing here with an almost unmanageable multitude of phenomena and fields, and that (b) proposals for structuring and differentiation are indispensable. The usefulness of such proposals needs to be determined case by case and in accordance with (meta)theoretical, empirical and practice-based requirements.

---

[7]In English, the principal terms are 'mediation' (see Silverstone, 2005) and 'mediatization' (see Lundby, 2009), with 'mediation' generally representing a broader, more open and flexible concept. The term 'mediatization' on the other hand tends to refer to "media logics" in media societies that are institutionalized and relevant in the long run. Mediality (see Grusin, 2010) and mediology (see Debray, 1981) are rarely used in English, 'mediazation' (see Thompson 1995) even less often.

In an initial approach, general or specific object-related differentiations can be helpful. In regard to scientific knowledge, obvious choices are the considerations presented by Peter Weingart (2008) on the tightening connection between knowledge and media systems, or the medialization criteria suggested by Mike Schäfer (2007), which deal with the enlarged scope of reporting, the pluralization of discursive positions, and the increasingly controversial coverage. The same holds true for specific methodical approaches – for example, the historically or systematically oriented approaches of the analysis of medial knowledge metaphors (Margreiter, 2001; Hayles, 2002; Boomen, 2009) – and for methodological advancements of media-ecological and ecosystemic approaches in particular. Initially, basic distinctions from media theory can be valuable as well. For example, processes of the medialization of knowledge may be addressed in terms of

- *semiotic means of communication* (image, language, writing, music): for example, textualization, scoring, visualization or filmization,
- *media technologies of production, storage and transmission* (printing, radio, film, television, computer, Internet etc.): for example, digital forms of production, using digital storage and exchange formats in exchange processes, developing methods by means of digital technologies,
- *media offers* (resulting from using means of communication such as texts, radio and TV shows, or websites): for example, producing knowledge by means of simulations, online newspapers, the role of mobile information services in developing knowledge etc.,
- *media facilities* (media organizations, media institutions, intermedia institutions and organizations): for example, the role of the WC3 consortium in matters of standardization, of creative commons or fair use policies, knowledge dynamics in the light of interlinked infrastructures, and knowledge-political institutions and authorities for mediating between subgroups, regional, national and transnational public spheres,
- *symbolically generated communication media* (recognition, power, love etc.): gaining distinction through weblog activities and the intensive use of social media and networks, new options and modalities of (self)representation, of the inclusion and exclusion as well as assertion of claims to knowledge and power by digital means.

Apart from the mentioned aspect of the historically new forms of sociotechnical integration, a decisive difference between digital processes of medialization and other historical processes of this kind lies in the dynamic and, to most people, intransparent role of algorithms in the interaction of cognitive-emotional, sociocultural, political, economic, and technological processes. The knowledge which operators of search machines and so-called social networks generate and utilize for themselves by analyzing the search and usage habits (Becker & Stalder, 2009) is noticeable to average consumers and also professional knowledge workers mostly in the form of advertising, and not explicitly explained to them as a set of differentiated interrelations for their casual or studious attention.
Even if the mentioned terms may be helpful when analyzing and distinguishing different aspects of the medialization of knowledge, it is indispensable to intellectually merge them for a deepened understanding of the issue.

A few years ago, Siegfried J. Schmidt suggested a compact media concept which aims at systematizing and integrating available definitions, concepts and theories of media (Schmidt, 2000, p. 93–104; 2008, p. 93–94) and is moreover highly useful for systematic analyses in the tension between media and knowledge. Beyond that, this term is meant to permit for the particular area of observation unambiguous differentiations that are as adequate as possible, empirically verifiable, and system-oriented (Schmidt, 2008). In his integrative media concept, Schmidt distinguishes the four components communication tools, media techniques, institutions and organizations, and media offers (2008), whose interaction is conceived in the systemic sense of self-organizing factors. As regards the description of knowledge processes in media systems, the individual components provide interfaces for locating questions related to, for example, the distribution of knowledge (for example, individual and collective knowledge, specialized knowledge), contextual aspects (for example, immediately context-related vs. de-/ recontextualized knowledge), or degrees of explication (for example, implicit vs. explicit knowledge).

[8]On this aspect, see Janich (2006), who addresses the "supposedly natural character" of information processing systems (p. 122-123). His arguments can be applied to knowledge systems which easily become problematic if the status of "the given" is attributed to them, "*without* paying attention to *the genesis* (of the system or its description)" (p. 122; italics in original).

Other systematic possibilities of unfolding the subject matter can be found in connection with more complex knowledge-theoretical differentiations (Schmidt, 2005; Kösel, 2007) and also the following research perspectives, listed in Schmidt (2008, p. 95):

- system components (communication tools, technological dispositives, social institutionalizations, media offers)
- action roles (production, distribution, reception, processing)
- systems of reference (technology, economy, politics, law, socioculture)
- reach (regional, national, international, global)
- observational directions (diachronic, synchronic)
- observational directives (descriptive, normative).

Finally I want to refer to the theory of media change forwarded by Gebhard Rusch (2007), who departs from a concept of multiplex systems in order to examine media processes on a micro-, meso- and macrolevel within the framework of evolutionary media dynamics (p. 13). Rusch differentiates a number of variation, selection and regulation dynamics and suggests a typology of dynamics of media change (see Figure 1) "which interact in complex hyperdynamics in settings of evolutionary or revolutionary change" (Rusch, 2007, p. 13).

Fig. 1 – Dynamics of societal, cultural and media change with seamless transitions, according to Rusch (2007, p. 65)

CONTINUOUS CHANGE ----------		**DISCONTINUOUS CHANGE**
biological evolution ----------		**cultural evolution**
(meta)stability ----------	**destability** ----------	**instability**
conservative change ----------		progressive change
evolution	shock	defect, dysfunction, deficiency (failure)
oscillation	boundary layer dynamics	collapse
cycle	contrast dynamics	fluctuation (leap)
	phase effect dynamics	catastrophe (hypercritical change)
	cascades (chain reaction)	revolution (system change)
	resonance	
	network effect	

Rusch's theory conceives of processes of medialization as media-systemic processes which can be represented in dynamic models. Specifically, Rusch defines five relevant factors which are variably interconnected in media system dynamics:

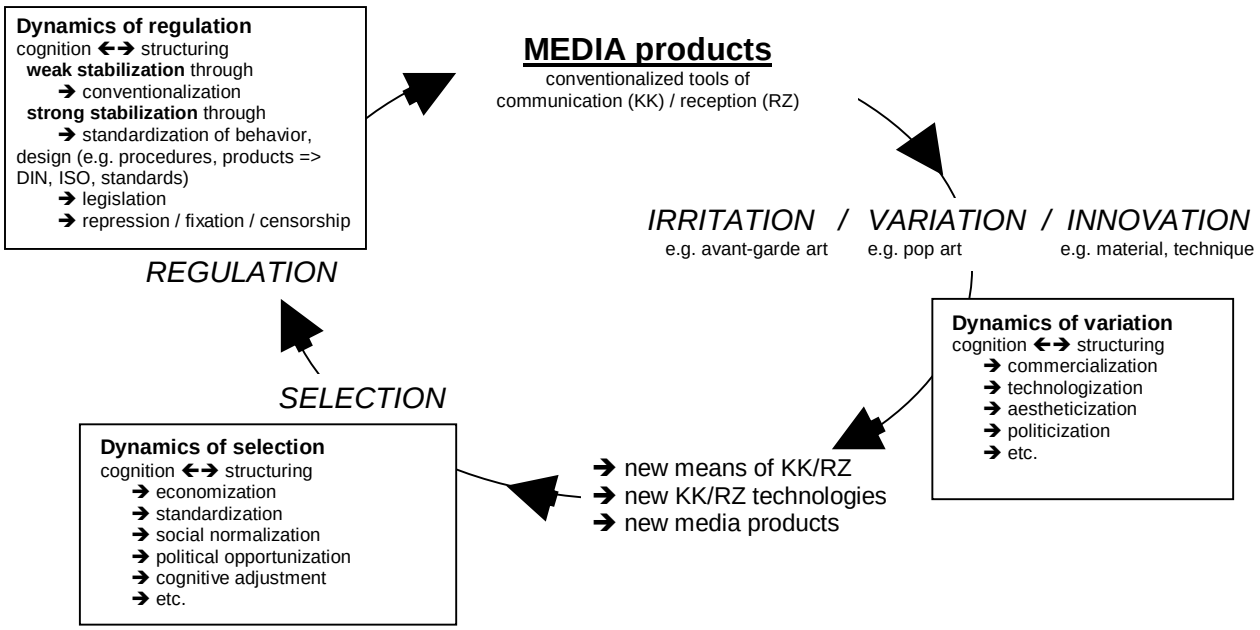
- media products – semiotic objects and services
- cognition – processes of regulating perception, thinking and acting (as regards reflection, production, reception/usage)
- society/culture – regulating cognition (socialization/culturation, structuring in regard to institutions, organizations etc.)
- technology – modalities of manufacturing, distributing and presenting products/services
- economy – commercializing/economizing cognition and social regulation (in regard to manufacturing, offering, selling, buying and distributing goods and services).

Figure 2 illustrates the rough structure of a media-dynamic system following principles of evolutionary theory.

---

[9] The term 'scopic media' denotes "screen-based technologies of observation and projection that render distant and invisible phenomena situationally present, unfold remote spaces and information worlds, and shift the boundaries between situation/system and environment" (retrieved December 28, 2012 from http://www.mediatisiertewelten.de/en/projects/1-foerderphase-2010-2012/scopic-media/).

Fig. 2 – Basic structure of evolutionary-progressive media dynamics according to Rusch (2007, p. 59)



Depending on the specific context and form, the same macro-processes can "contribute both to variation and innovation as well as selection/retention and regulation" (Rusch, 2007, p. 58). Rusch continues:

> The social structure as a basic formation process of social constructs, as practice (in the sense of Bourdieu) yields concurrently cognitive and sociotechnical results since in the same instances of structuring, both conventions and rules are 'negotiated' as well as sociotechnical structures established and social assets formed, which then become part of further structuring processes as situational and micro-political preconditions, and are modulated and transformed according to current requirements and possibilities. (Rusch, 2007, p. 58f.)

The interactions of the processes corresponding to the factors together generate changes which can be empirically examined and interpreted. Not least due to the integrative perspectivization of sociological, psychological, economic, as well as cognitive-, media- and communication-scientific approaches, Rusch's theory provides numerous connections for theoretically and empirically motivated detailed studies of medialized knowledge processes.

4. Conclusion and Outlook

The considerations and explorations have shown by example (a) that and in which regards questions about the medialization of knowledge can be examined beyond problematic reductions as well as vague or misleading terminology and without lamenting the loss of primary experiences; (b) that, in light of the digital turn, historically new forms of media-based and -impregnated knowledge integration and fragmentation as well as ways of dealing with them are up for examination; and (c) that a commonly accepted theory or just a set of basic distinctions is not within sight. Thus, from a metareflexive standpoint, the question arises as to which authorities want to implement which basic distinctions, concepts and practices – and by which means –, and which, regardless of efforts and intentions, will prevail in the near future or exist side by side. In all of this, reflections on the parallel developments of more or less (un)related knowledge cultures cannot be dismissed (Pscheida, 2009, p. 170f.). As a last point I want to highlight some aspects which I consider to be crucial for the further differentiation of the subject:

- No matter how we shape knowledge forms and architectures in relation to contents, social systems, cultures, contexts, technologies, organizations, degrees of consciousness, affect-logical dynamics (in the sense of Luc Ciompi) etc., the modeling process as well as the modalities of knowledge production and application will always be bound to cognitive actors (Schmidt, 2005, p. 115) and biological, organizational and medial individuality (Faßler, 2010, p. 14).

The obvious consequence is to understand knowledge processes and corresponding process results as medially and culturally impregnated products of interaction that are based on technology (in a broader sense), related to situation and context, and relevant to orientation and action.

- Even in those instances where knowledge is modeled as a commodity, resource or asset, there is little point in deleting the cognitive actors from the corresponding knowledge processes and "naturalizing" knowledge or information (Janich, 2006, p. 122). This also applies in the context of alternative modelings of "Economies of the Commons." Moreover, in the future it will be essential to pay attention not only to known forms of capital such as money, available means of production, or forms of cultural capital (sensu Pierre Bourdieu), but increasingly to the new informational forms of capital which are cropping up in the interaction of "digital capitalism" (Peter Glotz), "cognitive capitalism" (Hanno Pahl, Lars Meyer), "topological capitalism" (Maristella Scampa et al.) and "bio-political capital" (Toni Negri et al.; see Faßler, 2010, p. 19).

- Hand in hand with the former goes the consideration of differentiated forms of critiquing capitalism, media and knowledge. Starting with the "expansion of the issue of ideology to the constitution of societal world views and constructions of reality" (Adolf, 2006, p. 262), and the historically informed – and clarified by means of attention economy – differentiation of forms and procedures of media criticism (Schmidt, 2000, p. 155–175), to the development of media-activist concepts and practices (Sützl & Hug, 2012), to the critical-anthropological reflection of the contexts in which human abstraction achievements have developed and changed (Faßler, 2009, p. 287–291), there is no shortage of reference points for future-oriented forms of criticism beyond self-sufficient rhetorical exercises in perfection and culture-pessimistic mawkishness.

- The activities of the cognitive actors, on their part, do not take place in protected environments free of media and power, but in historical-medial constellations. That also applies to the production, representation, description, reflection, analysis, assessment and critique of knowledge. Therein lies both the methodological and epistemological relevance of motives of self-reference and self-application. Only in the course of recursive uses of the concepts do their respective possibilities and boundaries become obvious. In this process, we are not able to avoid the difficult task of empirically observing actors (actants, cognitive systems etc.) of the networks and analyzing them simultaneously as actants and at least partially as the result of network processes.

- If we accept that it has become problematic to orientate the internal differentiations of knowledge systems on individual media and their dispositives (Leschke, 2010, p. 303), then transversal and transmedial dimensions gain in importance. Rainer Leschke suggests focusing on medial forms as classification tools in the transversally linked media system (2010, p. 305). He illustrates this as follows, using the example of offers of mass media entertainment:

> While the complex of interpretive knowledge, identity construction and self-concept of the humanities was still largely based on the media-historical constellation of letterpress involved in the general literacy and competence for positing meaning, at the present, the medial constellations with augmented reality, the intermedial migration of forms and the imperceptible transitions between entertainment media and functional media require and generate first and foremost formal knowledge. (Leschke, 2008, p. 49)

In short: In order to understand knowledge dynamics and to find orientation in contemporary media constellations, we need knowledge about the relationship between media forms and media knowledge.

---

[10] The expansion of actor perspectives in the sense of "entities that do things" (Latour, 1992, p. 241) is plausible against this background as well. It has indeed become problematic to talk about "purely" human, technological, social, natural or cultural relationships. We consistently deal with "socio-cultural-natural-technologically" impregnated forms of relationship. The interaction of reaches and modalities of how different types of actors act and behave does not seem to have been convincingly differentiated to date in the theory of actors and networks, not least in regard to forms of (un-)conscious intentionality, to dynamics of the distribution of power, and normative decisions.

[11] See http://networkcultures.org/wpmu/ecommons/, retrieved April 16, 2012.

[12] To put it simply, this means educational spaces which are not established mainly or exclusively by taking recourse to verbal presentations or printed educational material with occasionally incorporating audiovisual media or field trips. The term designates intermedia structures and fabrics in which media technologies and means of communication are connected in a way that at the same time facilitates contrasting perceptions and intermedia contexts of meaning, and thus advances educational processes.

- This knowledge and the analysis of medial forms are relevant not least in regard to examining and shaping cultural, social and education-related concepts and practices. Here, too, we will benefit more from carefully considering the "[g]ains and losses" (Kress, 2005) than lamenting the loss of cultural spaces and forms of knowledge. This is particularly true for questions of education and of teaching and learning in school contexts. To date, media-theoretical explanations of educational architectures in schools (Böhme, 2006) have rarely been received in discussions connected to the fields of school pedagogy and school policy. The implicit or explicit insistence on schools as "literal countercultures" (Böhme, 2006, p. 70) may still have majority appeal and compatibility in terms of education technology, theory and policy. However, in the future there will have to be a heightened focus on planning and designing transmedial educational spaces if, given the increased educational plight, the Sputnik crisis of an earlier decade is not meant to be re-classified, ex post facto, as a historically negligible irrelevancy.

If we recognize plural, fragmented relationships to the self and to the world, it will be easier to deal with the many aspects of the medialization of knowledge, even without recourse to an elaborate, multimedially, multisensorially, multicodally and multimodally differentiated epistemology. The problematic nature of (seemingly) confirmed planning knowledge and an all-embracing knowledge frame was known long before the digital turn, at least in knowledge/science-critically informed circles. Also, votes in favor of interlinking knowledge piece by piece, and of positions in the middle between the poles of instant knowledge vs. long-term knowledge (Hug & Perger, 2003), or in support of developing skills for the creative and goal-oriented handling of problems with limited resources, are not at all new. However, the outlined models, theoretical approaches and categories are helpful in raising awareness for the characteristics of digitalization processes in general, the role of algorithms in linking processes in particular, the significance of reciprocal interdependence chains of partial dynamics in media change, transmedial and transnational dimensions of knowledge development, and for historically new forms of sociotechnical integration.

References

Adolf, M. (2006). *Die unverstandene Kultur: Perspektiven einer Kritischen Theorie der Mediengesellschaft*. Bielefeld: Transcript.

Adolf, M. (2011): Clarifying mediatization: Sorting through a current debate. *Empedocles: European Journal for the Philosophy of Communication, 3* (2), 153–175.

Bakardjieva, M. (2008). The (wo)man on the net: Exploring the new social distribution of knowledge. In T. Hug (Ed.), *Media, knowledge & education: Exploring new spaces, relations and dynamics in digital media ecologies* (pp. 151–169). Innsbruck: iup.

Böhme, J. (2006). *Schule am Ende der Buchkultur: Medientheoretische Begründungen schulischer Bildungsarchitekturen*. Bad Heilbrunn: Klinkhardt.

Becker, K., & Stalder, F. (Eds.). (2009). *Deep search: The politics of search beyond Google*. Innsbruck et al.: Studienverlag.

Boomen, M. v. d. (2009). Transcoding metaphors after the mediatic turn. In T. Hug (Ed.), *Mediatic turn: Claims, concepts and discourses / Mediale Wende: Ansprüche, Konzepte und Diskurse* (pp. 47–58). Frankfurt a. M. et al.: Lang. [= special issue *SPIEL, 25* (1)].

Cerri, D., et al. (2008). Towards knowledge in the cloud. In R. Meersman, Z. Tari & P. Herrero (Eds.), *On the move to meaningful Internet systems*: OTM 2008 Workshops Proceedings (pp. 986–995). Berlin et al.: Springer. Retrieved August 11, 2011 from http://members.sti2.at/~retok/publications/KnowledgeCloud_SEMELS08.pdf

Crawford, A. (2003). The digital turn: Animation in the age of information technologies. In C. A. Stabile & M. Harrison (Eds.), *Prime time animation: Television animation and American culture* (pp. 110–130). London: Routledge.

Debray, R. (1981). *Teachers, writers, celebrities: The intellectuals of modern France*. London: New Left Books and Verso Editions.

Dröge, F., & Kopper, G. G. (1991). *Der Medien-Prozeß: Zur Struktur innerer Errungenschaften der bürgerlichen Gesellschaft*. Opladen: Westdeutscher Verlag.

Faßler, M. (2009). *Nach der Gesellschaft: Infogene Welten – anthropologische Zukünfte.* München: W. Fink.

Faßler, M. (2010). Sichtbarkeit und Wissen: Netzwerke entstehender Ikono-Kratie. In T. Hug & R. Maier (Eds.), *Medien - Wissen - Bildung: Explorationen visualisierter und kollaborativer Wissensräume* (pp. 9–28). Innsbruck: iup.

Foerster, H. v. (1993). *Wissen und Gewissen: Versuch einer Brücke*. Frankfurt a. M.: Suhrkamp.

Gadanho, P. (2009, July 21). Beyond the digital turn [Web log post]. Retrieved August 11, 2011 from http://volumeproject.org/blog/2009/07/21/beyond-the-digital-turn/

Glasersfeld, E. v. (1997). *Wege des Wissens: Konstruktivistische Erkundungen durch unser Denken.* Heidelberg: Carl Auer Systeme.

Grusin, R. A. (2010). *Premediation: Affect and mediality after 9/11*. Basingstoke, New York: Palgrave Macmillan.

Hand, M. (2008). *Making digital cultures: Access, interactivity, and authenticity*. Burlington, VT: Ashgate.

Hayles, N. K. (2002). *Writing machines*. Cambridge: MIT Press.

Hug, T. (Ed.). (2009). *Mediatic turn: Claims, concepts and discourses / Mediale Wende: Ansprüche, Konzepte und Diskurse*. Frankfurt a. M. et al.: Lang.

Hug, T. (2010). Konstruktivismus. In R. Vollbrecht & C. Wegener (Eds.), *Handbuch Mediensozialisation* (pp. 32–43). Wiesbaden: VS-Verlag für Sozialwissenschaft.

Hug, T., & Perger, J. (Eds.). (2003). *Instantwissen, Bricolage und Tacit Knowledge: Wissensformen in der westlichen Medienkultur*. Innsbruck: Studia.

Janich, P. (2006). *Was ist Information? Kritik einer Legende*. Frankfurt a. M.: Suhrkamp.

Kant, I. (1929). *Critique of pure reason.* (N. Kemp-Smith, Trans.). Retrieved January 15, 2013 from http://staffweb.hkbu.edu.hk/ppp/cpr/toc.html. (Original work published 1787).

Knorr-Cetina, K. (1984). *Die Fabrikation von Erkenntnis*. Frankfurt a. M.: Suhrkamp.

Knorr-Cetina, K. (2003). From pipes to scopes: The flow architecture of financial markets. *Distinktion: Scandinavian Journal of Social Theory, 7*, 7–23.

Kösel, E. (2007). *Die Konstruktion von Wissen: Eine didaktische Epistemologie für die Wissensgesellschaft*: Vol. 2. Die Modellierung von Lernwelten. Bahlingen: SD-Verlag.

Krämer, S. (1998). Das Medium als Spur und als Apparat. In S. Krämer (Ed.), *Medien, Computer, Realität: Wirklichkeitsvorstellungen und Neue Medien* (pp. 73–94). Frankfurt a. M.: Suhrkamp.

Kress, G. (2005). Gains and losses: New forms of texts, knowledge, and learning. *Computers and Composition, 22* (1), 5–22. [= special issue on the influence of Gunther Kress' work]

Krotz, F. (2008). M wie Mediatisierung. *Aviso, 47*, 13. Retrieved June 18, 2011 from http://www.dgpuk.de/napex/upload/dgpuk//Aviso/Aviso47.pdf

Latour, B. (1992). Where are the missing masses? Sociology of a few mundane artefacts. In W. E. Bijker & J. Law (Eds.), *Shaping technology, building society: Studies in sociotechnical change* (pp. 225–258). Cambridge, MA: MIT Press.

Leidlmair, K. (1997). Technisierungsschübe und Wissenswandel. In C. Hubig (Ed.), *Cognitio humana: Dynamik des Wissens und der Werte* (pp. 557–565). XVII. Deutscher Kongreß für Philosophie in Leipzig, September 23-27, 1996. Berlin: Akademie Verlag.

Leschke, R. (2008). Medienformen und Medienwissen: Zwischen Interpretation und Formerkennung. In T. Hug (Ed.), *Media, knowledge & education: Exploring new spaces, relations and dynamics in digital media ecologies* (pp. 36–50). Innsbruck: iup.

Leschke, R. (2010). *Medien und Formen: Eine Morphologie der Medien.* Konstanz: UVK.

Liessmann, K. P. (2006). *Theorie der Unbildung: Die Irrtümer der Wissensgesellschaft*. Wien: Zsolnay.

Livingstone, S. (2009). On the mediation of everything: ICA presidential address 2008. *Journal of Communication, 59* (1), 1–18.

Luhmann, N. (1996). *Die Realität der Massenmedien* (2nd ed.). Opladen: Westdeutscher Verlag.

Lundby, K. (Ed.). (2009). *Mediatization: Concept, changes, consequences*. Frankfurt a. M.: Lang.

Manovich, L. (2002). *The language of new media* (2nd ed.). Cambridge: MIT Press.

Margreiter, R. (1999). Realität und Medialität: Zur Philosophie des 'Medial Turn'. *Medien Journal, 23* (1), 9–18.

Margreiter, R. (2001). Wissenskonstitution im Spannungsfeld von Arbeit, Spiel und Medien. Manuscript for a paper at the international conference *"Wie kommt Wissenschaft zu Wissen?"* Innsbruck University, November 30–December 1, 2001. Retrieved August 11, 2001 from http://www.uibk.ac.at/wiwiwi/home/tagung/margreiter.pdf

Matthiessen, U. (2006). Raum und Wissen: Wissensmilieus und KnowledgeScapes als Inkubatoren für zukunftsfähige stadtregionale Entwicklungsdynamiken? In D. Tänzler, H. Knoblauch & H.-G. Soeffner (Eds.), *Zur Kritik der Wissensgesellschaft* (pp. 155–188). Konstanz: UVK.

Matthiessen, U. (2007). Wissensmilieus und KnowledgeScapes. In R. Schützeichel (Ed.), *Handbuch Wissenssoziologie und Wissensforschung* (pp. 679–693). Konstanz: UVK.

Meyen, M. (2009). Medialisierung. *Medien & Kommunikationswissenschaft, 57*, 23–38.

Mills, K. A. (2010). A review of the 'digital turn' in the New Literacy Studies. *Review of Educational Research, 80* (2), 246-271.

Münker, S. (2009). *Philosophie nach dem »Medial Turn«: Beiträge zur Theorie der Mediengesellschaft*. Bielefeld: transcript.

Pscheida, D. (2009). Wissensmodelle im Wandel: Vom Modus wahrer Erkenntnis zum Modus situativen Konsenses. In T. Hug (Ed.), *Mediatic turn: Claims, concepts and discourses / Mediale Wende: Ansprüche, Konzepte und Diskurse* (pp. 149–176). Frankfurt a. M. et al.: Lang. [= special issue *SPIEL, 25* (1)]

Rusch, G. (2007). Mediendynamik: Explorationen zur Theorie des Medienwandels. *Navigationen: Zeitschrift für Medien- und Kulturwissenschaften, 7* (1), 13–93.

Rusch, G. (2009): The many mediatic turns . . . and a significant difference. In T. Hug (Ed.), *Mediatic turn: Claims, concepts and discourses / Mediale Wende: Ansprüche, Konzepte und Diskurse* (pp. 23–34). Frankfurt a. M. et al.: Lang. [= special issue *SPIEL, 25* (1)]

Schäfer, M. S. (2007). *Wissenschaft in den Medien: Die Medialisierung naturwissenschaftlicher Themen*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Schmidt, S. J. (2000). *"Kalte Faszination": Medien. Kultur. Wissenschaft in der Mediengesellschaft*. Weilerswist: Velbrück Wissenschaft.

Schmidt, S. J. (2005). *Lernen, Wissen, Kompetenz, Kultur: Vorschläge zur Bestimmung von vier Unbekannten*. Heidelberg: C. Auer.

Schmidt, S. J. (2008). Media philosophy: A reasonable programme? In H. Hrachovec & A. Pichler (Eds.), *Philosophy of the information society* (pp. 89–105): Vol. 2. Proceedings of the 30th International Ludwig Wittgenstein Symposium, Kirchberg am Wechsel, Austria 2007. Frankfurt et al.: Ontos.

Schulz, W. (2004a). Medialisierung: Eine medientheoretische Rekonstruktion des Begriffs. Beitrag zur Jahrestagung der Deutschen Gesellschaft für Publizistik- und Kommunikationswissenschaft (Erfurt, May 19–21, 2004). Retrieved December 31, 2006 from http://www.kowi.wiso.uni-erlangen.de/pdf_dateien/DGPuK_Medialisierung_end.pdf

Schulz, W. (2004b). Reconstructing mediatization as an analytical concept. *European Journal of Communication, 19* (1), 87–101.

Silverstone, R. (2005). The sociology of mediation and communication. In C. Calhoun, C. Rojek & B. S. Turner (Eds.), *The Sage handbook of sociology* (pp. 188–207). London: Sage.

Sützl, W., & Hug, T. (Eds.). (2012). *Activist media and biopolitics: Critical media interventions in the age of biopower*. Innsbruck: iup.

Thompson, J. B. (1995). *The media and modernity: A social theory of the media*. Stanford: Stanford University Press.

Weingart, P. (2008). *Die Stunde der Wahrheit? Zum Verhältnis der Wissenschaft zu Politik, Wirtschaft und Medien in der Wissensgesellschaft*. Weilerswist: Velbrück.

Whitchurch, C. (2010). Optimising the potential of third space professionals in higher education. *Zeitschrift für Hochschulentwicklung, 5* (4), 9–22.